

**D**esign  
at the **Doorstep**  
Design Approaches for MSMEs

Shashank Mehta





# Design at the Doorstep

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## Design at the Doorstep: Design Approaches for MSMEs

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NID Press is an imprint of Research & Publications, National Institute of Design, Ahmedabad

**Editing:** P.S.V. Kurup  
**Design:** Ankita Gajjar  
**Print Advisor:** Tarun Deep Girdher, Yogesh Patil  
**Print Production:** Smruti Offset Pvt. Ltd., Ahmedabad.  
Printed and bound in India.

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ISBN 978-81-86199-90-9

10 9 8 7 6 5 4 3 2 1



राष्ट्रीय डिजाइन संस्थान  
NATIONAL INSTITUTE OF DESIGN

First published in 2018 by  
Research & Publications  
National Institute of Design  
Paldi, Ahmedabad 380007  
India publications@nid.edu  
www.nid.edu

Printed on : Elegance E Class 100gsm/230gsm.

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## Foreword



My association with the Design Clinic Scheme dates back to the period 2008-2010 when, as the Additional Secretary & Development Commissioner for Micro, Small & Medium Enterprises, I was leading an important government initiative to enhance the manufacturing competitiveness of Indian MSMEs. Based on the visionary recommendations made by the National Manufacturing Competitiveness Council headed by V. Krishnamurthy, a bouquet of 10 schemes was conceived by the Development Commissioner's office under a programme called the National Manufacturing Competitiveness Programme (NMCP). I had the good fortune of being at the right place at the right time for formulating and steering most of the schemes through their initial phases.

Of all the schemes under the NMCP, I have no hesitation in mentioning my particular fondness for the Design Clinic Scheme. I have always felt that the immense talent, enterprise, and resilience of the small and traditional enterprises of India can find their rightful place in global trade and commerce by the use of design to create niche markets that overcome the handicap of scale. I recall my numerous discussions with Pradyumna Vyas, the director of the Ahmedabad-based National Institute of Design (NID) and also with Shashank Mehta, both highly regarded faculty members from the institute about the remarkable opportunity for NID to play a central role in bringing together Indian MSMEs and design professionals of the country on a single platform through the Design Clinic Scheme for MSMEs.

From the very beginning of this initiative, Shashank Mehta has continued to lead a dedicated team under the Design Clinic Scheme. This journey has taken him to every nook and corner of the country to spread design awareness, to document design needs, and to prepare the MSME clusters as incubators for new design ideas. His book titled *Design at the Doorstep: Design Approaches for MSMEs* gives valuable insight on the scheme implementation strategies and the perspectives of both design professionals and entrepreneurs. It provides information on design needs of selected clusters and the process of analyzing design problems of MSMEs. It also advocates how design solutions can quickly enhance the value and competitiveness of small enterprises.

I am indeed happy that this initiative, conceived a decade ago, has matured over the years, and the Design Clinic Scheme has emerged as one of the main platforms for coordinated activity between the government, NID, and the MSMEs. Over 219 workshops have been conducted in multiple clusters across the country, resulting in the documentation of the design status and needs of small enterprises. Substantive advice by professionals through 379 design

interventions have helped develop products and processes that have expanded the business linkages of the small enterprises. Several micro and small entrepreneurs have gone on to bag the prestigious I-Mark (awarded by the India Design Council) for their products. The aspiration for greater innovation and adding higher value to Indian-made products is being commonly understood and acted upon at multiple levels.

Through this publication, the author has aptly informed the wider audience about the strengths, weaknesses, and aspirations of the MSME sector, the design needs of MSMEs, the advantages of adopting design as a business strategy, and above all, the role of design and professional designers to raise the bar of quality of products of MSMEs to create better value in international business. This publication is therefore, an asset; it can be a reference book for all the stakeholders involved - policy makers, MSMEs, design professionals, academia, and research scholars.

I congratulate Shashank Mehta for bringing out such a valuable publication on a unique design experience in the MSME sector, which constitutes the backbone of India's economy. I look forward to more resource materials being brought out on this theme, since "design matters" in any business.

**Madhav Lal**

## Preface

The Micro, Small and Medium Enterprises (MSMEs), have been globally considered as an engine of economic growth. MSMEs play a pivotal role in the economic and social development of the country, often acting as a nursery of entrepreneurship. In India too, MSMEs play an essential role in the overall industrial economy of the country. Spread across the country, over 94% of the Indian industries comprise of MSMEs. For India, a labor abundant country, MSMEs are the major source of employment generation and foreign exchange earnings. The country will require creation of 220 million jobs by 2025. Reviving the country's manufacturing sector is a key initiative in this direction. The MSME sector is amongst the largest contributor in terms of employment generation in the manufacturing sector in the country. While generating employment opportunities at the local and regional level, MSMEs also help tackle the problems of regional disparities. In Indian context, the growth of the MSME sector is vital for our sustainable and equitable social and economic development.

Launched on February 17, 2010 with the initial target to reach out to 200 MSME clusters, the Design Clinic Scheme for MSMEs, a unique design intervention scheme for the country's vast MSME sector, reached out to over 25,000 MSME participants across the country, through organisation of over 350 Design Awareness Seminars, 200 Design Awareness Programmes, 236 Professional Design Projects and 98 Student Design Projects, in a short span of five years.

This book, mainly a compilation of articles I had written on my blog during the period of scheme implementation, is an attempt to share my experiences gained over these five years. As multi-layered accounts, the articles bring to the fore the typical characteristics and concerns of the Indian MSMEs and scope for design intervention in this crucial sector of the economy. While demonstrating the design intervention approach that is appropriate and contextual to this sector, it highlights the role of academia in developing such sector specific solutions and approaches. And it portrays the design journey to scale up (implement) this unique approach across the country.

MSMEs face several barriers in their attempts to grow. MSMEs have to catch up with global standards of excellence to remain competitive and profitable. They have to adapt to new standards in technology, quality, and pricing to be able to survive in the market place. However they find themselves entangled in the web of issues and problems, making it difficult to explore new opportunities. "Ambala main koi bhukhe nah imarta; lekin koi tarakki nahi karta" (nobody dies of hunger in Ambala; but nobody grows) as told by one of the unit owners at Ambala cluster, aptly describes the telling reality of the challenges faced by the MSMEs of the country. The future of the MSMEs will depend on overcoming these barriers and challenges; critical among them is the change from traditional methodology to an innovative product development process and the ability to remain in the business with competitive advantage. MSMEs need to move up the value chain, from OEMs to ODMs.

'Industry' for us means 'In + Dust + Try', thus was described by one of the MSME owners at Jammu. Majority of the MSMEs operate with minimum of capital investment. For majority of them, traditional methods of production, labour intensive processes, unergonomic and unhygienic work environment, old and improper tools and techniques, all result in low productivity, lower quality of products and inconsistent outputs. MSMEs, especially the micro enterprises normally operate from their home or utilise the space available in or around their homes. The workers, the laborers, the artisans, majority of them from the lower economic strata of the society, spend most of their time with poorly designed hand tools, machine tools, equipment, lighting, workstations, thereby exposing them to serious health hazards. Majority of manual processes, coupled with long hours and uncomfortable work postures result in critical health issues and decreased productivity.

By the very nature of their business, MSMEs would expect quick, practical and demonstrative solutions/results that can be immediately implemented with minimum or no investment cost. Design would



play critical role here to help MSMEs survive and sustain in these increasingly complicated and saturated markets. The design intervention model developed by the Institute and tested earlier with selected small scale industries and clusters, was found to be more appropriate to the country's large MSME sector that otherwise may not be able to afford on design. Scaling up of this unique design intervention model, and thus implementing it nationally as Design Clinic Scheme, was in itself a design opportunity and creative exercise.

This first of its kind design intervention scheme has helped create a platform for the needy MSME industries and the designers for continuous and constant interaction to improve their products and processes. One of the ten schemes launched by the Ministry of MSME, Government of India, under its National Manufacturing

Competitiveness programme, NMCP, the Design Clinic Scheme for MSMEs, would encourage creation of 'Designed in India' and 'Designed for India' products and services. The design intervention strategies under the Scheme also aligns with the 'Make in India' campaign of the Government of India and help MSMEs in improving their manufacturing competency and quality of products through value addition.

The contents of this book would be an eye opener to the policy makers and stakeholders of MSMEs to get a glimpse of the enormous employment generation opportunities available by strengthening these MSMEs across the country for a sustained and balanced economic development.



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**“ ‘Industry’ for us means  
‘In + Dust + Try’ ”**

**a MSME unit owner at Jammu**

## MSMEs: A Global Perspective

World over, the Micro Small and Medium Enterprises or MSMEs have been recognized as the backbone of the country's economic growth. "MSMEs' role in the economic and social development of the country is now well established."<sup>1</sup> MSMEs contribute to economic development in various ways, by creating employment for rural and urban growing labor force, and providing desirable sustainability and innovation in the economy as a whole. "In addition to that, large number of people relies on the small and medium enterprises directly or indirectly"<sup>2</sup>. "The development of MSMEs is seen as the way to accelerating the achievement of wider socio-economic goals, including poverty alleviation."<sup>3</sup> MSMEs represent a factor of balance at the micro and macroeconomic level by counter-balancing the monopolies and oligopolies, reducing the capability of the big companies of controlling the market. MSMEs are credited with generating the highest rates of employment growth and accounting for a major share of industrial production and exports. They play a significant role in the design, development, and manufacturing of a substantial number of new products. "MSMEs have been recognized as critical breeding and nurturing grounds for domestic entrepreneurial facility, technical proficiency, technological modernization and managerial competencies for the development of a vibrant and productive economy."<sup>4</sup> With 95% of global enterprises comprising MSMEs, they serve as key drivers of innovation, social integration, and employment - representing 60% of private sector jobs. MSMEs thus can become the "seed" of economic revival of the country.

In the rapidly changing and constantly moving world of today, MSMEs are most suited to quickly adjust to environmental fluctuations. Being smaller in size coupled with their fast decision making process, help MSMEs to provide quality services and competitive products at a lower cost and in quantities as per changing market demands. Further, being closer to the markets, MSMEs adapt easily to the requirements and demands of the consumers. Constant supervision of the owner/entrepreneur results in lower conventional expenses and high work productivity. These enterprises are also involved in the development

of appropriate technologies. MSMEs thus contribute directly and often significantly to aggregate savings and investment for any nation. They play vital role in promoting competitiveness and bringing in new products or techniques to the market. The performances and the development level of a national economy depend a lot on the capacity to create a good environment for MSMEs to flourish.

MSMEs have historically played an important role in contributing to economic development of many countries around the world. MSMEs bolster an entrepreneurial spirit and bring forward flexibility in the economy. For individuals, MSMEs often represent the first job, the first step in the career. "Neutrality is almost entirely comprised in the SMEs", declares the International Finance Corporation, further adding that "they are the only realistic possibility of employment for the millions of poor people in the entire world."<sup>5</sup>

MSMEs are the biggest contributors to the employment of labor in a country. "Globally, MSMEs employ one-third of the working population."<sup>6</sup> There are about 162.8 million formal MSMEs, employing more than 508 million employees, as per the data collected from 155 countries by MSME Country Indicator (MSME-CI).<sup>7</sup> MSMEs represent vast portion of businesses in developing countries. "A World Bank Group study suggests there are between 365-445 million micro, small and medium enterprises (MSMEs) in emerging markets, from which 25-30 million are formal small and medium enterprises (SMEs), 55-70 million are formal micro enterprises and 285-345 million are informal enterprises."<sup>8</sup> "On an average, there are around 31 MSMEs per 1000 persons globally. There are countries that are above average, for instance Brunei Darussalam with 122 companies to 1000 inhabitants, Indonesia with 100, Paraguay with 95, Czech Republic with 85 or Ecuador with 84."<sup>9</sup> The countries with a bigger income per capita tend to have a larger number of registered companies for 1000 persons. Globally MSMEs had grown by 6% from the year 2000 to 2009, with Europe and Central Asia experiencing a growth of 15% .



MSMEs, by number, dominate the world business stage. "Although precise, up-to-date data are difficult to obtain, estimates suggest that more than 95% of enterprises across the world are MSMEs, accounting for approximately 60% of private sector employment."<sup>10</sup> "According to data from the European Observatory, SMEs represent 99% of all enterprises in Europe, and contribute more than two thirds of European GDP and provide 75 million jobs in the private sector. In the United State of America, the SMEs account for 87 percent of the country's workforce. In Tokyo, the SMEs with less than 300 workers account for 99.5% of the factories and employs 74 percent of work force there. From a regional perspective East Asia and the Pacific have the highest ratio of MSME employment to total employment. This is mainly driven by China, where formal MSMEs account for 80 percent of total employment. In Pakistan, our neighboring country,

SMEs consist nearly 90% of all the enterprises, employing 80% of the non- agricultural labor force."<sup>11</sup> "In South Africa, SMEs account for about 91% of the formal business entities, providing almost 60% of employment."<sup>12</sup>

SMEs are also the biggest contributors to the gross domestic product, GDP. "In countries like Japan or China 60% of GDP comes from SMEs, in the USA the percentage goes up to 65%, and in the EU, SMEs generate 52% of GDP."<sup>13</sup> "Taiwan has, in the past 50 years, proved to be the most successful developing country, grown on a vibrant SME sector. This has produced both record-breaking growth and a quite low level of inequality, by comparative standards. Similarly, Korea has exemplified that inequality can fall significantly when the weight of the SME sector rises quickly, as it did after the mid-1970s,"<sup>14</sup> while in



“the emerging economies formal SMEs contribute up to 33 percent of national income (GDP).”<sup>15</sup>

According to estimates, 600 million jobs will be needed in the next 15 years to absorb the growing global workforce mainly in Asia and Sub-Saharan Africa. In emerging markets most formal jobs are with MSMEs, which create 4 out of 5 new positions. Other than the fact that MSMEs employ a large number of people, they are also responsible for new employment. The labor and capital ratio and the overall growth in the MSMEs are normally much higher than in the larger industries. “Between 2002 and 2010, on an average, 85% of total employment growth was attributable to SMEs.”<sup>16</sup> “MSMEs help to absorb productive resources (local technology and raw materials) that would have otherwise been ignored by larger firms at all levels of

the economy and add to the formation of flexible economic systems in which small and large firms are interlinked.”<sup>17</sup> For the developing economies, MSMEs thus help create the much required industrial base that can stimulate growth by providing employment and output in the initial phase of the transformation from a low-income economy to middle-income economy. MSMEs, from a social point of view, are more efficient in resource allocation as compared to that of large scale companies. They provide for and facilitate for a larger number of people. Moreover, MSMEs are generally more common in rural areas than larger businesses. MSMEs thus provide much-needed employment in rural areas. Therefore, in addition to a role in economic growth and employment, MSMEs also play a role in the distribution of development outcomes. MSMEs thus have a significant role in the transition of agriculture-led economies to industrial ones.

Internationally the SME abbreviation is used for Small and Medium Sized Enterprise, and MSME abbreviation is used for Micro, Small and Medium Sized Enterprise. “The enterprise is the common ways of organization made of one or multiple persons who have economic activities using multiple material and economic means in order to obtain profit.”<sup>18</sup> Although these abbreviations are accepted and used, when it comes to defining the terms SME and MSMEs, each country follows different approaches. The economic, cultural and social differences among the states of the world are reflected both in the definition as well as in the classification of SMEs.<sup>19</sup> “Globally two predominant ways of classifying enterprises prevail: the Asian perspective, which has in the centre the industrial branch and the European one, which is based on three size indicators, i.e. turnover, employees’ number and active value.”<sup>20</sup> According to a report published by International Finance Corporation (a World Bank Group), the most common way MSMEs are defined is: Micro Enterprises: 1-9 employees, Small Enterprises: 10-49 employees, and Medium Enterprises: 50-249 employees. Out of the other definitions a few of the common ones were based on the number of employees differentiated by industry, annual turnover, and investment.

“The European Union (EU) defines SME as an independently owned and managed business with fewer than 250 employees, and annual turnover of less than 50 million euro.”<sup>21</sup> Where as China’s classification is more complex because in the branch sub-classification they include the hierarchy criteria used in Europe, but according to the industry. Here an industrial SME is defined as having up to 2,000 employees. In the USA, a governmental department called Small Business Administration - SBA, establishes the classification of SMEs. SBA has established two widely used size standards - 500 employees for most manufacturing and mining industries, and \$7 million in average annual receipts for most non-manufacturing industries.



## MSMEs in India



For India, a labor abundant country, MSMEs are the major source of employment generation and foreign exchange earnings. The sector is the single largest contributor in terms of employment generation in the manufacturing sector and the second largest source of employment in India, after agriculture. Over 95% of the country's industries come under MSME category. "MSMEs contribute nearly 8 percent of the country's GDP, 45 percent of the manufacturing output and 40 percent of the exports. More than 94% (24.5 million) of these MSMEs are in the unregistered segment, with a large number established in the informal or unorganized sector."<sup>1</sup> From these MSMEs about 7.3 million are manufacturing enterprises while 18.8 million enterprises are engaged in rendering various services. And 54.4% of the MSMEs (14.2 million) are rural enterprises.<sup>2</sup> They produce over 8000 value-added products.<sup>3</sup> More than 31 mn units spread across the country,<sup>4</sup> MSMEs produce a diverse range of products and services, right from the simplest to the most complex ones, to meet the needs of the local markets, the global market and the national and international value chains. MSMEs are present as a part of the value chain in almost all distinguished industries such as the automotive industry, electronic goods, garments and textile industry, leather industry and several others.

MSMEs provide employment to over 73 million people in the country.<sup>5</sup> "The labor intensity in the MSME sector is estimated to be almost 4 times higher than the large enterprises."<sup>6</sup> "It is estimated that to create one job in the MSME sector, only Rs 72,000 is required as against Rs 5.5 lakh required in the large organized sector."<sup>7</sup> By their very nature, these industries are low on investments, low on mechanization but are labor intensive. These MSMEs are much closer to users in terms of understanding their needs and aspirations. Serving the local needs, these industries are the source of indigenous innovations. Fierce competition among these MSMEs and auxiliary units helps in bringing about continuous refinement and up-gradation of the products. Being smaller in stature, they are quick in adapting to new changes and providing customized solutions and services.

"Generating new employment opportunities by utilizing the existing skills and local resources, to improve the standard of people's living, will be one of the important criteria of sustainability in the Indian context."<sup>8</sup> A major section of India's over one billion population comprises the rural and middle-income segments. "Over 70% of them live in more than 6,38,000 villages"<sup>9</sup> spread across 28 states and 7 Union territories of India. The opening up of the Indian economy and the resultant economic development, has led to rapid industrialization and urbanization in the Indian society. The speedy proliferation of capital intensive, automated and centralized industries has resulted in reduced employment opportunities and induced mass migration of the labor class from rural areas to urban ones. A migration of this kind has distanced people from their traditions and roots. It has also resulted in overtly saturated cities. Lopsided development of an area/region is another outcome of this migration.

It is very well understood through experience that growth of MSME sectors in the region affects the local economics in a significant way. By providing employment in the rural area, MSMEs help arrest migration from villages to cities. The geographic distribution of the MSMEs is also more even. Majority of people working in MSME units are residents from the same region and follow the same local practices. This makes the effect of training and growth percolate easily to every participant of the activity. MSMEs thereby help bring equality in the society as the income generated will get distributed throughout the working class. Also with the opening up of markets at a global level, the work environment, consciousness about the quality, education, health issues and many other regional and political activities have got suitably linked with the development of MSMEs in the region. In view of these factors, MSMEs are important for achieving national objectives of growth with equity and inclusion. Thus, reviving these MSMEs would be an important step towards promoting sustainable growth and development of the economy of the country.

## The Definition of MSME

In India, the micro, small and medium enterprises have been classified broadly into two categories; manufacturing enterprises and those engaged in providing or rendering services. As per the MSME Development Act of 2006, (India) micro, small and medium industries are defined based on their investment in plant and machinery for manufacturing enterprise, and based on their investment in equipments for enterprises providing or rendering services.

"According to this Act, in the case of the enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the Industries (Development and Regulation) Act, 1951

- A micro enterprise is where the investment in plant and machinery does not exceed twenty five lakh rupees.
- A small enterprise is where the investment in plant and machinery is more than twenty five lakh rupees but does not exceed five crore rupees.
- A medium enterprise is where the investment in plant and machinery is more than five crore rupees but does not exceed ten crore rupees."<sup>10</sup>

"in the case of the enterprises engaged in providing or rendering of services,

- A micro enterprise is where the investment in equipment does not exceed ten lakh rupees.
- A small enterprise is where the investment in equipment is more than ten lakh rupees but does not exceed two crore rupees.
- A medium enterprise is where the investment in equipment is more than two crore rupees but does not exceed five crore rupees."<sup>11</sup>

*(The Ministry of Micro, Small & Medium Enterprises, Government of India is in the process of revising the definition of MSME.)*

## Government Initiatives to Encourage Growth of MSMEs in the Country

Sustainable economic development is at the top of the political agenda in India. The aim for growth is to be faster, sustainable and more inclusive.<sup>12</sup> India has a favorable demographic profile with over “60% of its population in the working age group of 15-59 years,”<sup>13</sup> thereby forming one of the largest highly qualified workforces, looking for suitable job/employment opportunities. In the Indian scenario, a job/proper employment is associated with the social status of a person. Therefore, generating new entrepreneurial and employment opportunities along with improving people’s standard of living are some of the major issues that come within the ambit of sustainable economic and social development of the country. Over 10 million people join the workforce every year in India. “This will require creation of 220 million jobs by 2025.”<sup>14</sup> The country thus needs to grow faster to increase per capita income to create decent jobs for the unemployed. This has to be done by utilising the existing skills and strengths of the people; while, at the same time, taking steps to preserve the values of traditional society. “What will be more relevant in the Indian context is what Gandhi said, “Production by masses and for masses, rather than mass production” coupled with a global outlook in terms of the quality of production and performance.”<sup>15</sup> Opportunities for employment and more importantly for self-employment would empower every individual by instilling confidence, self-respect and entrepreneurial spirit in him/her. Empowerment through employment and skill development are crucial for the sustainable growth of people. The MSME sector, with its multiplier effect on creation of jobs, has to play significant role to create gainful employment for majority of this population.

Realizing the significance of the MSME sector in overall growth and progress of the country, the government has taken several initiatives over the years towards strengthening this vital sector. The MSME Development Organization was set up in 1954 as an apex body for sustained and organized growth of MSMEs in the country. In the year 1991 the government announced a separate policy for the small scale sector that focuses on further promotion of the sector.<sup>16</sup> The

MSME development Act 2006 came in effect from 2nd October 2006. With the objective to ensure healthy growth of this sector and to increase its competitive edge, the Government of India announced the National Manufacturing Competitiveness Programme (NMCP) in the year 2005.<sup>17</sup> Through the amendment of the Government of India (Allocation of Business) Rules, 1961, through Presidential notification dated 9th may 2007, Ministry of Agro and Rural Industries and the Ministry of Small Scale Industries were merged into the single ministry - Ministry of Micro, Small and Medium Enterprises, MSMEs. And in the year 2011, Government of India announced National Manufacturing Policy, with the objective to enhance the share of manufacturing in GDP to 25% and creating 100 million jobs within the next decade.<sup>18</sup> On 25th September 2015, the Prime Minister of India unveiled an ambitious national campaign ‘Make in India’, with an aim to make India a global manufacturing hub.<sup>19</sup> With the view to bring in the much needed economic transformation in the country, the campaign aims to attract global businesses to invest and manufacture in India.

In the past, this major sector existed in a relatively sheltered environment, with special government incentives, support programmes and levels of protections. However, in the post-reform era, starting from 1991, the situation especially for the manufacturing sector has undergone a dramatic change. As India integrates with the world economy, its industries have to adjust to this new situation. This critical sector now needs to continuously enhance its competitiveness to benchmark against the best in the world. Liberalization and globalization of the economy, while offers tremendous challenge of survival for our industries, they also offer opportunities for its growth and expansion.

## National Manufacturing Competitiveness Programme

Worldwide, it is manufacturing that has driven growth. While the share in many of the comparable economies in Asia is now much higher, at 25 to 34%, the share of manufacturing in India’s GDP has stagnated at 15 - 16% since 1980.<sup>20</sup> Though the growth of the manufacturing sector has generally outpaced the overall growth rate of the economy, the contribution of the manufacturing sector in India is much below its potential. Reviving the country’s manufacturing sector is a key initiative in this direction. While farming, which employs nearly 50% of population, contributes just 14% to GDP, services sector contributes nearly 60% to the economy, but employs just around 27% of workforce. Manufacturing leads to creation of lot of jobs, service enterprises and thereby contributes to GDP. Every job created in manufacturing has a multiplier effect of creating two to three. The manufacturing sector would thus have to be the bulwark of this employment creation initiative. The country needs to now move towards labour-intensive manufacturing-driven growth model.<sup>21</sup> Recognizing that the manufacturing sector has a multiplier effect on the creation of jobs, even in allied sectors, the National Manufacturing Policy focuses on enhancing the share of manufacturing in the GDP of the country. In order to revive the MSMEs and with a view to accelerating the growth of the manufacturing sector in the country, the NMC programme proposes to create an enabling environment suitable for the sector to strengthen their operations and sharpen their competitiveness, to thereby flourish in India.

National Manufacturing Competitiveness Programme (NMCP), conceptualized by the National Manufacturing Competitiveness Council, NMCC, is the nodal programme of the Gov. of India, to be implemented through Public Private Partnership mode with close physical and financial participation of the MSME sector. There are ten components under the NMCP targeted at enhancing the entire value chain of the MSME sector. It includes programmes like establishment of new Tool Rooms, enhancing of product and process quality, cost reduction through lean manufacturing techniques, etc.<sup>22</sup> Design Clinic Scheme is one of the ten components of the NMC programme.





**“One of the major constraints we face is that the technologies we need are not available anywhere”**

**a MSME owner, Dehradun**

## Design and MSMEs

### National Design Policy

Realizing the increasing importance of design in driving the country's economic and social development, the Government of India announced its first National Design Policy in the year 2007. The design policy acknowledges that if technology and management were the driving tenets of business and industry in the past, the future clearly belongs to design-led innovation. Thus with the vision of entering into a design-enabled innovation economy, the policy recommends creation of original Indian designs in products and services, drawing upon India's rich craft traditions and cultural heritage.

With a view to encourage design led innovation in industries, the policy recommends formulation of a Scheme for setting up Design Centres/innovation hubs in various sectors/clusters of industries. The policy takes stock of the yawning gap between the demands for, and the supply of, design practitioners in India. The policy stresses on establishment of Departments of Design in all Indian Institutes of Technology (IITs) and all National Institutes of Technology (NITs) as well as in prestigious private Colleges of Engineering and Architecture. These, the policy envisages, would help upgrade quality of engineering design, machinery design, process design, design materials, environmentally sound and socially and culturally relevant design practice. Thereby, the policy envisages raising Indian design education to global standards of excellence. It aims at making India a major hub for exporting and outsourcing designs. The policy also proposes to facilitate Indian firms and institutions to develop strategic alliances with design firms and institutions abroad to gain access to technology and know-how with a view to improve Indian design.<sup>1</sup>



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### The Definition of Design

The International Council of Societies of Industrial Design (ICSID) ([www.icsid.org](http://www.icsid.org)) defines Design as “a creative activity whose aim is to establish the multi-faceted qualities of objects, processes, services and their systems in whole life cycles.”

The NID Act 2014 defines Design as “a logical and sequential innovative process for the purpose of transferring culture to viable products and services and for providing a competitive edge to products and services”. Design brings together the finest sensibilities of the arts with the logic of science to an innovative framework that encompasses study of materials and material culture, a design attitude and methodology that establishes connections with the fabric of society.

Design is the central factor of innovative humanization of technologies and the crucial factor of cultural and economic exchange.

Design isn't just about drawing a few lines or beautifying a pre-existing object. It's about conceptualizing, thinking and understanding. Design could be most appropriately defined as a problem-solving technique. It's an entire philosophy of life. The concept of design brings in not just the aspects of quality, functionality and aesthetics, but also a commitment to social values, culture and tradition, and user preferences.

The design process involves trans-disciplinary, creative and lateral thinking and has the power to effectively supplement technology and management to generate business solutions in an increasingly complex global economy. In fact, the world over, design is seen as a strategic asset that can make the critical difference between success and failure of enterprises. There is increasing awareness of the fact that good design is good business and that it contributes positively to the quality of our living, both economic and social well being.

Design is essentially a human-centered activity. It is not just about providing solutions for the manufacturing and services industry. It strongly believes in a holistic approach with an emphasis on generating new opportunities, improving standard of living and preserving the values and traditions of society. Design focuses as much on people, their socio-cultural aspects and the environment, as it does on materials and processes. There is, therefore, increasing acceptance of design as an integral part of the modern world.

Innovation has today emerged as the main driving force of the economy. And design is now being increasingly recognized as the core of the innovation process. Design helps develop the idea/invention further to a practical and contextual solution - an innovation that matches user aspirations. Product aesthetics as well as its functional refinement at every stage - from fabrication, production, packaging and transportation to maintenance and service - helps convert the ideas/inventions into marketable and sustainable products. By the very nature of its profession, design helps bring in the much needed empathetic understanding and holistic vision to connect and integrate various efforts towards a positive outcome. The designer's ability to view the problems from various perspectives, empathetic understanding and unique focus on quality helps bring in holistic understanding of the problem at hand. The designer utilizes the unique strength of the idea, helps to connect it to the users' aspirations, and in the process helps to overcome typical resource and skill constraints. The designer's role has thus changed from that of a creative artist to that of a strategic innovator. As an indispensable part of any business, design has today moved beyond just a service industry evolved from craft based specializations to that of an integrating and guiding intelligence within the innovation process.

## Imperatives of Design

While technological advances have led to a reduction in the costs of production and improved product performance, attention has now shifted towards improvement in product functionality and aesthetics with a view to enhance the overall value of the product. The consumer behavior has forced industries to shift their focus from technology to design, bringing into forefront softer aspects like aesthetics, socio-cultural environment, traditions, etc. The challenge, therefore, is to understand the customer's needs and aspirations, create value for money and develop a cutting edge for the product through value addition. All other parameters being equal, design can provide the necessary product differentiation and perception for the product to effectively compete in the market.

Prior to the liberalisation of the Indian economy, Indian industries had been successful in selling their products in a protected market. Absence of competition largely meant that these industries could gain a fair market share even without credible research and product development. However, liberalization has changed the face of Indian markets and many industries that flourished under the protectionist regime are today encountering serious difficulties in withstanding the tough competition in the market. The only way they can salvage their business is by acquiring competitiveness through newer approaches to manage their business. These industries have to look at a cutting edge for its products and services to take global competition head on. Design solutions can effectively provide that much needed cutting edge for the industry.

Global business is increasingly turning to India to provide low-cost, high-quality goods and services. To be globally competitive, companies have to continuously focus on innovation that is driven by the need to meet the shifting consumer tastes and preferences, not just in the domestic but also the global market. Successful businesses now have to increasingly rely upon design as much as they do on technology and management. Design led innovation has a critical role to play in providing modern day business solutions.

The present day Indian economy presents a unique scenario with a thriving organized sector comprising the large, medium and small-scale industry. There is also the unorganized sector comprising majorly the micro enterprises and crafts clusters that have tremendous employment and revenue generation potential but is presently under siege on account of the influx of cheaper substitutes and shifting consumer preferences. Sustaining this sector demands creative people centric design solutions. Design incorporates the traditional, social, cultural and ecological aspects of the region and has the power to give a cutting edge to locally produced goods by embellishing them with a global outlook in terms of their styling, appeal and performance.

To survive and sustain in the increasingly saturated global markets, the Indian economy is in dire need of designers with a global outlook, sensitivity to local needs and aspirations, holistic vision and capability to handhold the industry/craft/client to help carry their ideas to the market. In the present day knowledge economies powered by rapid technological breakthroughs and integration through information technology, issues related to sustainability and ecology, stringent IPR,



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mass-customization and saturated global markets have all resulted in demands for innovation and user centric designs that satisfy specific personal, local and/or regional needs.

While liberalization has enabled Indian industries to benefit tremendously from its forays into the global market, the emerging global knowledge economy has forced businesses to develop new approaches to design, product innovations and marketing. The latter are influenced by their intellectual capital, integrated product development processes and collaborations. It is inevitable that modern economies will be driven in future by design and innovation. The designer's role will increasingly acquire a crucial dimension.



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## Need for Design Intervention in MSMEs



The manufacturing competitiveness of MSMEs is facing a major challenge of change. This is the change from traditional methodology to an innovative product development process and the ability to remain in the business with competitive advantage.

The change is also precipitated by the customer centric approach which is necessary today to win markets. Therefore, the challenge is to understand the customer's needs and aspirations, create value for money, and develop strategies for value addition. The domestic market is no more an insulated zone in a controlled economy. The competitive pressures of a free market economy are catching up in India. With the opening up of the economy, the MSMEs have to catch up with global standards of excellence to remain competitive and profitable. Therefore, MSMEs have to adapt to new standards in technology, quality, and pricing to be able to survive in the market place. MSMEs face several barriers in their attempts to grow. The most critical among these are market-related barriers. The future of the MSMEs will depend on overcoming these barriers and challenges of the liberalized global economy by enhancing their competitiveness.

The MSMEs need to be revitalized for competitiveness and sustainable growth in a globalised environment. Due to their small size and investment capacity, these industries need to be highly agile to adapt to the latest approaches in design and development in order to maintain their competitive advantage in an increasingly harsh international markets of today. For the MSMEs, innovation is the key aspect that will help them compete and sustain in the market. These MSMEs have a potential for innovation and new technological developments. However, due to their limited resource base, they may not be able to afford a full-fledged R&D and design department.

These MSMEs need to rely upon outside support to assist them in identifying and then deploying these new approaches. Design is recognized as an innovative discipline that can help MSMEs to survive and sustain in these increasingly complicated and saturated



markets. Wider application of design by the MSMEs would help increase the value and competitiveness of their products and services. Consequently, the idea of providing such support via some form of central design support agency or organization has taken root in a number of countries. The approach of design is strategic due to its futuristic, contextual, and purposeful nature. Creativity and innovation helps the process, along with developing context driven breakthrough outcomes that ensure a holistic solution with positive impact. The design thinking helps MSMEs through various stages involving activities at grass root level.

Opportunity identification within the capacity of MSME units, contextual prototypes and manufacturing capacity development could be understood very well with the help of design process. Also design helps improve product functionality with in-depth analysis, product aesthetics, communication and branding for better



positioning and to the possibility of reaching maximum users and markets. Design as a general discipline helps make product simpler, smarter and sustainable in manufacturing, packaging and distribution through its unique and futuristic solutions.

Design process evokes the creative thought process, which would help MSMEs cross the limitations and boundaries of existing product and process lineup. As creative initiatives, MSMEs could work on areas where product quality improvement, process innovation, service innovation and communication related issues could be taken up to generate out of the box solutions. A well organized design approach would also lead the way for identifying opportunity areas within the reach of MSMEs for creation of value for its customers and clients.

## National Institute of Design and its Experience with the MSME Sector

Established as an autonomous multidisciplinary institute in the year 1961, the first design institute of India - National Institute of Design (NID), offers educational programmes, both at the undergraduate and postgraduate level and across 19 different disciplines. Business Week USA has listed NID among one of the top 25 European and Asian design programmes. Besides education, the Institute is actively involved in design research, training and design promotion through its consultancy wing. NID's consultancy wing helps the Institute and its faculty members maintain closer and regular contacts with various industries, social sectors and market situations. Over the last six decades the Institute and its alumni have worked extensively with the country's variegated industrial and social sectors, primarily the country's large MSMEs, craft sectors and also at the grassroots level, and with government and nongovernment organizations. Due to this, the Institute has gained valuable experience to solve typical problems that arise in these MSMEs, the crafts sectors and at the grassroots levels.<sup>2</sup>

Design here means, developing the quality product/acceptable solution together with the client, who may be the self-made entrepreneur/craftsperson, with the workers at the shop floor, besides the vendors, and users. Designers' wide exposure to the way the industry functions, their experience in the field, and their ability to take a holistic view of things make it possible for them to act as catalysts that can introduce a new vision and change into the industry. A small saving either in terms of materials, reduction or elimination of a process, reduction in the assembly and/or production time of a worker, reduction of inventory, small improvement in packaging that results in lower breakage and wastage or the ability to transport more products, can provide a vital breakthrough for the success of the industry. The Designers' problem solving ability and their ability to effectively communicate at various levels help transform constraints into unique opportunities.

These experiences have led to unique design intervention methodologies that are most appropriate to these sectors. These

design methodologies defer from the ones prevalent and practiced elsewhere, particularly in the western world, wherein more emphasis is laid upon economic issues and profitability of the industry. These design methodologies, center around the primary objective of improving the quality of life of all the stake holders involved.

A majority of the industrial units in India operate on a small scale and they employ people from different backgrounds. Therefore, before embarking upon any design intervention, it becomes important to gain a holistic understanding of the context, the need, strengths and weaknesses in terms of resources and levels of skills, training and experience available, socio-cultural issues involved and market demands. A detailed Design Assessment Survey or Feasibility Study is carried out to develop a comprehensive road map and future direction for various interventions in terms of infrastructure, skill and resource up-gradation and appropriate training Schemes. Such measures also help to determine the scope and direction for design interventions. Skill up-gradation and training programmes and design awareness seminars help sensitize the participants and the industries to newer design requirements, besides informing them about contemporary market demands. Design clinics based mainly on a participatory approach, help MSMEs and craft industries arrive at practical and implementable solutions to improve their existing products and also guide in developing new designs. Besides these, the design



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intervention projects provide enough opportunities for the designers to remain involved for a longer duration and encourage these industries to carry out extensive explorations of new materials and techniques, new designs, new markets and innovative applications. Though it still has a long way to go, design interventions have the potential to improve the quality of life of the people engaged in a particular industry. Such interventions also have a strong impact on the sustainable development of the Indian economy.

NID has successfully tested the Design Clinic Model with various MSME sectors. Design clinic workshops were arranged for the textile machinery manufacturing, furniture manufacturing, and ceramics industries among several other sectors. These workshops were supported by the Department of Scientific and Industrial

Research, Ministry of Science and Technology, Government of India. The feasibility surveys were carried out for various industry and craft clusters in the country. With nearly six decades of experience in similar models of design interventions and its various activities like Outreach Programmes, Industry Programmes and Design Consultancy Services, NID helped develop and refine this unique and ambitious design intervention model for the country's large MSME sectors. Inspirations were drawn from some of the successful design intervention models for these sectors of industries, viz Designing Demand by the Design Council, UK and the Design for District model practiced in Italy, where design schools have adopted districts for such type of specific design interventions. Also studied was the design intervention model for the toy industry in China where designers could add value to the clusters and make them face the competition.

## Design Clinic Scheme for MSMEs

The office of the Development Commissioner (MSME), Ministry of MSMEs, Government of India, on 17th February 2010 launched a unique and ambitious design intervention Scheme, the Design Clinic Scheme for MSMEs, for the country's large micro, small and medium scale enterprises. The National Institute of Design (NID), Ahmedabad is appointed as its nodal agency responsible for implementation of the Scheme across the country as per the approved guidelines of the DC (MSME). The total budget allotted during the 11th five year plan (year 2007 to 2012) for the implementation of the Scheme was INR (Indian Rs.) 735.8 million, out of which INR 490.8 million would be Government of India assistance and the balance amount would be contributed by the beneficiary MSMEs. The Scheme targets to reach out to about 200 MSME clusters, through organization of 200 Design Awareness Seminars, 200 Design Awareness Programmes (Design Clinic Workshops) and 400 Design Projects including 100 student design projects (final year thesis projects). The Scheme provides a great opportunity to the Indian design community that comprises design consulting firms, independent designers, various design institutes of the country, and design students to actively assist the country's large MSME sector to move up the value chain by increasing the value and competitiveness of their products and services.<sup>3</sup> One of the ten Schemes launched by the Ministry of MSME, Government of India, under its National Manufacturing Competitiveness programme, NMCP, the Design Clinic Scheme for MSMEs, would encourage creation of 'Designed in India' and 'Designed for World', products and services. Thereby creating a sustainable eco-system for these industries, the Scheme will help MSMEs compete and succeed in today's contemporary global markets.

The Scheme is divided into three major areas:

1. A one-day Design Awareness Seminar (DAS) that is fully funded by the Scheme with a maximum reimbursement of 60000/-.
2. A) Design Awareness Programme (DAP) comprising (i) Need Assessment Survey (NAS) for 15-20 days (ii) Design Clinic Workshop (DCW) for 1-5 days duration, partially funded (75%

by the Scheme) on a maximum budget outlay of 4 lakh per programme, generally organised by industry associations.  
 B) Spot Design Clinic Workshop of 1-2 days duration, partially funded (75% by the Scheme) on a maximum budget outlay of 35,000/- per programme, generally organised by design experts for a small group of MSME units.

3. Professional Design Projects (PDPs) that are partially funded under the Scheme (60%) on a maximum budget outlay of 15 lakh (individual projects - Rs. 9 lacs) and 25 lakh (group projects - Rs. 15 lacs), and student design projects (SDPs) with budget outlay of Rs. 2.0 lakh out of which 75% (Rs. 1.5 lakh) comes from the Scheme.

Design Clinic is a tested strategic model of design intervention, where a solution to an existing design problem is diagnosed and remedial steps suggested by a multidisciplinary team of design experts and subject experts. In this model, the value additions to an idea or a concept are imparted through interaction and at a lesser cost to a specific industry/sector. It applies to sectors such as Micro and Small Scale Manufacturing, where a conventional model of design consultancy and training is often not affordable. This model brings design exposure to the doorstep of industry clusters and helps in design improvement, evaluation and analysis and adopting long term consultancy/design related interventions.

Thus, a design clinic can be defined as a mechanism where design solutions are made available to the design problems of products/services, and for concepts and ideas that are brought in for design analysis and scrutiny. Here, flexible and strategic solutions are made available to provide value addition through synergies and matured options as solution to design problems. Replicating this model on a national scale will bring in appropriate solutions to the MSME sector, throughout the nation.

The main objective of the design clinic is to bring the MSME sector and design expertise on a common platform and to provide expert advice



and solutions on real time design problems, resulting in continuous improvement and value addition for existing products.<sup>4</sup> It also aims at value added cost effective solutions. These design clinics at various states and clusters of the country is expected to usher in a continuous competitive advantage to the MSMEs.

With the focus on building the design capability of MSMEs, the Scheme enables these MSMEs to improve their business performance as well as compete in the global market. It will help enhance industry understanding and application of design and innovation, and integrate design into the mainstream business and industrial processes of MSMEs. Through the process of constant and continuous design intervention, design learning will be established in MSMEs. The Scheme will help increase competitiveness of MSME products

and their services. The goal is to help MSMEs move up the value chain by switching the production mode from original equipment manufacturing, OEM, to original design manufacturing, ODM, ultimately leading to original brand manufacturing, OBM. The Scheme will thereby help create a sustainable design ecosystem for the MSME sector through continuous learning and skill development.

The Design Clinic Scheme helps MSMEs to avail independent advice on all aspects of design. This specialist advice is provided by experienced designers for new product development as well as by enhancing existing product portfolio. Practical support is provided to MSMEs via one-to-one advice, seminars, and workshops. It will help MSMEs realize and achieve their design-related objectives.



**“I built this factory brick by brick over the last fifty years, and now it’s outdated”**

**a MSME Owner at Samalkha, Haryana**

## Evolution of the Scheme

The Design Clinic Scheme for MSMEs forms one of the significant 10 components proposed under the National Manufacturing Competitiveness Programme, NMCP, by the ministry of MSMEs, developed with the core objective to improve manufacturing competitiveness of the country's micro, small and medium scale industries and help them move up the value chain. The NMCP as a Scheme was approved with its budgetary allocation by the government of India in the year 2006/07.

The proposal, largely in the form of an approach paper was initially developed at NID and was submitted to the ministry of MSMEs for its consideration. NID has been closely and actively involved over these years with various sectors of Indian Industries, particularly with its vast micro, small and medium scale industries, craft sector as well as the socially relevant sectors. This active involvement has helped the Institute understand typical design needs and expectations of these sectors of industries and society. These experiences and understanding so developed, formed the basis while developing this unique design intervention approach for MSMEs. The design clinic approach thus proposed was also tried and tested in the form of design clinic workshops by NID with similar MSME industry clusters over the last few years. I had the opportunity to be part of the team that developed the approach paper and offered the workshops.

Conventional mode of design intervention practices through design consultancy and training would not be affordable to the MSMEs. Largely unorganized sector, MSMEs of the country faces constant competition both from domestic and international businesses. They thus need to constantly improve and refine their products, processes and strategy for their survival and growth in today's competitive

markets. By the very nature of its business, MSMEs would expect quick, practical and demonstrative solutions/results that can be immediately implemented with minimum or no investment cost. The design intervention approach for these industries should take into consideration these aspects.

This unique design intervention approach aims to bring designers to the doorstep of these MSMEs to initiate a dialogue to understand and analyze the problems and develop remedial solutions. The value addition to an idea or a concept is imparted through interaction and at a lesser cost to the specific industry/cluster.

Especially, with these sectors of industries, before embarking on any design intervention exercise, the designer need to gain holistic understanding of the particular industry/business and identify design opportunity areas. These interventions would normally begin with designer having detailed discussion and interaction with the client, mostly the owner of the enterprise. With the purpose to explain the benefits of design, demonstrate his/her capabilities as designer, explore opportunity areas and in the process gain client's confidence, the discussion would revolve around possible solutions/alternatives to improve existing products and/or processes. The design clinic as an approach tries to systemize this interaction of design diagnosis resulting into practical, remedial, quicker and implementable solutions. This being the beginning of the relation and interaction among designer and the MSME unit, Design Clinic Scheme aims to develop a platform for continuous and constant interaction among these important stakeholders by offering financial assistance for design projects as its next step.

## Ancillary Approaches of the Design Clinic Scheme

Through its Consultancy Wing, NID organised several similar interactive sessions, both at formal as well as informal levels, to explore opportunities and scope for project based design interventions. Some of the examples of such formal efforts based on the Design Clinic approach include organisation of Design Clinic Workshops at Hyderabad, through National Institute of Design's Extension Centre, where the designer/faculty member interacted with individual units to identify and suggest remedial solutions.

In the years 2003 and 2004, similar Design Clinic workshops were organised in collaboration with Grassroot Innovation Augmentation Network, GIAN, Ahmedabad. Grassroots innovators, design students and design faculty members from NID, Ahmedabad and IIT, Mumbai and practicing designers as groups, analysed the indigenous innovations developed by participating innovators and solutions were proposed for further refinements of these innovations. A series of the five-day Design Clinic cum Design Awareness Workshops were organised in 2006, with the financial support from Dept. of Scientific and Industrial Research, DSIR, Govt. of India, for different industry clusters. These workshops were organised for the Ceramics Cluster, Khurja, Light Engineering Industry Cluster, Aurangabad, Furniture Cluster, Delhi and Textile Machinery Manufacturers' Cluster, Ahmedabad. Besides these focused efforts, NID's consultancy wing organized interactive sessions with the industry, before developing design project proposals for the specific enquiry.

Through its department of Outreach Programmes, NID has been actively engaged with various sectors and clusters of craft in the country. As part of these engagements, NID undertook projects to carry out a detailed Diagnostic Need Assessment Survey, DNAS and conducted a feasibility study for various craft clusters across the country. These opportunity mapping exercises helped institute understand and develop methodologies and formats for such detailed macro as well as micro studies, to develop a holistic understanding of the status and scope of Design for specific clusters.

A course module "Design Audit" is offered to NID's post-graduate students of Strategic Design Management discipline, since 2006. The module offers these students the much required learning opportunity to gain holistic understanding of the specific industry and identify various design intervention opportunities that may exist at production, processing, communicating, strategy and other levels, within and around the industry/business. Over these years, the course module has been constantly revised and refined to suit the industry demands, as well as students' expectations and learning.

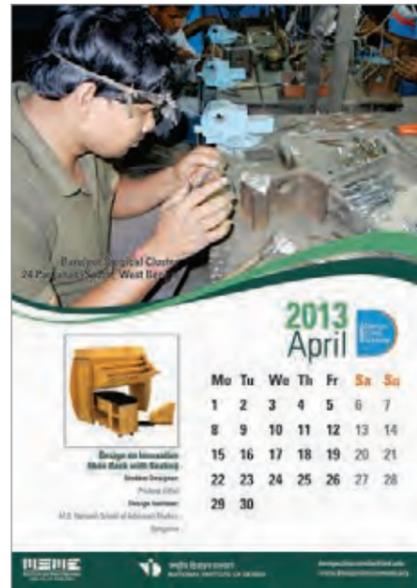
As a nodal agency, the first task for NID was to develop detailed guidelines, formats, procedures and methods for each components of the Scheme. Experiences and learning gained from each of the institute's major departments, that are its Education wing, Consultancy wing, Outreach programmes and Industry Programmes & Projects department, were employed for developing these details.

The learning and experiences of organising several seminars and workshops through the Industry Programmes and Projects Department, helped develop detailed guidelines and formats for Design Awareness Seminars and Design Awareness Workshops. The guidelines and formats developed for Need Assessment Survey (NAS), to be conducted as part of the Design Awareness workshop, were derived based on the experience of organising DNAS, feasibility study and the Design Audit course module. The formats and procedures developed for the institute's consultancy wing, as well as the students' final semester graduation projects translated into an useful resource for developing the project guidelines and formats. These experiences also became the source for reference as well as provided the much needed confidence to take up this major challenge. The guidelines are developed to complement the overall direction and objectives proposed under the Scheme guideline developed by the Ministry of MSME.



The Design Clinic Scheme has now been implemented across the country and team members are in constant touch with all its stakeholders. The experiences gained from the process of implementation from each of our Regional Centers, as well as the feedback received from different stakeholders of the Scheme, are utilized to further refine and revise the Scheme to improve its effectiveness and efficiency in terms of its implementation as well as

the Scheme objectives. The Project Implementation Committee, PIC, and the Project Monitoring and Advisory Committee, PMAC, have been constantly monitoring and advising the implementation team. These collective and collaborative efforts from all the team members have helped develop and refine this unique and ambitious Scheme for its effective implementation process and achieve its objective.



## Implementing the Scheme: A Design Opportunity

NID is appointed as the Nodal agency by the Ministry of MSMEs, Government of India, to successfully implement the Design Clinic Scheme for MSMEs throughout the country.

I looked at this responsibility and the project as a design opportunity and a creative exercise to scale up one of the successful design intervention models developed by the institute. Defined primarily as a systematic problem solving methodology, however with the increasingly globalized and highly saturated markets of today, the role of design has now also expanded to include that of defining problems - understand user demands, their needs and aspirations - and identify new opportunity areas. Design forms one of the crucial element and a driving force for most business successes of today. Design as a professional activity is thus constantly reinventing and redefining its roles and responsibilities. This design intervention model developed by the institute and tested earlier with selected small scale industries and clusters was found to be more appropriate to the country's large MSME sector that otherwise may not be able to afford design intervention supports. Scaling up of this unique design intervention model would help benefit the large section of these industries. This major project and the assignment was thus a lot more than mere administrative exercise to achieve the set targets. Successful implementation of the Scheme would help provide the much needed competitive edge for the country's MSMEs to survive in today's global markets.

One would today come across many local innovations, good practices developed by individuals/groups to satisfy individual and/or community needs. Also one would find interesting and ingenious methods and models that may have successfully solved community/group problems. The examples of these good practices or successful models could be available in variety of forms - may be in the form of good governance, new model of business/work practice, way of living, development of a self-sustained village, or may be in the form of a cooperative society/model providing employment opportunities

at the doorstep. Replicating these local innovations, models and prototypes and importantly, scaling them up to benefit larger sections of the society are major challenge and an emerging opportunity area.

The traditional role of design has been to transform the idea/technology into marketable products and services. Thus, design focused largely on offering contextual solutions having mostly a single/specific user group/target segment or solution seeker and on the other side a specific producer/client or a solution provider. Replicating or scaling up an innovation, good practice or a model, would demand their applications to different context and for variety of different stake holders. This would thus call for different approach and skill sets. The main challenge here would be to maintain effective implementation of the model/method, creation of easy and effective interface for various stakeholders, quality of its deliverable etc.

The design clinic Scheme thus offers similar challenges to implement the identified design intervention model to 200 MSME clusters spread over around 28 industry sectors and across the country. With the objective to create a platform for constant and continuous interaction amongst the MSME industries and the design fraternity of the country and thereby help develop long term relations between these stakeholders, the Scheme is subdivided into its three main components, i.e. Design Awareness Seminars, Design Awareness Programmes and Design Projects. While there have been similar successful design intervention models for the small scale industry sectors elsewhere in other countries, the Scheme offered added challenges of successful implementation of all its three components.

One of the major challenge that the team faced in the beginning was to develop guidelines and formats that while standardize various steps and activities, provide enough flexibility to accommodate contextual needs and demands of the industry units, the clusters as well as the designers involved. Various medium and platforms to create awareness and generate interests were constantly



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explored. Creating an effective channel of communication at all its various levels of implementation, and to its variety of different stakeholders throughout the country, was in itself one of the major design challenges. While the dedicated website provided platform for sharing information and experiences, the members of the implementation team from its Regional Centers reached out to the stakeholders and facilitated them to avail the benefits of the Scheme. Advisory committee and implementation panels comprising of experts, professionals and officials monitored the progress and based on the experiences gained from the field, the Scheme was constantly revised and refined.

Effective implementation of the Scheme and thus scaling up of this unique design intervention model, it is expected, will help create

a sustainable design eco system and a major design movement in the country. The experiences and learning gained from this project would be useful for development of similar successful platforms and methods at various levels of country's economy and society. The knowledge gained from this exercise could be utilized for successful implementation; replication and/or scaling up of various different ideas, practices and models that already exist in the country. This will help the country effectively utilize its indigenous knowledge base, indigenous innovations, resources and skill sets for its economic and societal growth, one of the major directions emerging worldwide for any country to progress to innovation economy.

# Taking the Scheme to the Doorstep: Awareness and Promotion

An interesting radio jingle “lambi race ka ghoda” was launched in September 2011.<sup>1</sup> Developed in Hindi, this radio jingle of 30 seconds duration was aired on FM channels in select cities. The jingle was so developed to reach out to micro and small scale industry owners in cities and smaller towns of the country and convey the message of the need for design for value addition and long term growth of their business. The analysis of DCS website suggested manifold increase of visits to the website during these three days.

A short film describing the benefits of the Scheme and its different components was developed. While another film of the duration of 10 minutes highlighted the benefits of design to the MSMEs, an animation film was also developed to convey the message of design and the benefits of the Scheme to the participants. These films were screened during seminars and workshops organized as part of the Scheme and during various presentations and events and exhibitions organized to promote the Scheme.

The Scheme aims to create awareness of design amongst the MSMEs in the country. However the first major challenge for the Scheme implementation team was to promote and create awareness among all its various stakeholders about the Scheme itself. Since the launch of the Scheme, various mediums were vigorously explored to reach out to over 31 million MSME units spread across the country. Taking design to the doorstep of the needy MSME units is the unique feature of the Scheme and also one of its main objectives. The three different components of the Scheme as developed with a view to create handholding support of design intervention to the MSMEs, demanded reaching out to both the industry associations as well as to the individual MSME units. Two of the three components of the Scheme demand MSME contribution for their participation, and thus the promotional activity needed to go beyond just awareness creation to that of individual and regular discussions and facilitation to convince the MSMEs of the benefits of design as well as the Scheme.

As the first step of its implementation, detailed guidelines and formats were developed. Various channels of communication and marketing were continuously explored to reach out to the industries as well as the design fraternity. A dedicated website for the Scheme <http://www.desgnclinicsmsme.org> served as the platform for interactions. Besides Ahmedabad, Regional Centers have been set up at Delhi (North Zone), Ahmedabad (West Zone), Bangalore (South Zone), Kolkata (East Zone) and Guwahati (North-East Zone) with a view to reach out to all the different parts of the country.

Advertisements were regularly placed in national and regional newspapers throughout the country as well as in different industry magazines and periodicals. The team members regularly participated in different MSME sector specific fairs and industry meets, putting up displays and/or presentations on the Scheme. Information brochures were distributed to the interested members at the railway stations and display kiosks were placed at the airports. Different sections of the media, the regional as well as national, regularly covered the events organized as part of the Scheme and thereby helped us take the message of design intervention advantages to the industries.



Team members from the Scheme's five regional centers constantly reached out to industries through direct contacts, through regular emails and phone calls and through personal meetings and industry visits. They constantly developed and built their database of the interested industry participants. Various MSME District offices, MSME DIs and District Industry centers, DICs from the states supported us and facilitated our regional centers to reach out to MSME clusters and industries. Liaison officers were appointed in few of the cities and they supported the regional centers in reaching out to the MSMEs. Besides these efforts, the institute also tied up with various national and regional apex industry associations and organizations to help take this unique design intervention Scheme to the needy MSME Associations and industries. CII, FICCI, FISME, PHD chamber of Commerce, Foundation of MSMEs, HCCI, Kolkata, MCED, Aurangabad, CTTC, Bhubaneswar, IIE, Guwahati were some of the apex bodies and organizations that helped us in this process.

During the first one and half years, various design awareness seminars, design awareness programmes and design projects were successfully completed in different parts of the country. A Showcase Design Exhibition was organized on 29th June 2011 on the occasion of World Industrial Design Day at NID, Ahmedabad, to exhibit the achievements and outcomes of the Scheme. These achievements and especially the design project outcomes were a major convincing factor for the MSMEs and their owners. Along with the Showcase Design Exhibition, a seminar was organized where designers made case study presentations of their projects undertaken as part of the Scheme. Similarly second such Showcase Design event was organized in Delhi on 29th August 2011. It was interesting and heartening to see and hear both the designer - the service provider, and the MSME unit owner - the beneficiary of the design intervention, together explain and demonstrate the benefits of the Scheme. Building on the success of these events and the experiences gained, both the Orientation programme and the Showcase Design exhibition were now combined and first event was organized at Hyderabad on 13th October 2011.



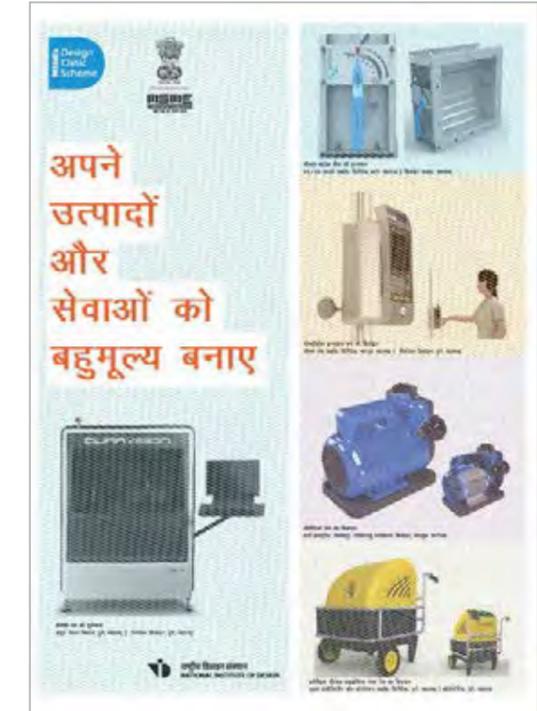
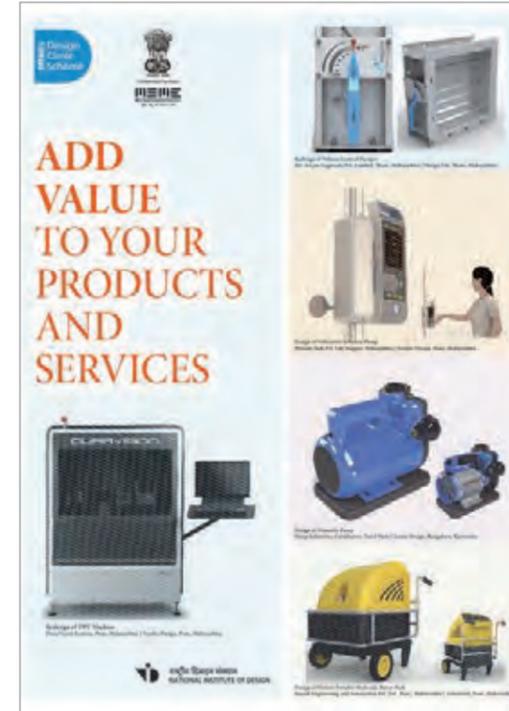
The Scheme aims to create a platform for the MSME units and the designers, for their constant interactions. Thus similar efforts were parally initiated by the team to reach out to the entire design fraternity of the country. Designers were contacted through individual and group emails, direct phone calls etc and group meetings were organized in different cities to meet, discuss and explain the details of the Scheme. Designers also being important stakeholders as service providers of the Scheme, regular contacts were established to understand and address their concerns and expectations from the Scheme. They were constantly facilitated and encouraged to utilize this important opportunity to be part of a major capability building exercise for the nation to help MSMEs move up the value chain from original equipment manufacturing, OEM industries to original design manufacturing, ODM industries.

Due to these continuous and vigorous efforts by all the members of the implementation team, we were able to reach out to majority of the MSME associations and clusters of the country. Within one and half years of the launch of the Scheme, 153 design awareness seminars were completed, 50 design awareness programme were in various stages of their progress and the Scheme received 88 project proposals. These programmes were organized in 22 states of the country covering around 20 industry sectors. Over 650 designers (including design institutes and design students), 145 industry



associations (over and above the apex organizations) and 400 MSME units had registered with the Scheme by then. The Scheme website formed the base for these registration and information sharing. All the empanelled members were regularly updated with the Scheme progress as well as the opportunities available, through weekly emails sent from the Scheme Secretariat. Regular feedbacks were received from the members and the Scheme was constantly refined and revised based on these feedback and experiences.

While these efforts for promotion of the Scheme continued, the implementation team geared up to take up its next challenge to create and develop platform for constant dialogue and discussion amongst these empanelled industries and designers and identify design opportunity areas for their further collaboration to improve products and processes. Considering the need for these interactions at local level, the Secretariat explored different possibilities to create opportunities for individual as well as group interactions. The Design Awareness Programme, the second component of the Scheme is developed keeping in mind this objective for the designer to interact at individual level/MSME unit and discuss and identify the opportunity areas. The implementation team's efforts were now focused to encourage industries to participate in these programmes. The team members reached out to individual industry units to convince them for their share of contribution as required, both in terms of finance as well as time commitments.



## MSMEs Awaiting Designers

With its core objective of creating and encouraging symbiotic relationship between the MSMEs and the designers, the Design Clinic Scheme was expected to create platform for constant and continuous interaction between these two important stakeholders. The Scheme website played critical role towards achieving this goal.

The website provided easy access for all its stakeholders to register with the Scheme online. The website was thus formed into a good repository of these data - the comprehensive list - for the benefits and easy exchange of information for the MSMEs and Designers. Detailed guidelines, formats, information brochure, Scheme presentations, and other related promotional material were made available on the website that can be downloaded to organise any of the programme as part of the Scheme. The website also houses reports and outcomes of various seminars, workshops and projects (both professional as well as student projects) undertaken through Scheme support. Project proposals can be submitted online and their status/progress can also be tracked online. Its online evaluation system helps get these proposals evaluated quickly and efficiently by the subject experts from across the country. The website has become a good source of

information, knowledge sharing and reference for the stakeholders. Various news, schedules of upcoming programmes etc. are regularly updated and announced through the website. While helping the implementing team to efficiently connect and serve its stakeholders, the Scheme website helped us build the much needed trust and transparency of operations.

The first two components of the Scheme, the Design Awareness Seminar, DAS and the Design Awareness Programme, DAP are group activities and thus were organised usually with the support of the local industry associations, industry apex bodies, govt. or non govt. organisations etc. working with the specific MSME clusters. However the design projects, one of the important and the major component of the Scheme, are normally taken up by the individual or group of MSME units. Scheme reimburses 60% of the design project cost for the professional design projects and 75% of the student design project cost. The Scheme targeted to support over 400 design projects. It was thus important to take the Scheme to the individual MSME units. And majority of these MSMEs in India are located in and around smaller cities, towns and villages spread across the country.

Variety of options and approaches were thus explored to reach out to the MSME units/its owners at individual level so as to discuss and explain to them the benefits of design as well as the details of the Scheme. Field executives from the implementation team regularly traveled to different places and met the owners and members of MSMEs individually and at their convenience.

Within six months or so (during the first half of 2013), the three field executives from the west zone center traveled to more than 60 cities/towns and contacted over 1000 MSME units in West and North Zones and obtained over 300 design briefs from the industries. It was an arduous task to convince the MSMEs to explore the benefits of design. Majority of the MSMEs being component manufacturers and first time users of design may not be in a position to clearly identify their design requirements. They also may not have any contacts with the designer/s. And majority of the designers in India are based in few major cities only. Connecting these MSMEs to designers to interact and explore the scope for design and design projects was thus a difficult challenge for the Scheme.

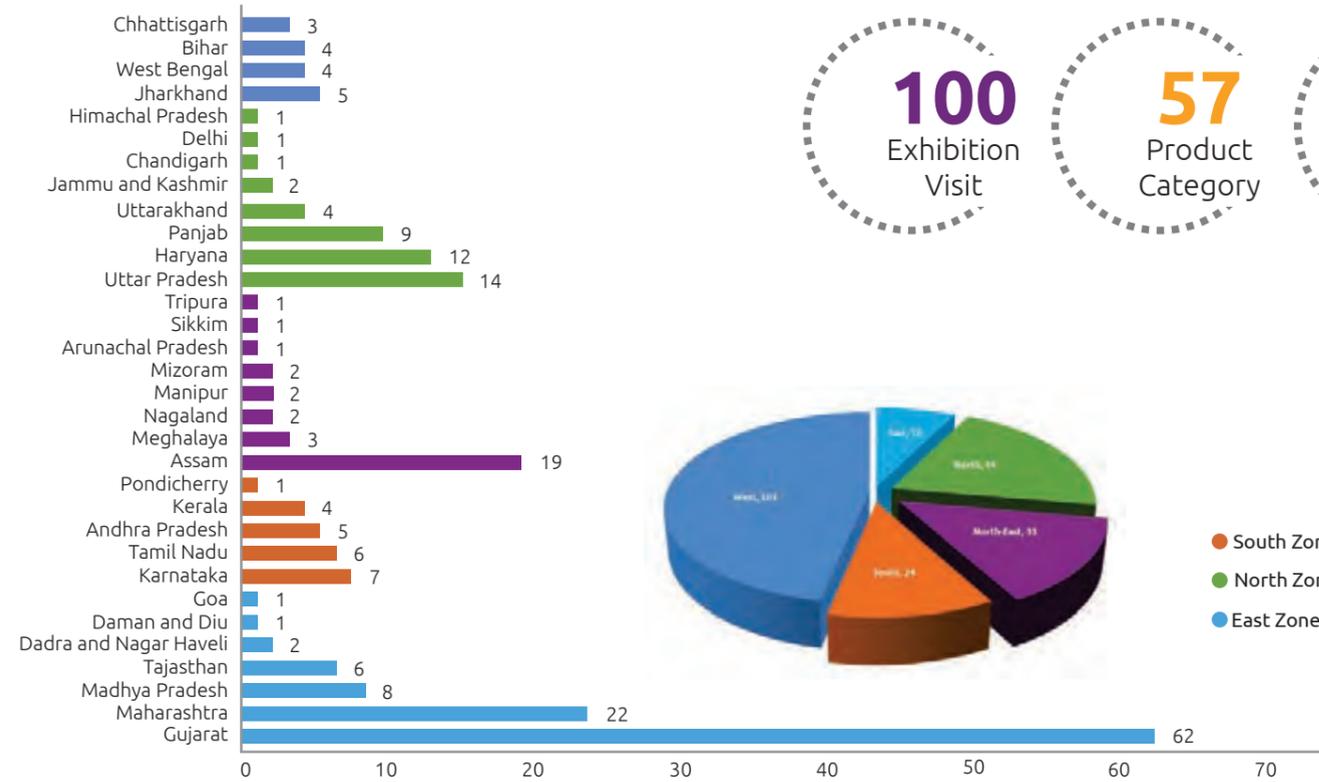
'MSMEs Awaiting Designers' <http://www.designclinicsmsme.org/msmes-awaiting-designers> a space created on the Scheme website for the MSMEs looking to explore the scope for design interventions with the designers is a unique feature of the website. The space provide the opportunity to the MSMEs to display and advertise their expression of interests to explore the scope for design intervention for the specific MSME unit, which can then be directly replied/contacted by the interested designer/s from across the country. The MSME thus can get to explore his/her design project/s with the designers/design firms from different parts of the country before finalizing with the designer/design firm of his/their choice. The project proposal thus developed through mutual agreement and understanding may then be routed through the Scheme for financial support, if required. This unique feature of the Scheme website has contributed in a big way to connect the designers to the interested MSME units to explore and work together to improve their products and processes and thus move up the value chain. While Siddhant Industries, a Kolkata based MSME unit could explore his design need with the designers from Ahmedabad, Pune, Bangalore and Delhi all of whom contacted the MSME, before finalizing with one of the design firm, the Ambala based MSME unit



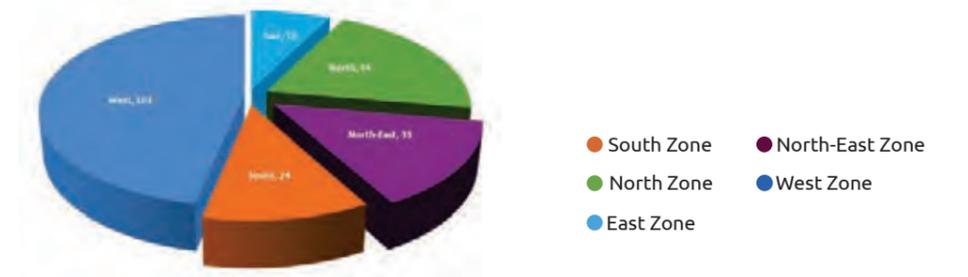
could connect with the design firm based in Ahmedabad to develop project proposal and take up the design project through the Scheme support. Most of these MSMEs without this support to connect with the designer/s, probably would not have explored design intervention. The web-space is now an active platform of continuous interaction between the designers and the MSMEs with over 300 design briefs uploaded at one stage. The format for the project brief, kept as a simple information page for the MSME units, is available on the website.

Sr. No.	Industrial Sector	South	North	West	North-East	East	Grand Total
1	Agriculture Equipments		3		2	18	23
2	Auto Components		3		1	2	6
3	Ceramics & Glass	2	3	1	1	6	13
4	Electrical Equipments		6			9	15
5	Electronics Equipments	1			1		2
6	Engineering & Fabrication		5	1	2	22	30
7	Food Processing	2	1		4	8	15
8	Gems & Jewellery	1	1	4	1	5	12
9	Handicraft	1	1	1	1		4
10	Handloom			4			4
11	Jute Products		1	3			4
12	Leather Products	1					1
13	Machine Tools		2				2
14	Machinery		2		3	7	12
15	Medical & Pharma Equipments	1				1	2
16	Metalware	3	2	2		4	11
17	Multi clusters	3	4		2	8	17
18	Packaging & Branding		3	3	1	2	9
19	Plastic Products		1			6	7
20	Rubber Products				1		1
21	Stone & Marble		1			2	3
22	Textile Products		1	3	1	1	6
23	Wood & Bamboo	1		8		1	10
24	Wood/Steel Furniture				2		2
25	Garments		3	1			4
26	Sport Goods		1				1
<b>Total</b>		<b>16</b>	<b>44</b>	<b>31</b>	<b>24</b>	<b>101</b>	<b>216</b>

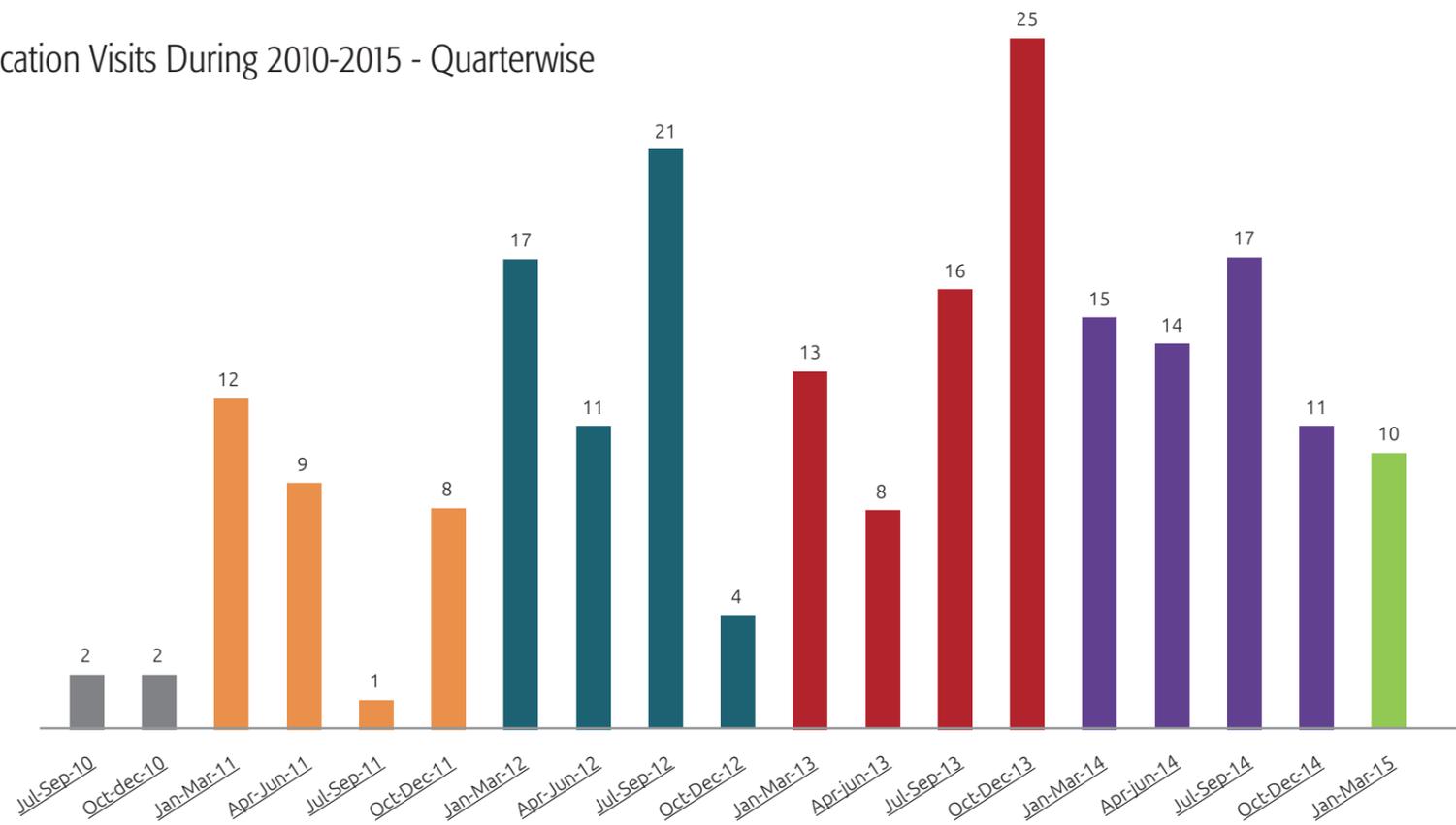
### Location Visits - State & Zone Wise



### Exhibition/Fairs/Meetings/Coverd

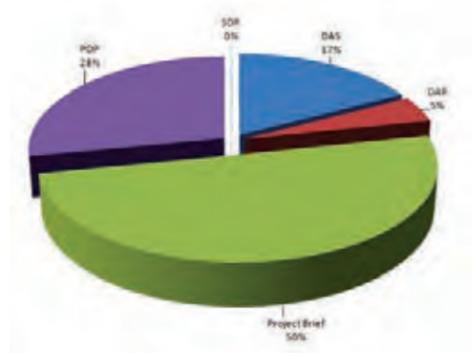


Location Visits During 2010-2015 - Quarterwise



Zone	2010	2011	2012	2013	2014	2015	Total
East	01	01	00	02	07	06	16
North	02	03	13	10	15	01	44
North-East	00	18	00	07	06	00	31
South	00	01	01	04	15	03	24
West	01	08	39	39	14	00	101
<b>Total</b>	<b>04</b>	<b>30</b>	<b>53</b>	<b>62</b>	<b>57</b>	<b>10</b>	<b>216</b>

Outcomes



- 5238** MSME/Associations Visits
- 423** Cluster Visits
- 216** Cities/Location Visits
- 33** State & UT Visits

- 278 DAS**
- 72 DAP**
- 811 Project Brief**
- 453 PDP**
- 1 SDP**





## e-newsletter

The e-newsletter of the Scheme was launched on 17th February 2012, on the occasion of the second anniversary celebration of the Scheme implementation. Over these two years the Secretariat kept in touch with each of its empanelled members through emails and direct contacts to keep them updated with the Scheme progress and for the various opportunities arising out of the Scheme implementation. The need was now clearly felt to have formal communication channel with all its empanelled members as well as to reach out to other stakeholders of the Scheme that are the government organizations, industry associations and apex bodies, Institutes and other related departments etc. It was our constant endeavor to explore various communication mediums to inform, involve and encourage the stakeholders of the Scheme to benefit from design. With these continued efforts of promotion, the e-newsletter was expected to maintain the much needed communication channel with its empanelled members and create opportunities to interact and share their experiences and concerns with each other.

With all the five zonal centers of the Scheme now well established, with the encouraging supports from different industry associations and apex bodies and through the constant and continuous efforts from the implementation team, many different activities, such as Design Awareness Seminars, Design Awareness Programmes and Design Projects were organized throughout the country every month. As part of the exposure to the global best practices in design, a group of twenty five participants, comprising members from MSMEs from different parts of the country, government organizations and the members of implementation team visited Yokohama, Japan. This visit and the five-day training programme arranged by AOTS, Japan for these participants, was organized and supported by the Scheme.

## design blossoms

The e-book titled 'design blossoms...; Young Designers' Strategic Design Vision for MSMEs' was launched on 27 January 2015. The e-book is a compilation of 51 student design project outcomes, the outcomes of final year thesis projects supported through the Scheme.<sup>2</sup> Prior to this, and as the Scheme progressed, series of publications documenting some of the successful design intervention case studies were also released. A two-volume publication: 'Entrepreneurial Empowerment through Design' documented 51 professional design projects supported by the Scheme and their outcomes.<sup>3</sup> Similarly a document compiling 40 Design Awareness Programme outcomes, the programmes organized in the state of Assam, and a document compiling 39 DAP outcomes from the state of Bihar have been published. The document called 'Harbingers of Design Edge for MSMEs' has the details and analysis of field officials' visits for promoting the Scheme and share the details of how the Scheme made inroads into difficult and unexplored clusters.<sup>4</sup> The booklet titled 'Enhancing MSME Capabilities through Design Intervention' launched on the occasion of 5th anniversary of the Scheme, is a compilation of the impact the 300 odd Design Awareness Seminars, DAS, had amongst the MSME clusters pan-India.<sup>5</sup>

As mentioned earlier, the Scheme aims to develop continuing interactions amongst its various stakeholders and the implementation team being one of the important functionaries to develop these relationships, the team has to constantly demonstrate its sincerity and commitment through its various interactions with the stakeholders. All the sections of the Scheme secretariat needed to be thus agile and efficient to quickly respond to the inquiries and requests from the stakeholders. We, thus constantly, worked on stream-lining the support system for efficient response and facilitation throughout the entire process, including pre-event/project as well as post-event/project demands. The implementation team explored variety of different options, mediums, models to take design to the doorstep of the needy MSMEs, to realize the core objective of the Scheme to help these MSMEs move up the value chain.

The Scheme thus has been providing a continuing journey for all its team members to learn, experience and improve at each stage of its implementation.





IITF Delhi Exhibition (14-27 December 2014)



IITF Delhi Exhibition (14-27 December 2014)  
Visit of Hon'ble Union Minister for MSME, Secretary MSME and AS & DC (MSME)



Visit of Ms Anandiben Patel,  
Hon'ble Minister of Gujarat to DCS stall at Vibrant Gujarat (8-13 January 2013)



Visit of Hon'ble Minister of State,  
MSME to IITF Delhi (14-27 December 2014)

## The Foundation: Diligence at Every Step

First few (four) years of the Scheme implementation were most challenging period for the team to reach out to the MSMEs, explain and convince them about the benefits of design, and prepare them to join and participate in different programmes of the Scheme. Design has emerged as one of the crucial components for the growth and the future of this vast MSME sector and thus the overall economy of the country. As one of the country's largest and diverse industry sector, MSMEs demand customized and contextual solutions. Successful implementation of the Scheme was thus crucial for the growth of this vital sector.

Over these four years, the team covered fairly good ground to create the much needed awareness about the benefits of design as well as that of the Scheme. Sincere efforts, constant interaction with the stakeholders, systematic and transparent administrative process, team members' openness to learn, refine and improve the system; coupled with success stories of the benefits gained by the MSMEs, have resulted in creating the much needed confidence and trust among its stakeholders, especially the MSMEs.

By the fifth anniversary of the launch, the Scheme could establish good connect and command respect among all its stakeholders. By then over 1400 designers/design firms, 1800 MSME units and over 270 MSME associations became active members of the Scheme. The Scheme also succeeded in creating industry-academia linkage with 67 design institutes and engineering colleges registered with the Scheme and actively participating in taking up student design projects as well as also sharing their experiences through participation in Design Awareness Seminars and Design Awareness programmes. Besides these, various government organisations, and NGOs came forward to organise Design Awareness Programmes for the MSME clusters. Also different state governments, banks and large organisations contributed on behalf of MSME clusters to organise the programmes.

The programmes were organized in 36 states and UT of the country. The field executives travelled to over 400 clusters across the country and personally met with over 5000 MSME owners to explain the Scheme and its benefits. We participated in over 100 exhibitions across the country and industry sectors either by putting up display/stall and/or visiting them to personally meet with the exhibition participants, the MSME unit owners and other stake holders. The members and the zonal coordinators presented the details and benefits of the Scheme through lectures and presentations in different conferences and seminars organized by industry apex bodies and associations.

18,178 members from MSMEs participated in 396 Design Awareness Seminars, DAS organized across the country. These DAS covered 27 MSME industry sectors with maximum DASs organised in Engineering and Fabrication industry sector. 787 designers/subject experts presented and shared their rich experiences through these seminars. 32 Orientation Programmes were organized across major cities of the country to explain the details of the Scheme to over 3079 stakeholders. 219 Design Awareness Programmes, DAPs helped bring as many designers to the doorstep of 4569 MSME units. From these, east zone organized maximum numbers of DAPs.

The Scheme Secretariat received and processed 638 professional design project applications from which 353 projects were approved for financial assistance. These proposals were submitted by individual MSMEs, clusters and in the groups of four or more MSME units. 2065 MSME units benefitted through these professional design project interventions. Students of engineering and design institutes came forward to work with MSMEs as part of their final year graduation/thesis projects. 115 student design projects from 34 institutes from across the country were approved from which 95 projects have already been completed.



The Scheme received over 200 print media coverage. Other media also covered the activities and their outcomes. These coverages helped us reach out to wider section of the society. Rajasthan Patrika; City Express, Chennai; Punjab Kesari (Hindi daily), Ludhiana; Dainik Vishamitra (Hindi daily), Kolkata; The Assam Post, Guwahati and many other regional news papers helped us take the message of design to the needy MSMEs across all parts of the country.

The Scheme has thus succeeded in creating the much needed platform for constant and continuous interaction among its different stakeholders, most importantly between the MSME and the designer/s. These efforts helped create the required foundation to launch further, longer duration and more effective design intervention programmes through design projects, cluster based handholding support etc. With the foundation now well laid, the efforts to achieve the core objectives of the Scheme, that is to help MSMEs move up the value chain is sure to gain further momentum.

## Appreciation for the Design Clinic Scheme

The Design Clinic Scheme for MSMEs, as a national Scheme is constantly assessed and evaluated by various agencies in the country. Here are the excerpts from two such evaluation study reports....

*“Despite the immense handicap of prevailing low level of performance amongst MSME’s, under which the Scheme was introduced, it has been singularly successful in meeting most of its objectives. More importantly the purpose, the larger objective and focus have been met and it has established itself as a credible initiative that has won a buy-in of the MSMEs.”*

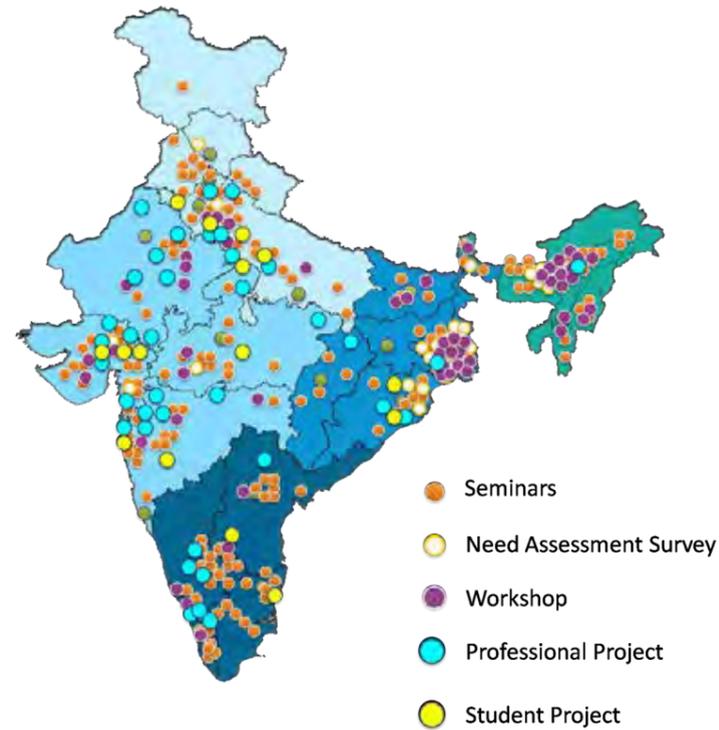
*“Despite being in operation for less than three years, an examination of the achievements of the Scheme is encouraging, not only in terms of numbers, but also in the context of changing the mindsets.”*

*“During the survey, almost every person contacted, who had attended a seminar or a workshop, unequivocally wanted to use design in his/her products.”*

*“The Scheme has provided an excellent platform for the interaction between designers and MSMEs. In earlier times there was a perception that design intervention is meant for only the MNCs and big Indian companies. This myth has been dispelled to a large extent through the Scheme and now a large number of MSMEs have used the services of design experts. What is heartening is that a large number of MSMEs have registered themselves on the Design Clinic Scheme website of NID with their specific design related problems.”*

*“The Scheme has been successful in increasing the competitiveness of MSMEs both in Micro and Medium Enterprises.”*

*“Overwhelmingly the MSMEs wanted to use the Scheme to work on more projects and get additional funding realizing the benefits accrued.”*



*“The Scheme and its components have successfully delivered the objectives set out for the Scheme while its delivery has been responsive to stakeholder needs and have progressively clarified and simplified procedures, formats, reports etc.”*

*“The Nodal Agency has met all the facets enunciated by the Scheme and even mentored the same.”*

*“Looking at the close coordination and constant hand holding that these Regional Centres have been doing it is obvious (and when substantiated by the response of a substantial number of beneficiaries/stakeholders), the actual implementation of the Design Clinic Scheme has been undertaken by them. During the survey and detailed meetings with beneficiaries/stakeholders, the important role of the Centres vis - a - vis the Coordinators as being the real single point of contact*

## Designers

Registrations	North East	East	West	North	South	Total
Design Consultants Registered	48	102	316	247	194	907
Design Firms Registered	17	30	155	59	145	406
Design Institutes Registered	7	04	16	11	20	58
Design Students Registered	05	22	81	181	148	437

## MSMEs

Registrations	North East	East	West	North	South	Total
MSME Associations Registered	34	39	94	58	41	266
MSME Units Registered	25	108	309	694	599	1735
Government Organizations Registered	4	4	9	4	3	24

## States Covered under the DAS, DAP, OP and DP

Sr. No	State	Capital	DAS	DAP	OP	PDP	SDP
1	Andhra Pradesh	Hyderabad	13	2	1	6	
2	Arunachal Pradesh	Itanagar	1	2	1		
3	Assam	Dispur	23	40		17	
4	Bihar	Patna	22	39	2	2	
5	Chhattisgarh	Raipur	4		1	1	
6	Daman & Diu	Daman	2		1		
7	Delhi	New Delhi	3	2	1	3	32
8	Goa	Panaji	2		1		
9	Gujarat	Gandhinagar	39	7	2	69	10
10	Haryana	Chandigarh	20	25		22	8
11	Himachal Pradesh	Shimla	1	1	1	2	1
12	Jammu & Kashmir	Srinagar	1		1		
13	Jharkhand	Ranchi	5		1	1	
14	Karnataka	Bangalooru	26	8	1	40	35
15	Kerala	Thiruvananthapuram	24	7	1	3	1
16	Madhya Pradesh	Bhopal	17	6	1	2	2
17	Maharashtra	Mumbai	29	5	2	44	3

Sr. No	State	Capital	DAS	DAP	OP	PDP	SDP
18	Manipur	Imphal	5	2	1		
19	Meghalaya	Shillong	3	2	1		
20	Mizoram	Aizawl	3	2			
21	Nagaland	Kohima	5	3	1	1	1
22	Odisha	Bhubaneswar	11	5	1	7	4
23	Puducherry	Puducherry	1			1	
24	Punjab	Chandigarh	9	3	2	24	1
25	Rajasthan	Jaipur	22	8	1	9	3
26	Sikkim	Gangtok	2	2			
27	Tamilnadu	Chennai	15	1	2	5	4
28	Telangana	Hyderabad	2				
29	Tripura	Agartala	2	3	1		
30	Uttar Pradesh	Lucknow	28	4	1	7	7
31	Uttarakhand	Dehradun	4		1	4	
32	West Bengal	Kolkata	39	39	1	7	3
<b>Grand Total</b>			<b>383</b>	<b>218</b>	<b>31</b>	<b>277</b>	<b>115</b>

### Design Awareness Seminars



### Design Awareness Programme



### Orientation Programme



(data till March 2015)



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for the Scheme were reinforced. With the manpower needs being supplemented through field executives under the overall supervision of the Coordinators the real impetus happened. In other words the regional centres/coordinators evolved to become decentralized nodal agencies in themselves.”

(Evaluation Study of Design Clinic Scheme for Design Expertise for MSME sector, for Ministry of MSMEs, Govt. of India, conducted by the National Institute for Entrepreneurship and Small Business Development, NIESBUD, Delhi)

“The Scheme has initiated revolutionary outcomes for the MSMEs by developing an industry - academia - government Scheme model, making the MSMEs more sensitized towards design competitiveness and developing solutions for the cluster specific problems.

The designers registered with the Scheme make it the biggest virtual database of designers in India making it a win - win model for all the stakeholders involved.”

(Shifting the Paradigm; mapping the Inclusive Innovation Ecosystem for MSME. To understand the innovation ecosystem, the study focused on government Schemes and impact funds in India. The study was carried out by GIZ India, CII and CII-ITC Centre of Excellence for Sustainable Development.)

Looking at these progresses, the government of India, in its 12th five year plan announced the continuation of the Scheme with increased budget outlay.



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**“we don’t need training,  
we have grown up seeing  
these practiced at our  
home”**

**jewellery artisan at Imphal, Manipur**

## Orientation Programmes

Orientation Programmes formed an important component of the awareness and promotional activity of the Scheme. The three significantly different components of the Scheme needed to be explained in detail. The need for such platform for interaction and discussion with all the stakeholders of the Scheme was thus realized in the beginning of the Scheme implementation. The Orientation Programme offered us an opportunity to connect with all its stakeholders, i.e. the industry associations, government organizations working with MSMEs, educational institutes, designers and interested MSME units from the state/s. The programmes were thus developed such that offered platform for discussion and interactions to address specific inquiries from the stakeholders.

As we started completing seminars, workshops and design projects under the Scheme, the outcomes of these workshops and design projects formed important case studies of the benefits of design for these industries. Combining an exhibition of the outcomes and achievements of the Scheme with the orientation programme helped us improve the effectiveness of these programmes in terms of explaining the importance and benefits of design as well as the details and mechanism of the Scheme and its three components, to all its stakeholders.

With the view to take the Scheme to the needy MSME units across the country, NID tied up with various industry associations and apex bodies, both at the state level as well as at the national level. For organizing these orientation programmes, NID partnered with these apex bodies. Thus the orientation programme at Bhopal was organized with the support of Federation of Indian Micro, Small and Medium Enterprises, FISME, New Delhi and M.P. Laghu Udhog Sangh, MPLUS, while the orientation programme at Baddi on 18th November, 2011 was organized with the support of Baddi Barotiwala Nalagarh Industries Association, BBNIA, a local industry association from Baddi. As part of the Scheme, we had planned to organize at least one Orientation programme in each of the States.

### Taking the Scheme to the Northeast

The 18th Orientation Programme of the Design Clinic Scheme for MSMEs was held at Agartala, Tripura on Saturday, 7th July, 2012. The programme was organized with the support of IL&FS, Agartala and was attended by over 100 enthusiastic participants that included members from different industry associations, entrepreneurs, officials from government organizations and students and faculty members from engineering colleges in and around Agartala. Hon'ble Minister for Industries & Commerce, Govt. of Tripura, Shri Jitendra Chaudhury inaugurated the programme. Shri. Pradyumna Vyas, Director, National Institute of Design, NID, Ahmedabad, Prof. P.K.Bose, Director, National Institute of Technology, NIT, Agartala, and Shri Pravin Agarwal, Director of Industries & Commerce, Govt. of Tripura were amongst the dignitaries present during the inaugural session. The speakers highlighted the need to connect the rich tradition of crafts in the region of northeast to the contemporary markets. The Hon'ble Minister lauded the efforts made towards this direction through the Scheme and assured necessary support required to take the Scheme to the needy industries and entrepreneurs of Tripura. A detailed presentation on different components of the Design Clinic Scheme with its status and case studies of some of the outcomes of the



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Scheme was also made during the programme. Official of the MSME Di office, Agartala made a presentation on other NMCP components/ Schemes and support available to the micro, small and medium enterprises. It was then followed by interaction and question-answer session with the members present.

It was heartening to see the enthusiasm and involvement of the entire team of IL&FS, Agartala under the guidance of its Director, Shri. Agarwal and the Senior Manager, IL&FS, Shri Panda to make the programme a huge success. IL&FS has been closely working with the entrepreneurs of Tripura and this active involvement has helped them develop good contacts and relations with them. The IL&FS team thus personally contacted them to explain the benefits of the Scheme and to invite them to the programme. Over 30 members from



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different media; both from the press as well as the TV attended the press meet organised on 6th July, previous day of the programme, and they helped us take the message to the industries and to the public in general. The event was well covered by the media before the Orientation Programme and also after the programme.

During the programme, organisation of Design Awareness Programmes, DAPs for various entrepreneurs and industries of Tripura were explored. DAPs would help identify various opportunities for improving their existing set of products, processes and also for improving systems and businesses as a whole. Besides this, the programmes would help bring different specialist organisations working in Tripura such as IL&FS, Bamboo & Cane Development Institute, BCDI, Agartala, National Institute of Technology, NIT, Agartala to come together to discuss issues and measures and to develop contextual solutions/suggestions for these industries. These institutes and organizations can then take up the identified opportunities for their further design and development process. Many of the solutions/directions for these industries need appropriate techno-design solutions, combining design and technology inputs and these workshops, it was felt, would be best suited for these interactions and further actions.



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Followed by this orientation programme at Agartala, a meeting was held with the Hon'ble Minister, Industries & Commerce, govt. of Mizoram on Monday, 9th July 2012 to discuss and explain the details of the design clinic Scheme and to explore the possibilities of state govt. support for organising DAPs in the state of Mizoram. Mizoram has good craft based micro industry clusters engaged in wood furniture, bamboo and cane products, garments, tin-smithy, etc. Two design sensitization seminars as part of the Scheme have already been organized in Mizoram, one for the Baktwang wood furniture cluster and for the Beirobi bamboo based product cluster. Followed by these seminars Design Awareness Programmes have also been undertaken for both these clusters. A student design project is currently underway and one of the final year PG student of Toy & Game Design programme from NID, is developing range of toys for Baktwang cluster. These initiatives were initiated through Indian Institute of Entrepreneurship, IIE, Guwahati, which is already working with these clusters.

Delivering special address during the orientation programme of the Design Clinic Scheme for MSMEs at Dimapur, Nagaland on 30th September 2013, the chief guest of the function Shri Merentushi R Jamir, the Honourable Minister of Youth and Sports, Government of Nagaland, exhorted the youth of the state to explore setting up



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their own enterprises. "Job will pay you only till you retire..." told the Minister to the gathering of over 100 young enthusiasts. The economy of the state of Nagaland depends heavily on government services. Pension, of late, has either been removed/stopped or reduced considerably for most jobs offered today. Micro enterprises offer the much needed alternative for creating employment at the local level, and at minimum investment. A successful enterprise can create ripple effect, both personally as well as to the local economy in terms of employment as well as wealth creation.

Being a state level programme to inform the details of the Scheme to its stakeholders, the Orientation Programme offers opportunity to discuss and work out further plans for implementation of the Scheme in the state. The programme at Dimapur was organised by the Indian Institute of Entrepreneurship, IIE, Guwahati, which is actively supporting NID to implement the Scheme in the northeastern states of the country. Three design awareness seminars, DAS and design awareness programmes, DAP have already been conducted in the state of Nagaland under the Design Clinic Scheme, at Dimapur, MonTown and at Mokokchung in the sectors of Jewelry, Bamboo and Wood crafts. The NGOs, and industry associations participating in the programme showed keen interest in understanding the Scheme as well as organizing Design Awareness Seminars for their members.



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With their rich natural resources and skill sets, these northeastern states of the country are now well placed to serve increasingly customized markets of today. Design can play critical role to help connect these local resources and skills to the needs and expectations of the contemporary markets. The Scheme reimburses 60% of expenditure for the Design Projects and 75% of the expenditure for the Design Awareness programmes. Efforts were continuously made to develop options for the needy MSME units to get financial support to cover full or part of the contribution required. These efforts have created a much needed platform for long term design intervention that can help bring major changes in terms of value addition and repositioning of their products.

The Orientation programmes thus helped us connect with all the various stakeholders of the Scheme. Discussion and interaction during the programme, while helped develop that much needed confidence amongst the stakeholders, it also provided platform to develop and build relationship with the implementation team as well as amongst the local industry associations and local designers, one of the important objective of the Scheme.

## Design Awareness Seminars

Design Awareness Seminar (DAS) is the first of the three components of the Design Clinic Scheme. Normally of 4 to 6 hours duration, these seminars are held at the industry/cluster locations at timings convenient to the local MSME participants. Invited designers and experts explain the need and benefits of design intervention through case study presentations to the participating members. DAS thus helps create the platform to initiate and further the interaction between the local industries and local designers. MSME association, apex body, NGO or government organization of the area organises this seminar as per its approved guidelines and formats. Project Implementation Committee, (PIC) of the Design Clinic Scheme processes the requests received for organizing the seminars and approves them as per the criteria and objectives of the Scheme. The regional centres at Delhi, Ahmedabad, Bangluru, Kolkata and Guwahati and the liaison officers appointed in different cities help and facilitate smooth organisation of these seminars and handhold them till the completion of the entire process upto reimbursement of seminar expenses upto Rs. 60,000/-.

Within the first 20 months from the launch of the Scheme, a massive number of 166 Design Awareness seminars were organised for different MSME sectors across the country. Of these, 47 were organized in the west zone region, 36 in South zone region, 37 in East zone, 25 in the North East region and 21 DAS were organized in the North zone region. These seminars were organized in 25 different states and union territories of the country, covering 21 broad industry sectors of MSMEs, ranging from Metal Products, Plastic Products, Machine Tools, Agriculture Products, Auto Components, Furniture, Engineering Components, Gems & Jewellery, Leather Products, Product Packaging, Bamboo etc.

With an average participation of 42 persons and 28 industry units per seminar, the Scheme reached out to over 6700 participants from over 4500 MSME units across the country. The participants from these MSME units who attended the seminars included unit

owners, directors, partners, marketing heads, project managers, R&D engineers and designers, floor staff of the units, etc. These seminars were organized in over 108 different cities/towns/villages across the country. Over 340 design experts interacted with the participant MSME members through these seminars.

Sanitary and Bathroom Products, Mohali, Panjab; Foundry industry units, Agra, UP; Hand Tools manufacturers, Jalandhar, panjab; Agriculture Products, Coimbatore, Tamilnadu; Imitation Jewellery manu. Cluster, Machalipatanam, Vijaywada, AP; UPS manufacturers association, Bangalore, Karnataka; Surgical Equipment manu. Cluster, Baruipur, West Bengal; Engineering Fabrication unit cluster, Bilaspur, Chhattisgarh; Food Processing units for Makhana Processors, Darbhanga, Bihar; Blacksmith cluster, Jorhat, Assam; Jewellery Cluster, Imphal, Manipur; Bamboo Cluster, Bairabi, Mizoram; Transformer and Stone crusher cluster, Gwalior, M.P.; Light & Stove Manu. Asso., Mumbai, Maharastra; Plastic Molded Products, Rajkot, Gujarat etc. were among the clusters and locations where the seminars were organized.

Reports comprising the list of participants, programme schedule, photographs showcasing the seminar in progress, participant feedbacks, etc., of each of these seminars have been submitted by each of the organisers and are available online at <http://www.designclinicsmsme.org/empanelment-media-reports/reports/seminar-reports>. As far as possible the secretariat ensured release of reimbursement of seminar expenditure within ten days of receiving the requisite documents.

It required lot of efforts and struggle for the implementation team in the beginning, to convince the MSME associations to come forward to organize the seminar. Twenty two MSME clusters were selected for Scheme implementation as its first phase. The members of the implementation team from our Regional Centres had to pursue hard to convince these cluster Associations on the need for organizing



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the DAS for their cluster. It took three months to organise the first Design Awareness Seminar by the Toy Association, Delhi on 8th May 2010. The MSME sectors being largely unorganized sectors, with few formal associations and/or authorized members, was making it further difficult to complete the formalities, take the necessary decisions for organizing the seminar as well as circulate the information about the same. The progress thus was slow in this initial period with 1 seminar organized in May 2010, 2 seminar in June and 4 seminar in July 2010.

Corrective measures were quickly taken and it was decided to open up the Scheme by reaching out to other MSME associations and apex bodies. Various steps to promote the Scheme were implemented, such as organization of Orientation Programmes, launch and stabilization of Scheme website, establishment of all the regional

centers, advertisements etc. By this time the implementation team members also gained confidence and developed required capabilities to meet the challenges. Specific agreements were signed with apex bodies and regional associations to organize the seminars. As a result, 77 Design Awareness Seminars were organized across the country in the duration of four months, from December 2010 to March 2011, thereby completing 100 seminars by March 2011. Very soon it was decided by the Project Implementation Committee to approve only those requests for seminars, having commitments to organize Design Awareness Programme, the second component of the Scheme.

This unique and ambitious Scheme has the arduous task to create awareness about the importance and benefits of design among the MSME units as well as provide handholding support to these units



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to try and employ the benefits of design (through support to design projects). Towards meeting its first objective, the seminars certainly created the much needed spark and provided new perspective to the participating MSME members to look at their products from users' perspectives. As Design is normally understood as a costly affair and limited to cosmetic changes of the products, the presentations helped change these perceptions to that of design as a creative problem solving process to improve products and processes at every stage of business. These seminars helped bring the designers and with them the message of design to the doorstep of these needy MSME units. As majority of these MSMEs are engaged in manufacturing components as OEMs, as per the specifications provided by their clients, and thus are mostly occupied with their day to day issues and business, they will have to soon move up the value chain and develop their own unique products. Exposure to design through these seminars, is expected to go a long way in improving product quality and manufacturing competency for the beneficiary members of the MSMEs and benefit the Indian economy as a whole.

There were however few limitations of these short duration seminars. The presentations by the designers and the opportunities thus created did not always lead to discussions. Most participants and the MSME unit owners did not like to open up to discuss their individual products and problems in this larger groups and in front of others

who may be manufacturing same products or components and hence their competitors. Other than the unit owner/s, other member/s from the units participating in the seminar were normally not in a position to discuss and/or take decisions regarding their participation in the next stages of the Scheme. The experts/designers and/or their presentations at times could not connect to the context and the audience, thereby creating a communication gap. Participants were finding it difficult to relate the presentations, case-studies and/or discussions if they were not from the same domain/sector. Inaugural sessions and felicitations at times got extended, thereby reducing the time for experts for their presentations and discussions. Based on these continuous experiences and learning thus gained, the guidelines and formats of seminars were continuously refined to improve the effectiveness in terms of their quality and delivery to meet the overall objectives of the Scheme.

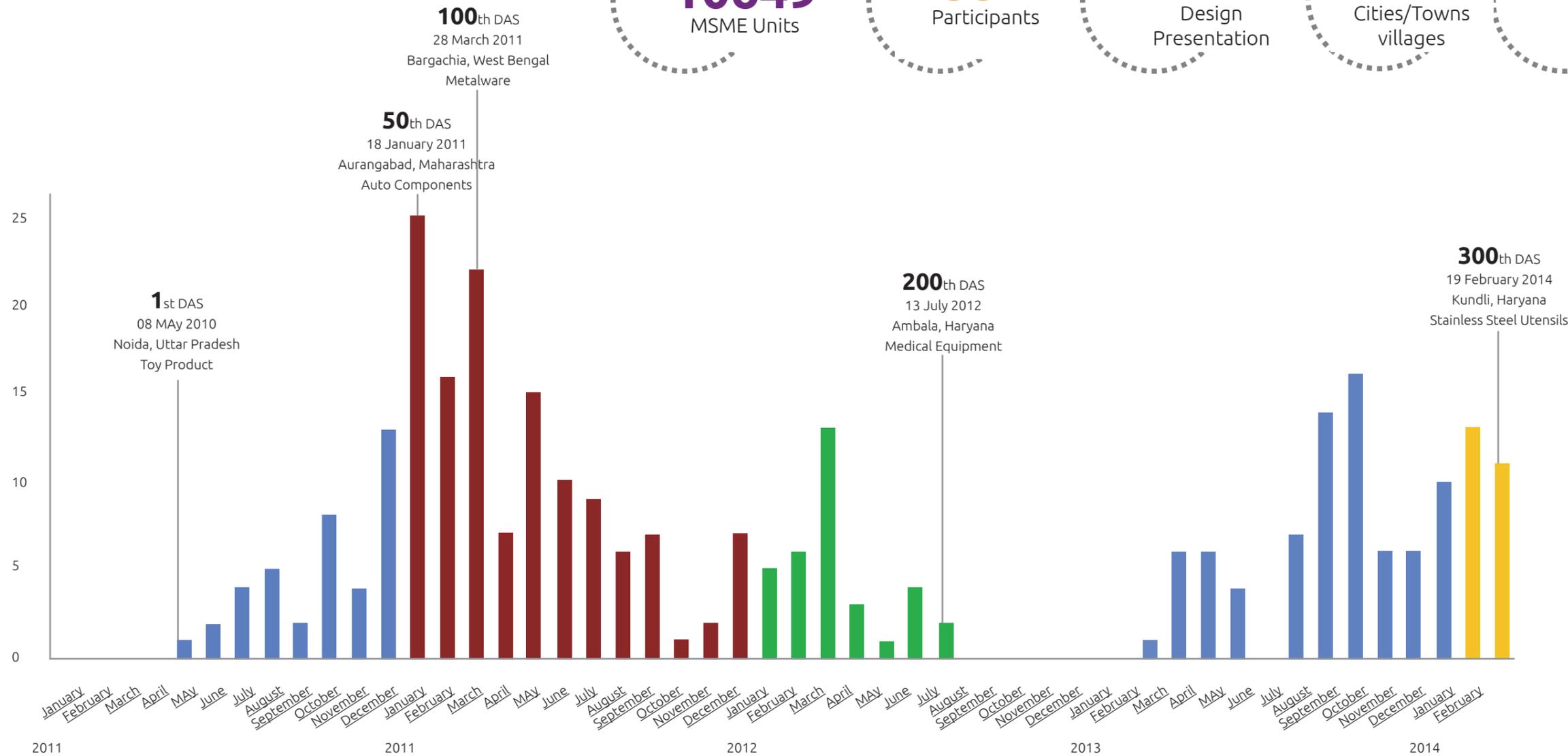
As an implementing agency, the team was now geared up and equipped to take the next challenge to convert these MSME unit members' first level of interaction with designers at the seminars, into their further involvement and interactions through their participation in Design Awareness programmes and Design Projects so as to improve their products and processes to meet the market expectations and achieve global standards and thereby reap the benefits of design for their own products and businesses.



DAS Conducted

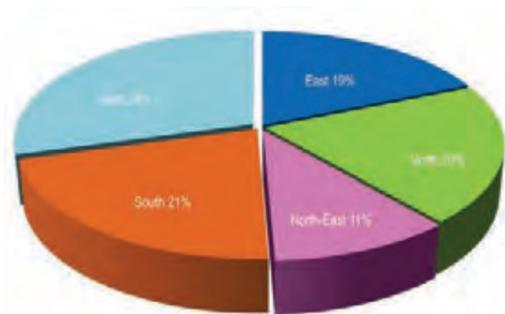


## DAS Organised Across the Country

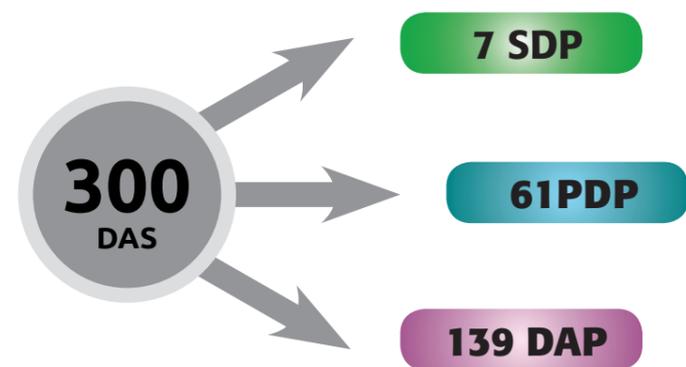


	2010	2011	2012	2013	2014	Total
<b>DAS</b>	39	127	34	76	24	300
<b>Organisers</b>	35	60	25	53	14	187
<b>Design Presentation</b>	107	221	68	149	56	591
<b>Participants</b>	1622	5490	1639	3614	946	13311
<b>Average Participation</b>	42	43	48	48	39	44

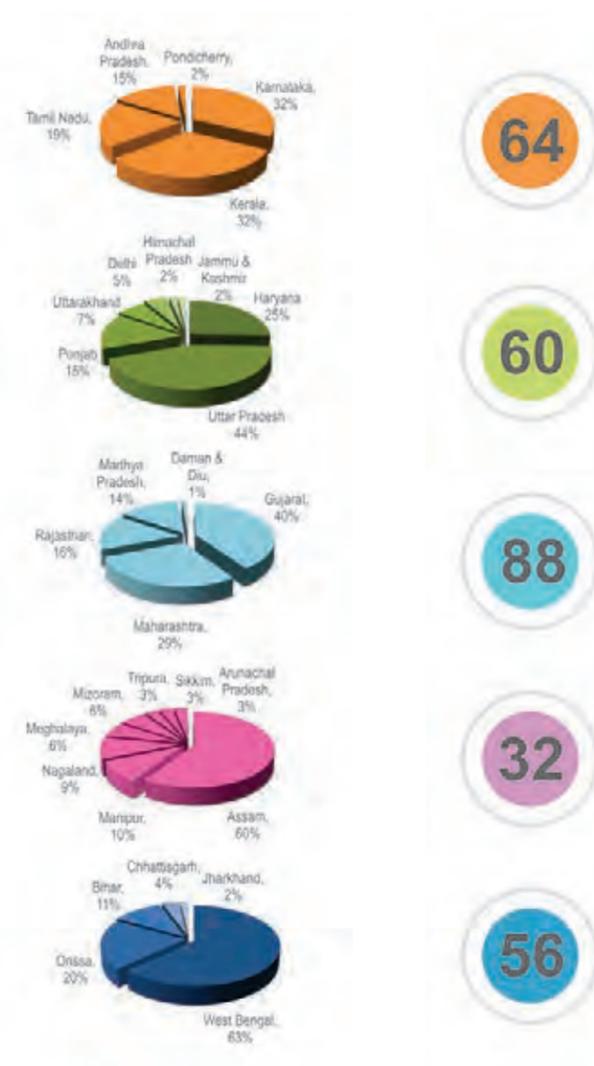
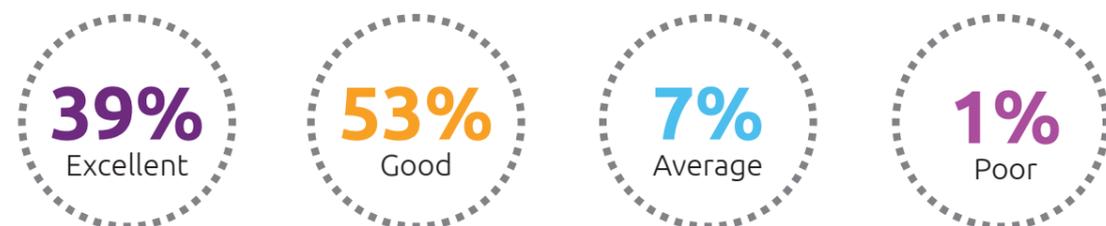
## DAS Organised - State wise



## 300 DAS Converted in to DAP and Projects



## Participants Feedback - Satisfaction Level



## DAS Status - Zone & State wise Participants

Sr. No.	State	Capital	DAS	Guest Speakers	MSME Participants
1	West Bengal	Kolkata	36	63	1594
2	Orissa	Bhubaneshwar	11	19	455
3	Jharkhand	Ranchi	1	2	45
4	Chhattisgarh	Raipur	2	2	95
5	Bihar	Patna	6	10	265
6	Tripura	Agartala	1	2	29
7	Sikkim	Gangtok	1	1	30
8	Nagaland	Dimapur	3	6	84
9	Mizoram	Izawal	2	4	100
10	Meghalaya	Shillong	2	4	82
11	Manipur	Imphal	3	6	120
12	Assam	Guwahati	19	28	796
13	Arunachal Pradesh	Itanagar	1	1	30
14	Rajasthan	Jaipur	13	25	570
15	Maharashtra	Mumbai	26	63	1214
16	Madhya Pradesh	Bhopal	14	41	429
17	Gujarat	Gandhinagar	34	80	1926
18	Daman and Diu	Daman	1	1	40
19	Uttarakhand	Dehradun	4	9	254
20	Uttar Pradesh	Lucknow	6	54	1143
21	Punjab	Chandigarh	9	14	358
22	Jammu and Kashmir	Srinagar	1	2	45
23	Himachal Pradesh	Shimla	1	2	71
24	Haryana	Chandigarh	16	31	510
25	Delhi	New Delhi	3	4	114
26	Andhra Pradesh	Hyderabad	13	17	345
27	Tamil Nadu	Chennai	21	25	669
28	Pondicherry	Puducherry	20	2	27
29	Kerala	Thiruvantapuram	9	29	1028
30	Karnataka	Bangaluru	1	44	843
<b>Total</b>			<b>300</b>	<b>591</b>	<b>13311</b>

## DAS Organised - Industry Sector wise

Sr. No.	Industrial Sector	South	North	West	North-East	East	Grand Total
1	Agriculture Equipments	1	1	5	-	1	8
2	Auto Components	3	5	4	-	-	12
3	Ceramics & Glass	2	3	2	1	2	10
4	Electrical Equipments	3	-	1	-	1	5
5	Electronics Equipments	4	-	1	-	-	6
6	Engineering & Fabrication	14	11	21	-	7	53
7	Food Processing	5	-	3	-	7	15
8	Garments	1	4	1	1	1	8
9	Gems & Jewellery	4	2	6	5	4	21
10	Handicraft	4	3	3	2	3	15
11	Handloom	-	2	-	5	-	7
12	Jute Products	-	-	-	2	6	8
13	Leather Products	1	6	3	-	4	14
14	Machine Tools	3	1	2	-	-	6
15	Machinery	2	-	4	-	-	6
16	Medical & Pharma Equipments	-	2	-	-	2	4
17	Metalware	1	5	7	3	6	22
18	Multi clusters	-	2	4	-	-	6
19	Packaging & Branding	1	4	1	4	3	13
20	Plastic Products	1	1	9	-	4	15
21	Rubber Products	2	-	1	-	1	4
22	Safety & Security	-	1	-	-	-	1
23	Sport Goods	-	2	-	-	-	2
24	Stone & Marble	-	1	3	-	-	4
25	Textile Products	1	1	1	3	1	7
26	Toy	-	1	1	-	-	2
27	Wood & Bamboo	2	-	-	6	3	11
28	Wood/Steel Furniture	9	2	4	-	-	15
<b>Total</b>		<b>64</b>	<b>60</b>	<b>88</b>	<b>32</b>	<b>56</b>	<b>300</b>

(Date source: Enhancing MSME Capabilities through Design Intervention; <http://www.designclinicsmsme.org/wp-content/themes/default/docs/300Seminaranalisesbookforweb.pdf>)

(data till completion of 300 DAS)

## Design Awareness Programme

Design Awareness Programmes (DAP), the second of the three components of the Scheme, provides the crucial link to connect MSME unit/s to design intervention, through quick remedial solutions and thereby help convince the unit owners on the benefits of design. The DAP helps convert the initial interaction at the Design Awareness Seminar between the MSME unit owner and the designer to long term relation amongst them for taking up Design Projects through regular and continuous interactions. Thus, the Design Awareness Programme, developed in the form of design clinic, one of the most appropriate design intervention models for the Indian MSMEs, provides unique character to this Scheme and thereby differentiates it from other similar Schemes of design interventions for SMEs across the world.

Design helps connect product to its users through product improvements mainly from the perspectives of its aesthetics, usability, functionality etc. However, majority of MSME being the component manufacturing units, they would demand improvements of their different processes, activities, their intra and inter department communication as well as with their vendors, clients

etc. Opportunities and the scope for design interventions exist in MSMEs at various levels and in different forms. It may be in the form of new design of product, redesign of existing product, product diversification, product graphics and/or in the form of its package design etc. Opportunity may also exist in the form of improvement of quality through redesign of joineries and detailing, redesign of tools and equipments or it may be in the form of ergonomic improvement, redesign of workstation etc. It may be in the form of design sensitization training and/or skill up-gradation of their workers and staff members; appropriate adaptation of new materials, processes and/or machines and equipments etc. The DAP offers the designer/s opportunities to demonstrate scope for design intervention at individual MSME units and wider benefits of design if applied holistically.

Design Awareness Programme is divided into two phases. The first phase of the programme involves detailed need assessment survey through primary research at unit level interactions and in-depth secondary research by the designer. Designer's interaction with

individual MSME units help the owner and the members of the unit better understand the process of design as well as its benefits. Through these interactions design intervention opportunities are identified and remedial solutions are offered, as a result the much needed confidence level gets developed. Similar interactions with other units of the same cluster helps designer gain micro as well as macro perspective leading to holistic understanding of design issues involved at the cluster level.

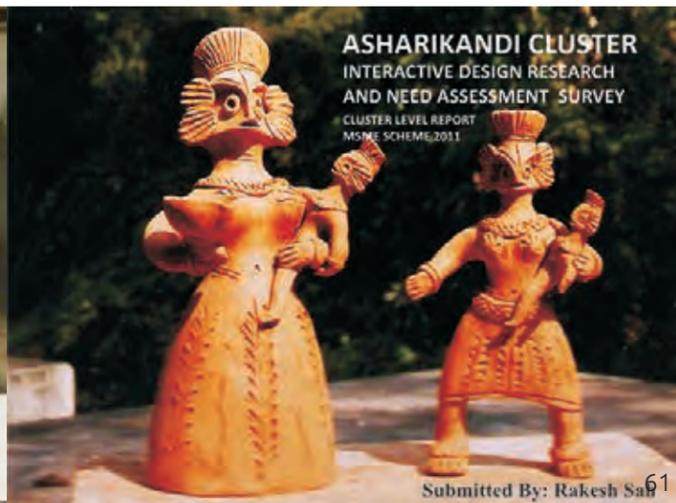
The second phase of the Design Awareness Programme comprises of workshop with the participant industry members. During this workshop the designer shares the overall understandings, insights and opportunities identified through the survey and discuss possible remedial solutions with the participants. The participating members are also exposed to different elements of design through case study presentations, expert discussions and hands-on exercises. Individual and group discussions form part of the workshop. Some of the products and components manufactured by the units are taken up for detailed analysis by the designer/s. The participants are exposed

to creative problem solving methods through hands on exercises by taking up some of the daily problems and issues faced by the units for finding remedial solutions. The workshop thus helps participating MSME unit members discuss individual level issues as well as the common issues concerning the entire cluster.

Bringing the designer to the doorstep of the MSME units helps maintain confidentiality, develop the much needed confidence and trust among the unit members to open up and freely discuss issues and concerns, identify opportunities and explore remedial solutions. Process based improvements calls for participatory approach for detailed interactions and brainstorming sessions among the designer, unit owner and other unit members/workers. Detailed analysis of the entire business process results in identification and documentation of various opportunity areas that would help the MSME gain holistic understanding of the business and develop strategies and directions for future progress. Each participating MSME unit/s would take back positive and implementable outcome/s in return of their participation in the programme.



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Most MSMEs' immediate focus/priorities today would be to tackle their day to day issues and challenges. These units may not be in a position to invest in design, both in terms of their resources as well as time. Interaction with the designer at individual level with quick remedial solutions would help convince the unit owner to invest and test design. It would help identify design opportunities, some of them resulting into design projects. The unit otherwise on its own may not be in a position to identify design requirements/scope for design intervention. The Design Awareness Programme would thus help transit initial interaction during the Design Awareness Seminar, the first component of the Scheme, to that of continuous and focused interaction with designer for design project based intervention, the third component of the Scheme. Thus, the DAP would help initiate the unit into appropriate use of design and design thinking to improve its products and processes to compete in today's markets.

The Scheme reimburses 75% of the expenses or maximum upto Rs. 3.0 Lakh, for organizing the programme. MSME associations can come forward to take this benefit to organize the programme for

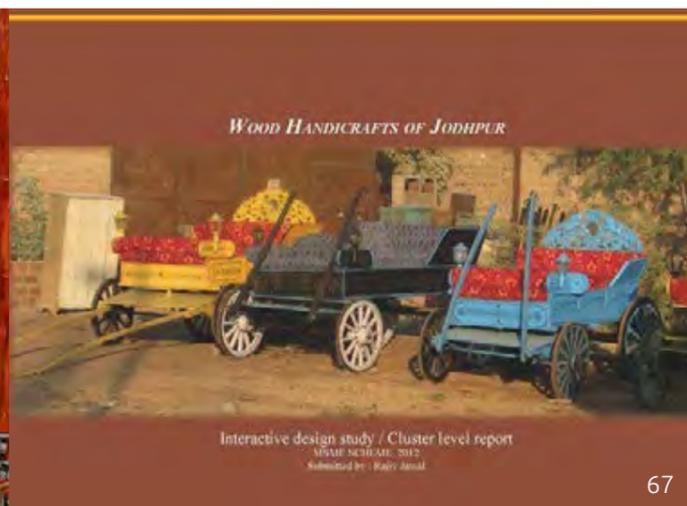
its identified/interested units. Alternatively, industry apex bodies or government organizations may also take up to organize the programme on behalf of the cluster and/or group of MSME units. Options to decide the contribution amount was introduced for the Associations, through different band system, so that depending upon their size and interest they can select their contribution. The industry/ Association contribution (Rs. 1,0 Lakh) is an indicative amount and the burden can be further reduced at the workshop organization level. The Association may reduce the overall expenditure and thereby their contribution by organizing group meetings at different industry unit locations, thus avoiding hiring of conference facility etc. if required. To further simplify the process, an option to arrange a Spot Design Clinic Workshop was offered to two or more than two MSME units. These Spot Design Clinic Workshops can be organized at the participating unit/s level. Detailed guidelines and formats were developed to assist both the designer as well as the MSME association in carrying out the survey as well as the workshop. The Scheme secretariat constantly improved the guidelines and formats, based on the experiences and feed backs received, for efficient and quick implementation

of this programme in various MSME clusters, most of them largely unorganized sectors with their own internal issues and complexities.

By February 2012, completion of two years of Scheme implementation, 47 Design Awareness Programmes were at various stages of their completion. Over 15 DAPs were in progress in the north-eastern region, 13 programmes in eastern region and 11 programmes were in progress in western region of the country, while 4 programmes each were underway in north and south zone of the country. These programmes covered over 19 MSME industry sectors. Another 37 DAPs were finalized and scheduled to start. The reports of the need assessment survey carried out as part of these programmes as well as the workshop reports are available on <http://www.designclinicsmsme.org/empanelment-reports/reports/design-awareness-programme-reports>

DAPs provide great opportunity to the designer to interact with the MSME unit/s, understand their needs, expectations and aspirations, build relations for further interactions and project based interventions

and thereby help the individual MSME unit improve its products and processes and be part of the movement to help country's large MSMEs sector move up the value chain. The MSME on the other hand would be able to test immediate benefits of design at minimum investment. Successful outcomes of DAPs in select clusters are summarized below to get an overview of DAP implementation strategy across the country:





**“अम्बाला में कोई भूखा नहीं मरता,  
लेकिन कोई तरक्की नहीं करता”**

**a MSME unit owner at Ambala**

## Bengal Women Welfare Association: Sholapith Work

Background: Shola (*Aeschynomene Aspera*) is a plant which grows in the tropical wetlands all over the world. In India it grows in the states of West Bengal, Orissa, Kerala, Karnataka, Andhra Pradesh, and Tamil Nadu. The soft, spongy, porous, light and supple white inner core - pith of the Shola stem is used for making beautiful objects. The outer skin is brown and is peeled off to use the soft portion from the core. The core is sliced into strips and made into sheets, cubes, cones and slices, which are shaped by skillful hands to give form to make various decorative items. The process is simple, but the craftsmanship requires a steady hand and great skill.

Sholapith items form an integral part of the major religious rituals, thus having a strong local demand in West Bengal. Beautiful finished shola products are used the world over on various occasions like festivities, religious ceremonies, private celebrations and as decorative items. Studies reveal that a minimum of rupees 4 to 5 crores of foreign exchange is earned through Shola craft annually. The specialty of the Shola products is that they are light weight, flexible and colour as well as fragrance absorptive (fragrance sprayed on them last for months). The leftovers of Shola wood from the clusters are



used locally as fuel for cooking purpose. *Aspera* is also used for its edible and ethno-medicinal properties. It is used as fishnets floats and life belts, also for making sun-hats because of its insulating properties.

The cluster: The Sholapith cluster in the small villages of Mandirbazar block (Diamond Harbour subdivision, South 24 Parganas District, West Bengal) is dominated by thousand small home based businesses. The units are interconnected by the markets they serve, the Sholapith products they produce, their suppliers, their buyers and local/trade/financial associations. Shola craft is the main catalyst driving the economy of the region. Earlier limited to religious and ritualistic products, today the craft caters to the export market in a big way.

People mainly from under-caste groups are involved in the craft. Workers' age range from 18-72 years. Women are engaged in large numbers. The raw material is distributed and finished products collected, through a nodal member who keeps a track of the labourers who are paid daily wages. Majority of the families at the cluster units earn as low as Rs. 30 (approx.) per day.



This craft uses simple and locally available tools. Paints earlier made from natural sources, mainly different shades of red and black, are now replaced by artificial paints and variety of colours. Few machines like Blow moulding machine are used. Raw material is bought from the local market. High quality Shola wood comes from West Bengal which now-a-days is also supplemented majorly by the Shola wood imported from Bangladesh to meet shortfall in supply.

DAP process : A 5 days Workshop was organized by the MSMEs cluster Association, BWWA, Kolkata for their members to interact with the Design experts/subject experts. The aim was to generate design awareness with cluster centric design information, contextual design diagnosis and participatory workshop for better understanding the role and benefits of design in industrial context of cluster. Design experts and members from the East Zone office of DCS for MSMEs, Kolkata presented case studies on good design practices.

The members were divided into groups of five members each and were briefed about the design processes and development techniques. Each group was given a product category such as a range of apparel accessories, Christmas decorative items, bouquets and wreaths, lampshades, fragrance diffuser and potpourri, lifestyle products for home, offices and hotels. Each product category could lead to individual projects involving the design processes starting from concept to customer. The proposed design intervention aimed to provide relevant inputs to the participants to transform conceptual prototype into a cost effective and popular product both for domestic and international market.

To begin with a Need Analysis Survey was carried out in the year 2011 by Saurabh Kumar, a Strategic Design Management graduate from the National Institute of Design. The study documents the tools, chemicals, machines; the processes; the range of products; a value chain assessment for understanding the constraints and design opportunities for the industry and the competitiveness of the local

units in the global context. Key trends of the Sholapith products were identified along with other aspects like the success patterns, export & buying behaviour and obstacles to direct export. A strong emphasis is placed on studying the back-end and the front-end scenario of the Sholapith cluster in depth, right from the process of Shola plant farming to the end-use of the Sholapith products, worldwide.

20 registered units of the cluster, spread over 7 villages in the Mandirbazar block of South 24 Parganas district were studied as part of the survey. The units were chosen on criteria covering maximum diversity of Sholapith product range, skills sets, knowledge base, product mix, size of business and the complete positioning of their products and their businesses in the market.

The methodology of the study included an all-inclusive literature, web, other relevant report review on a diverse range of topics related to Sholapith cluster sustainability & evolution locally and worldwide; Interviews of cluster stakeholders - craftsmen, executives from BWWA, exporters, buyers, designers and design institutions, economic development professionals, cluster development professionals, management professionals and educators; Base line data compilation using best available data resources from the main stakeholders; Studying observational behaviors of the members of the units, in-home environment, in-unit environment, living conditions et al were done.

Findings: A remarkable feature of this economy is the existence of a healthy balance between everyday work, environment and way of living of the local people. Recently this balance has been threatened on several accounts - population engaged with the craft getting older and younger generation opting for other professions, destruction of the ecology of the Shola plants, unfavourable balance of power in favour of the exporters as well as the raw material suppliers, illiteracy of craftsmen and their dependency on Shola craft skill alone with no fall back option and competition from some of the biggest exporters

of Sholapith products like Thailand, China, USA and competition also from alternative materials like paper flowers, corn husk flowers, cloth flowers, plastic flowers et al. Besides there are the other issues like-expensive raw material; inadequate electricity, telecommunications and road infrastructure; non availability of loans; severe weather conditions in summer and rainy seasons; shortage of craftsmen; irregularity of work and wages; difficulties of storage of raw materials and finished products.

Recommendations: In view of the challenges and opportunities present for the Sholapith cluster, a multi-pronged approach is needed for the cluster to reach its full potential and for improving the lives of those dependent on this intricate art for their sustenance.

To manage resources well, there is need for setting up common facility centre (CFC) providing permanent shade, electricity, drinking water, permanent waterproof warehouse, common machines etc to be utilized by multiple units as and when needed. CFC can also be used as nodal point for the cluster and the outside experts such as designers, researches, business mentors, financial institutions to share, design and develop new products, plan the businesses and avail common facilities (Common Computer Training, Financial Facility, common purchase of raw materials, sharing transportation) and empower the units by negotiating on behalf of the units with the exporters; setting up Export facility within the CFC; Design of clutter free work spaces with proper illumination, segregation of raw and finished materials to minimize human effort and increase production.

Focus on new product developments - decorative as well as functional products considering the Sholapith material properties, and design for new markets; Improvisation in Sholapith craft technology through R&D activities; Continuous research in terms of consumer trends, market trends and competition in the local and international market; New and effective packaging techniques; Re-skilling and skill diversification to ensure that alternative materials could be

used by the units in their craft in case Shola goes out of favour in the international markets; Intervention in the financial domain for the units for procuring raw materials or other business related expenses. For instance, Basudeb Halder of Maheshpur, running Halder Dry Flowers for the last 10 years says that he gets lots of orders for Sholapith products from exporters in Delhi and Kolkata but, he is unable to fulfill them due to lack of funds to buy raw materials as he never gets any advance with the orders.

The Designer who conducted the DAP feels that Sholapith craft needs a strategy framework to highlight the historical values of the craft and connect it to the modern needs of the buyers and customers. The cluster has to move out of the exporters clutch and develop its own export authority; Set up a research centre for Shola plants to increase its yield and improve Sholapith use; developing an e-commerce portal for these units and the use of blogs and other social media channels; education and training programs should also focus on the awareness and better design practices. Engaging the youth to be part of the Sholapith craft in different capacities is imperative for the survival of this craft. Also needed is Knowledge and skills transfer from the senior craftsmen to the younger generation and empowering the women workforce in the region to play a bigger role. Design and technology can be included in the curriculum at all the primary and secondary schools in the region with focus on vocational training - learning by doing. Mechanizing some/all the processes used in the production of Sholapith products will lead to faster, consistent, mass scale production and might, in the long run, reduce variable cost of their production.

The Sholapith craft has sustained locally in the region for hundreds of years. The products are known worldwide for their profound beauty, light weight, longevity and affordable prices. Sholapith craftsmen and women, while mostly poor and unexposed to the demands of the global marketplace, are talented and open to innovation, especially when it comes to opportunities to access new markets.



The knowledge and the skill among the people engaged in the craft are intact and limited since hundreds of years. It is striving to evolve to cater to the high demands in terms of increasing variety and quality of international standards. The younger generation is starting to move out of the local businesses and trying to tap the export market. Today, in the local economy it holds a very significant role in engaging a large chunk of the population of the region, especially the youth. For instance, 27 years old Bishwanath Gayen of Maheshpur learnt the trade from his father who practiced the art for more than 30 years. Earlier his father used to make products for local market and around 10 years back he started taking orders for the export business. His sister and mother also help him in the sampling and production. Bishwanath works for two exporters from Kolkata. He is always occupied with good quantity orders. Biswanath develops new samples of Sholapith products by taking references from photographs, from nature or from his imagination. He first develops samples (4 to 5 variations of one sample) and presents it to the exporters for approval and sometimes one of them gets selected. Similarly, Sushanta Halder of Halder Shola supplier, who is in the business for 15 years experiments with new designs by himself. The new designs can be considered to be a result of in-built creative synergy between Sholapith and the craftsman. The better the craftsman's material understanding, better the design.



The craft is at an important stage of transition, a larger variety (almost 99%) of the products being presently produced for export. Like many other crafts, Sholapith craft began to evolve in the late 1990s, with a majority of new entrants drawn from diverse social and business backgrounds into the Sholapith products scenario. The craft underwent a major expansion a decade ago, in response to the fast-growing foreign demand for Sholapith decorative and lifestyle products.

Mr Kayal of BWWA talking about the response of DAP says "People are so charged up after the workshop. They have become aware. Nobody had told them before that they can do new things and reach out. New promises seem possible. The first positive outcome is that so many units have come together for the first time. Several organizations like ASAF in Kerala, have shown interest to tie up with our units and give bulk orders. Marketing inputs were given to us during the workshop. We have liked the clarity and approachability. With officials we cannot open up so much, we cannot get our doubts clarified. But this was different"

*(Excerpts from Flower of the Wood, Need Assessment Survey of Sholapith cluster, Mandirbazar block, South 24 Parganas, W.B.; Saurabh Kumar)*

## Agarbatti Cluster, Baruipur

Background: Agarbatti is a low budget industry that does not require a lot of capital investment but has a great demand as a product both in the domestic and international market. Minimum capital investment in this industry can give very high returns if managed properly. It is a labour intensive industry and creates many jobs. The skill requirement for the workers is also not very high. Given the availability of large scale low skilled labour it can be ideal in Indian context. The industry also employs a large section of women workers thus paving way for them to be economically productive.

The cluster: Agarbatti making began in and around Baruipur as an alternative source of income for farmers in the months when the activities in their farm was reduced and the production was less. It has now become a thriving industry engaging almost 50,000 workers directly and indirectly and catering to almost 70% of the total Agarbatti manufactured in West Bengal. Women constitute a majority of the workforce. Most of the workers are from below poverty line families. But the cluster has immense growth potential to lift the socio-economic condition of more than fifty thousand people associated with it.

There are 112 micro units having annual turnover of around 40-45 crores (reports and data of DSR prepared by DIC, South 24 Paraganas, 2010). Need Assessment Survey (NAS) of the Agarbatti Cluster in 2013 suggest that 56000 workers are associated with this sector of which 30000 are women. Agarbatti Manufacturer's Welfare Association or BAMWA is the major association in the Cluster. Majority of the market is domestic but it also caters to markets in places like Nepal, Bhutan, Sri Lanka, Australia, Spain, Mauritius, Chile, Egypt, UAE, Malaysia, South Africa, UK. Main products of the cluster include Incense sticks and Cones, Dhuno incense cones and sticks, Raw stick, Flora stick and Fragrant stick. The main Raw materials used are Charcoal, Coal dust, Wood powder, Guggul, Dhuno, Gum, Geeket (wood skin), Bamboo sticks, and Incense. It passes through 3 stages of production which also talks about the kind of employee employer relationship that the

sector involves: Wholesale contractors/unit owners buy raw materials and give it to the workers for rolling; Workers roll the agrabattis, dry them and return it to the unit owners/contractors; unit owners/contractors package the finished incense sticks in their own factories. On an average the price ranges from Rs 2 to Rs 20 per packet. Workers are paid Rs 7-8 per 1000 sticks. Raw stick is sold in kilograms - Rs 50-60 per kg. Working hours range from 8-10 hours.

A Need Assessment Study of the agarbatti cluster at Fultala, Baruipur was done by a professional designer Piyali Barua, a graduate of the National Institute of Design in 2011. She did a design audit and a design opportunity mapping and came up with some 'informative, structural, analytical and design intervention opportunities'. Apart from interviewing workers and association members, she also spoke to a cross section of buyers and consumers, people of age groups from 15-60 years and from different income groups to get a holistic insight into the trade and its problem areas. She interviewed 26 people and 15 units including some of the very first ones in the trade like Gitashree Perfumery Works. During her survey she confronted a range of emotions from over enthusiasm to suspicion.

Findings: A Design Audit revealed that in spite of having a huge domestic and international demand very little development has taken place in this trade in terms of the products, the techniques used, machinery and tools, design intervention, general awareness, the issues of employee-employer relationship, worker's rights, standard of wages, technical know-how, accessibility to the markets, raw materials and funds and possibilities of workers/units organisations. There is hardly any knowledge sharing between the units. There is lack of motivation amongst the unit owners and there is no systematic planning for the future.

The NAS was followed by a 5 day Design Clinic Workshop. Representatives from the Agarbatti industry, exporters, unit members, Agarbatti workers, and members of the Baruipur Agarbatti



Manufacturing Welfare Association, participated in the workshop. More than 25 people attended the session every day. Experts like Dr. Somnath Gangopadhyay, Associate Professor Occupational Ergonomics Laboratory, Department of Physiology, University of Calcutta were invited to interact with the participants. Some of the highlights of the workshop included Discussion on women's welfare and development for uplifting the Agarbatti Industry; Ergonomic Intervention (like a specially designed work table, or a board for rolling the agarbattis) for improvement of productivity of workers involved in this sector; One to one discussion on NAS reports, identifying the problem areas and detecting the design intervention opportunities; Reflection on future scope for redesigning machines, tools and implements for integrated development; Discussion on need for regularly organising short training programs for the workers

for upgrading their technical skill; Discussion on the minor to major gaps in production process to improve both quality and quantity of the product with minimum scope for wastage; Discussion on building a common facility centre; Need for Developing new product range; Establishment of chemical testing lab in Baruipur for preparing and testing different fragrance; Contacting certified institutes for a formal training on fragrance making (Currently none of the unit members know how to create or develop essence of oils); Reflection on the need for design intervention like Branding, Packaging Display and Merchandising; Discussion on Internet and website being the essential tools to access the global market; Discussion on the need for usage/user study and market study of changing life style, behavior, domain, patterns, trends; Discussion on future initiatives plans, bamboo plantation for maintaining enough availability of the raw materials etc.



According to the Designer “On the whole, the present scenario proves that the cluster needs to develop design consciousness and design intervention in every sector whether it is product, its production process, machinery, packaging, health & education of the worker, workstation, or their aspirations. There is lack of awareness, education, health consciousness, and modern technologies. Also, the overall work environments, working pattern and time management is very monotonous and disorganized”.

The workshop was extremely participatory. Participants freely interacted and came up with their questions and doubts. They were extremely happy and satisfied by the experts’ tips and suggestions. Some of them immediately implemented the suggestions. Many of them registered themselves on the web trading sites as suggested to keep themselves abreast with the global market and the new market trends and to create visibility for their products. All these instant feedbacks were the actual achievements of the workshop, and the rewards for the design experts was to be able to motivate them to think differently and to create design awareness for their betterment and business growth.

Reflecting on the benefits of the design awareness seminars and the design workshop, Sri Ashutosh Das, Secretary, BAMWA remarked “We were greatly benefitted. The initial motivation and start up was very essential for us and that DCS did for us. We have done so much since the workshop and seminar. Earlier, only I had an e-mail ID in the entire cluster. Now 36 people have e-mail IDs. We have also made a website which we are going to launch this month. People were initially reluctant to do anything with the internet but now since the workshop they have realised how important it is to be connected and to be visible.

After we did the workshop with DCS we felt the need for getting good machines. We have already installed 10 machines. These are

simple paddle machines which the women workers have already started using. These machines support us in the entire production process from raw stick making to the finished product. We have started thinking seriously about packaging since the workshop we did with NID. We are developing a Common facilitation centre and have procured an office for our association. We have recently got lot of orders for our products from the North East on the basis of these seminars and workshop”.

The future seems to hold some promise. The cluster has already shown immense motivation since the design clinic workshop. It registered itself as Industrial Co Operative Society Ltd. to avail further benefits of the MSME Schemes. 45 units out of 112 units have now obtained the EM number from the Government. All the units are organizing and are showing enough enthusiasm to come together as a result of the design clinic workshop and they have already acquired the DC (MSME) approved cluster status. The new machines that have been procured have not only increased the production, it has helped to bring in standardization unlike the hand rolled sticks which were all different in sizes and thickness. This has added to the finish and quality of the product. The machines have helped to process the bamboo sticks which were earlier mostly done manually. The packaging is also mechanized now thereby adding to the finish and quality of the product. Summing up the impact in short Ashutosh Das said “A new window has opened up for us after the NID workshop. Between earlier and now, there are lots of differences in the cluster, in terms of awareness, product quality, people’s mind set, their willingness et al”.

*(Excerpts from Ned Assessment Survey Report -2011, Agarbatti Cluster Baruiapur, West Bengal; Piyal Barua; [http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/NAS\\_Agarbatti%20Cluster.pdf](http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/NAS_Agarbatti%20Cluster.pdf))*

## Ranaghat Gold and Silver Jewellery Cluster

Background: Ranaghat is a city in the district of Nadia, West Bengal, India. It is located on the banks of River Churni. Ranaghat has a population of 68,754, males constituting 51% of it and female constituting 49% (2011 census). It has an average literacy rate of 84%, higher than the national average. Ranaghat is a business hub. Both Wholesale and Retail business have developed here. The economy of Ranaghat and its surrounding region is mostly based on agriculture, paddy (rice), flour, wheat and fruits are the main produce.

Gold and silver jewellery is a traditional craft of Ranaghat practised over last 100 years. It is a labour intensive and mostly home based industry. People work for eight to ten hours in a day. Existing gold products of the cluster include Aangti (ring), Pala badhano bala (wristlet), Churri (wristlet), Nak chabi (nose pin), Kaner dul (ear rings), Necklace, handmade and machine made Chains and Ear tops. The existing silver products include: goddess' ornaments, Nupur (anklets), silver vessel, finger rings, lockets and traditional handmade anklets. The products are of various qualities depending on the requirement of the traders/customers. Copper and silver are mixed with gold and cadmium is mixed with silver. Some units are manufacturers or retailers and some are whole sellers.

The process of making jewellery here normally include: Purchase of raw material by traders, Melting, Drawing wires and sheets; cutting and shaping into different forms manually or through machines; Welding, soldering etc; and Polishing (acid polish, shampoo polish etc).

A Need Assessment Survey of the Ranaghat Gold and Silver Jewellery cluster was conducted by Susmita Dutta, Industrial Designer (Textile Design) PGD holder from NID. The objective was to generate detailed cluster information to understand the core issues related to raw material at different stages of manufacturing; Infrastructure setup and workplace; Ergonomics; Process and techniques; Existing Products; Tools and technology in use; Capability of manufacturing unit; Present Market status; Current Competition; Packaging and

Presentation; Display and Marketing; Wastage and Hallmark; etc. The methodology included Questionnaire survey of manufacturing and sales units; Discussion with unit owners and artisans; Process observation; Visit to different working spaces and market; Finding traces from earlier technique and usage of tools and materials; Self observation and analysis. 14 units dealing with both gold and silver jewellery and 8 units dealing only in silver jewellery were studied. Most of the units are in business for more than 15 years, though some like Siddeswari Jewellers are in the trade for more than 25 years.

Findings/Challenges: Several design intervention opportunities were identified, some specific to the gold and silver units respectively and some general to the cluster as a whole. They include scope for design intervention in tools and workstation development at every stage of the process to make the production faster, less laborious and making the product quality better and finer. Wastage at every stage of the process increases cost of production of these jewellery units.

Tarak Karmakar, the owner of one of the micro units, New Laxmi Narayan Jewellers, at Ranaghat has been into this trade for the last 15 years. He is finding it difficult to cater to the contemporary market demands, which are of fine and thin gold chains. He does not have the required new technology to make these kinds of gold chains. Lack of funds deprives him of these mechanical facilities, creating unequal completion with the other large scale units. He has to travel to Kolkata with gold material to make or buy this kind of fine chains, every time putting him into huge risks.

At Jafornagar, Monojit Roy (age 41) and his wife have been working in this craft for over 15 years. Traders give them silver wire and sheets to make chains and anklets of different design. They work at their home for over 8 - 10 hours every day. Sitting on floor and working for long hours leads to back pain. Working at night under a bulb light affects their eye sight. Long working hours also expose them to Cadmium smoke causing health hazards.

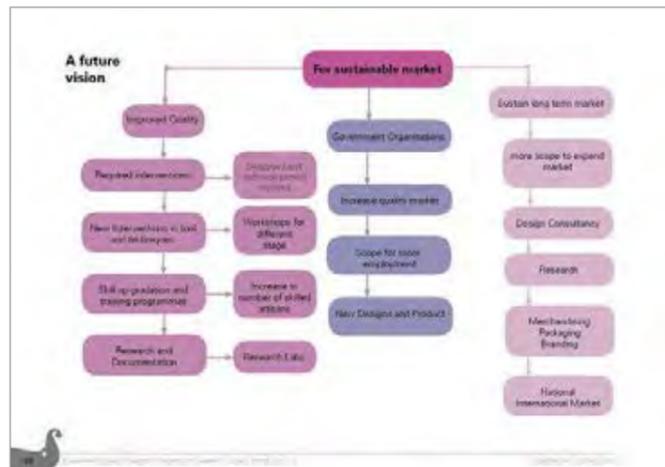
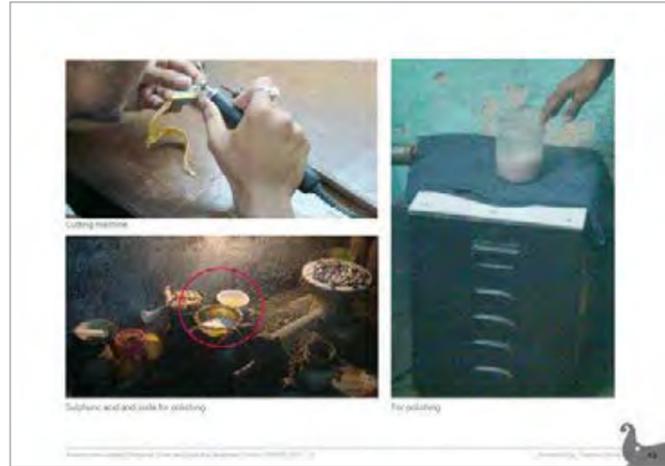


The artisans here lack the knowledge and understanding of the prevalent jewelry trends and designs. Lack of innovations and copied products increases competition and reduces their profit margins.

The existing traditional products need to be contemporized and made relevant. New motifs could be developed from daily life or taking inspiration from the local heritage. Using local traditional motifs will give the product an identity. Improvement can be brought in the aesthetic of the product in terms of detailing of the form, patterns and joineries. Surface finish, textures should be introduced.

Contemporary lifestyle accessories for daily use for both the domestic and export markets may also be explored.

Most units cater to the local markets. Absence of market linkages, lack of proper packaging, product display and showroom space is evident. There is scope for intervention in branding and merchandising. Better display and retail outlets, Website, package graphics, brochures and branding, proper catalogue etc. will help create a brand value, a visual identity and approach for the expanding export markets.



There is dire need to train, nurture and increase the number of skilled artisans. New generation of artisans are not skilled like the older master artisans. Small entrepreneurs of this cluster do not have sufficient funds or expertise to continue research and development on a regular basis. Quality of product is compromised due to lack of skill and technology. The cluster needs the benefit of Hallmark to create quality standard and thereby build trust factor to approach new customers and bigger market players. A common facility centre (CFC) would help bring artisans on a common platform to address together many of these issues. Besides, few more initiatives that can help create new opportunity for the cluster are, Creating a new design library for the cluster; Tie-ups with designers and experts; Design workshops to train artisans; etc.

Following the NAS, a five days Design Clinic workshop was organised on 18th March to 22nd March, 2013, at the cluster itself. The problems and opportunities identified in the Need Assessment Survey guided the content, approach and schedule of the workshop. Exposing artisans to the design process for generating new patterns and motifs and developing ways to market their products had emerged as the two main focus areas in the Need Assessment Survey.

The workshop started with detailed presentation of the findings of the NAS and discussions thereon to develop solutions for few of the common issues/problems identified. Appropriate new technology and finishing, joinery details, display and lighting for showroom etc. were discussed. The participants were exposed to different elements and the process of design. Demonstration of how software can aid in making patterns and motifs for the jewelers was arranged. Different designer's collection of jewelry like designs for nose pins, anklets, wristlets, necklaces etc; theme based jewellery; textural jewellery; etc. were presented to the participants.

Third and fourth day of the workshop were devoted to the hands-on experience for the participants to explore and create new forms,

motifs and patterns. Participants were guided to explore new forms and patterns taking inspirations from their immediate surroundings such as leaves, flowers or traditional motifs from murals etc. The exercise also included development of variations in their existing designs. The objective of the exercise was to initiate the process of developing a design library at the cluster level, as well as to expose participants to the scope for design.

The participants developed new designs in the form of drawings and sketches. Later on few of the participants made prototype jewellery, from the designs developed. Amit Sharma, one of the workshop participants, designed a golden pendant, the design of which was inspired from the neem leaves; Mr. Subir Kumar Dey designed golden ear ring set, inspired from the pattern of the leaves of the fern plant, while Mr. Shaymol Sarkar designed silver ear ring sets. The participants showed great promise to adopt new processes and products. The designer then presented and shared with them some of the professional design projects demonstrating the design process integrating the market requirements.

On the fifth day of the workshop, another designer Ms. Indira Basu was invited to discuss and share her experience of packaging design and marketing of Jewellery. She made case study presentations of her professional work done for Tiffany & Co. and for a Kolkata based jewellery brand KAHON.

All the sessions of the workshop were interactive with everyday question answer sessions, where participants asked questions without any hesitation and got their doubts cleared. Designs for different target markets such as children, men etc. were explored. Developing contemporary jewelry style, daily use jewellery etc.; working out a reasonable pricing to increase reach and appeal; solutions on product diversification- making products like cuff links, wristlet or chain for men and women, piercing products, fancy and fashionable hair clip etc; were discussed and explored.



(Excerpts from Interactive Design Study of Ranaghat Gold & Silver Jewellery Cluster; Susmita Dutta; <http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/GovtOfWestBengalRanaghatJewelleryCluster.pdf>)

## The Amtala Brushmaking Cluster of 24 Parganas District in West Bengal



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Background: Little was known about the Amtala brushmaking cluster of 24 Parganas district in West Bengal, until the Bengal Women Welfare Association (BWWA), Kolkata, requested NID to organise a DAP in the cluster under the DCS-MSMEs. This is an important industrial cluster manufacturing various kinds of brushes for the Indian and overseas markets. Different kinds of brushes are commonly used by people daily across different working categories and households.

Findings/challenges: BWWA being an active stakeholder in the DCS-MSMEs, identified this cluster for design intervention as it lacked innovation and scope for future cluster development. A five-day DAP was organised with a DCS-MSMEs registered design expert, Anjani Kumar, wherein, 20 units from the said cluster actively participated in the programme. During the DAP, it was found that every stage of manufacturing the brushes presented a huge scope for design intervention; there was an urgent need to recognise this situation in order to speed up the production process and enhance the quality of the products. Design opportunities were explored, inter alia, in the

areas of sitting postures, workstation, tools and implements used, processes involved and undertaken, training and skill upgradation of setups, packaging and display opportunities, and lack of a common facility centre. The programme had a huge impact on the participating cluster units, providing an in depth analysis of the individual unit/s doing business within “glocal” (global-local) market conditions vis-à-vis existing products, product innovation, and new product development, product redesigning and product re-engineering, product reach, and product diversification areas.

The design expert highlighted in his NAS report, the need to have a Common Facility Centre (CFC) along with the formation of an effective cooperative society to look into the progress of the said cluster. The report also emphasised the need to purchase material as per lot-size instead of on an “as and when” basis, to reduce inventory costs and attain a beneficial pricing mechanism. Currently, the cluster is considering CFC under another Scheme from the Government, providing logistical support to the same.



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**g) DESIGN OPPORTUNITY IN WORKSTATION AND TOOLING DESIGN**

The stall is cramped and the well-designed workstation where he can increase his ability to make some art brushes which has a big demand everywhere. As he is depend upon the craftsmen or machine who placed the order.

However, there is scope to redesign the workstation, the tools in use, keeping the fabrication space very organized with proper table arrangements which would increase efficiency and maintain the quality.

Design tools can be designed for the finishing stage as this stage decides the grade of the product and small negligence can decrease the quality of the products.

Packing tools can be introduced for getting a well pack of brush; not only do it represent better quality and appeal factor.

**h) STUDY FOR THE NEED OF TRAINING AND SKILL UP-GRADATION**

**Gluing, staining & finishing:**  
The machiner or workers engaged in doing glue work, staining & finishing to enhance the quality by hand-made single tools which, these tool are not designed to fit with the tools that need. Thus these tool need to be modernization or reorganize to achieve the quality up to the mark.

**Finishing and handling:**  
The below does not understand the critical aspects of finishing. They need to address material and material for the same.

**Surface decoration:**  
While applying colors directly without any masking which causes uneven and non-finished product. Also the color drying needs to be understood so that color drying time from brush handles could be controlled which would yield in better finished products.

On the unit level, the on-the-spot remedial design solutions were developed for each of the MSME units participating in the DAP, based on the design audit and SWOT analysis undertaken by the design expert. The areas related to various stages of production such as raw materials, sizing, colour application, assembling, packaging, quality check, transportation and marketing channels to name a few were examined and products and process level solutions were developed based on individual MSME's design scope or need finding. Some of these suggestions were immediately implemented and tested during the workshop itself.

The introduction of DCS-MSMEs has given an impetus to urgent design intervention in the Amtala Cluster. Consequently, many of the units under the cluster are considering taking up Professional Design Projects (PDPs) under the Scheme so as to enhance product development.

*(Excerpts from Interactive Design Research and Need Assessment Survey Report; Cluster & Unit level Design Audit Report Amtala; Anjani Kumar; [http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/Brush\\_Cluster\\_NAS\\_opt.pdf](http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/Brush_Cluster_NAS_opt.pdf))*

## Kaithal Foundry Cluster

Background: Kaithal is a city and a municipal council in Kaithal district in the Indian state of Haryana. The city is situated on National Highway NH 65, connecting the state capital Chandigarh to Hissar. Historically, it was known as "Kapisthal" (Abode of Kapi, another name of Lord Hanuman), and it is said to have been founded by the Great Pandava Emperor, Yudhishthira of Mahabharata. Narwana is a small town located near Kaithal in Jind District of Haryana. With agriculture as their main activity, and their farmers using advanced tools and implements, generated a constant demand for the foundry industry.

Foundry cluster in Kaithal & Narwana is well known for the Agricultural implements, Centrifugal Pumps, Pipe fittings & Chaff Cutter it produces for domestic use. The Kaithal Narwana Foundry cluster is a horizontal cluster consisting of 38 numbers of SMEs that produce and market directly while competing with one other. Out of which about 17 units are producing agricultural implements and the rest are making submersible pumps, electrical motors and other low end machinery parts with a total production of around 1000 M.T per month employing 1000 workers. The yearly turnover of the cluster is approximately Rs 50 crores. The production of Major product units varies from 50-150 M.T per month. The output of the cluster has grown at about 5% per annum in terms of quantity and its financial turnover has almost doubled in last 4 years. However this is mainly due to a steep rise in the price of raw materials and not due to increased competitiveness or introduction of new technologies to reduce costs. The cluster is using age old technique of casting using natural sand casting mixed with water and coal dust in all the units. The products are perceived as low quality with cheap spares, thereby resulting in poor brand image of the cluster. More over the agricultural implements produced by them are seasonal in nature. Hence these units operate for 7-9 months in a year.

Findings/challenges: A detailed Need Assessment Study was carried out in the year 2011-12 by a senior industrial design consultant Mr. Sudhir Kumar. This study and analysis was done to understand

the present way of working and shortcomings with the Cast Iron products. It was felt that improvements in iron and steel melting technology, manufacturing process and design and construction of the new products can bring them simplicity and improve the quality of life of the labor that are associated with the cluster. Detailed secondary research was carried out to understand cluster history and evolution, present status, manufacturing processes, marketing system, competition, national and global scenario etc. Equipped with a questionnaire developed based on this study, the designer then carried out detailed design audit at over 17 cluster units.

Some of the common issues identified include, shortage of skilled and unskilled manpower; lack of awareness on business costing; lack of orders from organised buyers; poor working conditions; low level of mechanisation leading to dependence on unskilled and scarce labours; poor operational practices and processes; low level of technology leading to higher consumption of coke and thus higher air emissions; High cost of raw materials; High moisture content in the sand; Blow holes, pin holes, hardness etc. as common problems in the products.



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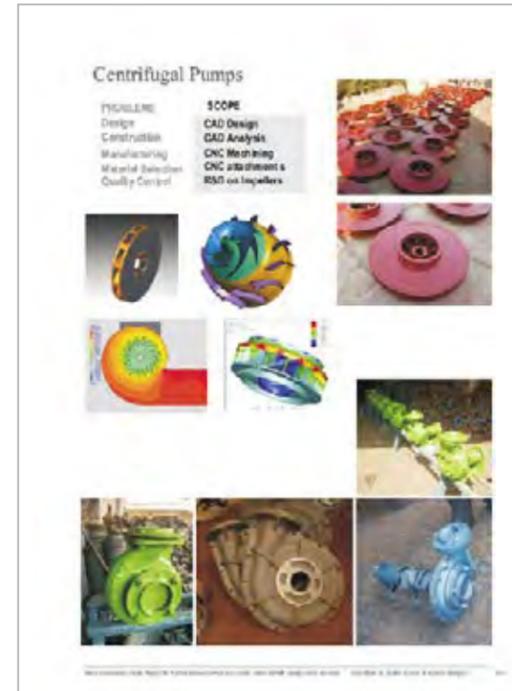
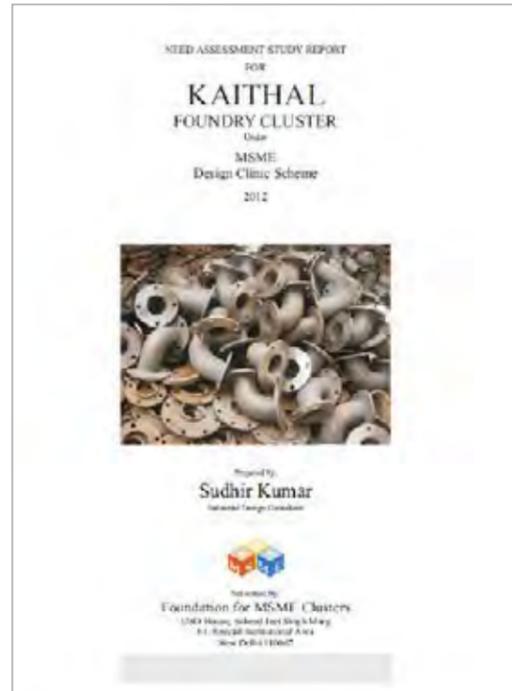


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The opportunities for design and development identified through detailed design audit of the units include, introduction of small injection moulded plastic parts for faster assembly and cost cutting; Design of gasifier based non polluting cupola for better efficiency and lower operating cost and at the same time making the process neat, clean and compact; Design of better material handling devices; Design of comfortable seating devices, tools and fixtures; Sand storage cum screening device; Storage racks for pumps and chaff cutter components; Design of tilting bucket and trolley to prevent direct load on labourers, safe in operation, better capacity, easier pouring etc.; Development of better hand tools, machines and power workstation for better results and safety to human from dust and other pollution hazards; Paint and drying booths for improved finish and looks; Development of product graphics for users and label

for branding; Multi layer moulding, appropriate mould machine to resolve parting line issues, mismatch between the top and bottom of the mould box, thereby improve production and quality of the components; Design of simpler parts with new material for new product construction, assembly method and approach towards mass manufacturing; Development of new products with improved features and looks. The machine should necessarily be lighter, easier to operate, user friendly and safe.

Proposed interventions and future direction for the cluster were categorized in three phases, with the immediate interventions during the first year included improved looks with quick changes in parts, graphics, branding and manufacturing processes. The intermediate phase included development of new product ranges keeping in



mind exports, with new technology, appropriate material and upgraded manufacturing practices. The third phase and the long term interventions included development of new way of manufacturing the products with mechanized processes, application of modern manufacturing practices following global trends and meeting international requirement.

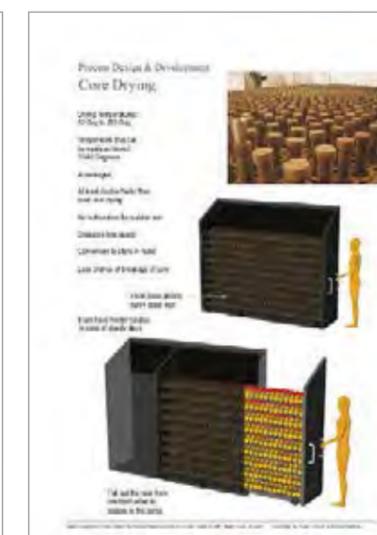
A five-day workshop was organized on 12th - 16th June 2012. Participants were divided into five groups, based on the products they were manufacturing, i.e. Centrifugal Pumps, Chaff cutter, Thresher and Rice Mill, Saag Cutter and Pipe Fittings. The design team worked separately with each groups to have focused discussions on industry specific issues and explore remedial solutions. Both, the new products development as well as process development were explored. Design's core strengths vis-a-vis development of quick alternatives, visualization and representation through sketches, computer rendering, and quick models and prototypes were used to its fullest to create platform for discussions, explore different perspectives and available options, and to finally convince the unit members of the need and scope of design interventions.

A new design of Saag Cutter considering ease of assembly, usage of standard components, simple design of cover, plastic and/or metal body parts, etc. was developed and 3D computer rendering was quickly developed. Similarly a non-return valve was studied, designed and 3D computer rendering was developed within 3 to 4 hrs of work, along with ongoing discussions to explore and incorporate suggestions. The redesigned product included improved and resolved form and use of PU coating on CI for better finish & reduced stresses, ease of assembly and properly placed logo for branding. Similarly oil cover was redesigned and prototype was developed using rapid prototype technology to fix it on the existing product and test it out.

The participants were exposed to latest designs, trends and practices in the field. These included usage of motorized and semi motorized hand tools, CAD, CAD analysis of the products and their components, availability and applications of CNC machines, etc. Experts were invited to share their experiences and interact with the participants. Quick sketches by the designers during the process of discussions helped participants visualize alternatives, suggest improvements and in the process develop solutions most appropriate to their context. A

trolley to assist mould making, a motorized paint booth with hangers for pipe fittings and internal water processing chamber, core drying and storage chamber to save available space, reduce breakage and faster and controlled drying, assistive device to carry and pour molten metal into moulds were quickly developed during the workshop.

The programme brought, for the first time, the designer to the doorstep of these MSME units. During the total span of over five months the designer visited the cluster several times, interacted with individual unit owners and their members, spent over twelve days for conducting the Need Assessment Survey and then workshop, thereby helped develop the much needed trust and confidence to then take this relationship forward. Several group projects were finalized by the end of the workshop, to be then taken up as part of the next component of the Scheme. The Foundation for MSME Cluster, a Delhi based NGO working with this cluster for many years, played a critical role not only to arrange the much required financial contribution on behalf of the participating MSME units, but also coordinated and facilitated at every stage of implementation of the programme.



(Excerpts from Need Assessment Study Report for Kaithal Foundry Cluster; Sudhir Kumar; [http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/NAS+DW\\_FoundationOfMsm\\_Pump&Motors\\_Kaithal.pdf](http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/NAS+DW_FoundationOfMsm_Pump&Motors_Kaithal.pdf))

## Foundry Cluster, Samalkha

Background: Samalkha is a small industrial town located near Panipat in Haryana. It is situated on the national highway number one and is 75 K.M away from the national capital Delhi. Samalkha is well known for its cast iron casting for Chaff Cutter and Cane Crusher it produces for domestic use. The chaff cutter is used to cut chaff to feed animals. The cluster was developed in late 40s.

There are 30 foundry units/manufacturing enterprises operating in the cluster. Employing 1,200 skilled and semi skilled workers, the cluster produces around 2,000 M.T per month (for ten months). Its turnover in the year 2010 - 2011 was approximately Rs 90-95 crores. The product design and the associated process are almost 120 years old. While the current products are doing good, and the demand is growing with increase in population and cattle, with declining labor force, skills and productivity of machines it is becoming difficult for the unit owners to carry out the business efficiently.

Findings/challenges: As part of the Design Awareness Programme, DAP detailed need assessment survey, NAS was carried out in the year 2012 to study the gap between the product-process-user-market and the environment. The designer-visited each of the units and had detailed interaction with the unit members. Qualitative and quantitative studies through observation, questionnaire, photo-documentation, etc. were part of the methodology used.

Survey and field visits were undertaken to capture the uniqueness of each unit in the cluster, dig out their unique strength and assessing the future. The NAS process covered brief study of the present set up and processes, the outcomes and the overall manufacturing dynamics that work in the cluster. Detailed study was undertaken to understand cluster history and evolution, evolution of chaff cutter, evolution of cane crusher, supply chain management, social, political and economical factors affecting the cluster, waste generation, issues of labor etc.



Detailed design audit was carried out to understand the present way of working and shortcomings with the Chaff Cutter and Cane Crusher. Study was also aimed to facilitate understanding where technology stand as on today and what best that can be suggested to the units to switch over to new products, technique, machines that bring cost reduction, improved products and markets. The designer also interacted with the users of the products as well as studied the markets and the competitors to understand present status and the problems faced by the users.

Equipped with holistic understanding thus gained through micro and macro study of the cluster and its units, the designer then organized five day design awareness workshop (DAW) where the findings were presented to the cluster members. The identified opportunities

were then taken up with individual unit owners to explore remedial solutions. The outcomes of the workshop included improvements/refinements of the existing components and manufacturing processes, new designs of products to better utilize available resources, wastes etc. as also some cluster level improvements.

*(Excerpts from Need Assessment Study Report for Samalkha Foundry Cluster; Sudhir Kumar; [http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/NAS+WS\\_SamalkhaFoundry.pdf](http://designclinicsmsme.org/Design%20Awareness%20Programme%20Reports/NAS+WS_SamalkhaFoundry.pdf))*

## Cluster Products

### 1.1 Chaff Cutter

Product specialization of the cluster is increasing of non-based chaff cutter and some tractors.

Chaff cutter is a mechanical device used for cutting straw or hay into small pieces to feed the livestock. It is generally used in dry or green fodder of Bajra, Jowar, Maize, Sorghum, Sugarcane, Paddy, Gram, Cowpeas etc. These small pieces of hay and straw are then used for feeding cattle.

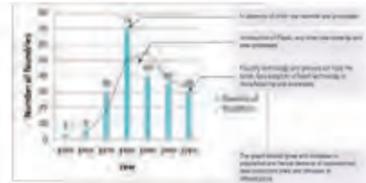
Chaff cutters is useful in dairy farms to cut green and dry fodder into small pieces before feeding the animals especially having such animals. The different types of chaff cutters manufactured in Samalika are hand and power driven. The price of the product ranges from Rs. 2,500 to Rs. 8,000. 70% of the foundry units in Samalika produce chaff cutters.



## Cluster History and Evolution

Samalika is well known for its cast iron casting for Chaff Cutters and Case Tractors. The cluster was developed in late 80s. In 1989 a family of local trader brought this business to this town. They were earlier working as traders in Gorakhpur and in 1989 they came to Samalika and established a single filled capacity machine the market potential in the region. Since the entrepreneur had worked earlier as trader in Gorakhpur, the technical know-how was limited and safety depended on the suppliers who migrated from Banabihari units of Gorakhpur. In the due course of time the quality of units started improving along with the growth and bifurcation of the family.

In 1998 another small foundry unit was set up by two brothers where crucible was used for melting and is responsible in establishing five more units with small size capacities. They introduced green sand casting with small size handi capacity to which can be changed almost every day with a capacity of 0.5 to 1 M.T. They started addressing the demand which was unmet by the capacity based units i.e. the casting of one heavy part, tractor castings, pump parts etc.



## Chaff Cutter User Survey



## Problems with Chaff Cutter



## Working Postures

An ergonomically designed space will include an ergonomic assessment of the following:

The individual's posture, their routine tasks and when time is spent for a particular activity, movements or repetitive actions.

The job tasks, which includes any devices required to perform the duties, like the mouse, the printer and the scanner.



## Agarwal Castings

Year of Establishment: 1989  
Unit Owners: Mr. Nand Lal Agarwal  
Contact Details: 0

Products: Machine castings, engine parts, tractor castings, pump parts, etc.

Location: Samalika, Gorakhpur, Uttar Pradesh.

Number of units: 10 units.

Capacity: 10 M.T.



## DAPs at Ambala...

By the completion of three years of its implementation, the Design Clinic Scheme for MSMEs achieved the targets of organising 200 Design Awareness Seminars (DAPs). By then 18 Orientation Programmes were organized covering 25 states and union territories and over 120 Design Awareness Programmes, DAPs, helped bring the designers to the doorstep of over 1400 MSME industries across the country, to discuss, explore, identify different opportunities and develop remedial solutions and strategies for their future growth.

The benefits of design, as emerged through these programmes and projects as demonstrative examples and case studies, have helped MSMEs and its stakeholders to further explore and try out the components of the design clinic Scheme. Thus, while the MSME associations and the individual MSME units were coming forward with their share of required contribution/s to organize DAPs, contributions were also received from the local bank, large scale industry etc. for organising DAPs for their respective MSME units and/or vendors. Also various state governments came forward with the required share of contribution to organize DAPs for different MSME clusters in their respective states. 20 DAPs in the state of West-Bengal were organised with the required 25% contribution from the state government. Similar contribution and supports were received from the state government of Karnataka, Assam and from the state government of Haryana.

Design, especially for the micro and small-scale industries, acts as catalyst to bring in positive approach and the much needed improvements in their products, processes and the system as a whole. Design helps bring people/industry/unit owners to come together and face the challenges of the contemporary markets of today. Design thus helps bring in new enthusiasm and energy. The Design Awareness Programmes, DAPs organised at Ambala, Haryana amply demonstrates these benefits to the MSMEs.

The PHD Chamber of Commerce and Industry (PHDCCI), the multi-state organisation along with the Ambala Scientific Instruments Manufacturing Association (ASIMA) came forward with the proposal to organize 10 Design Awareness Programmes, to cover majority of their industry members to sensitize and benefit from design. This industrious town located 200 Kms. north of Delhi is popularly known as the "City of Scientific Instruments". With over 800 units engaged in the business, Ambala is today the hub for scientific instruments that supplies to majority of schools, colleges, universities, hospitals and medical colleges, research laboratories etc. in the country. These units manufacture over 20,000 different types of instruments using more than 50 types of different raw materials. With the annual turnover of approx. Rs. 800 crore (with 25% from export), these units provide employment to more than 4000 skilled and semi skilled workers.

The enthusiastic members of ASIMA formed 10 different groups of units, each involved in manufacturing similar types of instruments/ equipment; namely Glassware, Heating Equipment, Biological Microscope, Electrical Instruments, Physics Instruments, Optical



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Instruments, Electronics Equipment, Pharmacy & Pharmacology Equipment, Wood ware and Clean Air Equipment manufacturing units.

The DAPs helped bring designers to the doorstep of these industries to discuss and explore opportunities and strategy for their further development and future growth. For each of the programmes the designer/s visited around 20 units from their group of industries to understand the problems and issues involved both at the micro as well as macro level. The NAS reports thus prepared, as preparation for organizing the workshop/s, besides detailed need and opportunity mapping also involved detailed research on the technological and market trends, competitors etc. Series of five workshops, each of the duration of five days were then organized within the span of one month. These workshops helped bring all the stakeholders - the unit

owners, association members, designers, experts from various related fields, Government officials etc. - onto common platform to discuss their various problems/issues faced by the group/s. Coupled with this series of presentations, expert lectures, brainstorming sessions, hands-on assignment sessions, idea generation and model/prototype development sessions etc. resulted in bringing in the much needed positive mindset, enthusiasm and approach.

New innovations in the form of digital microscope with touch screen control, magnification attachments with the smart phones, web cam computer connectivity etc. presented by the senior designer Mr. Balasubramaniam exposed the participants of the biological microscope cluster, to the future trends of their industry sector, and thereby opened them up to new vision and new directions. A visit to



one of the college, Sanatan Dharma College at Ambala, organized for the participants of the Physics Instruments Cluster, by its designer Mr. Ajit Dandekar as part of the workshop, probably for the first time exposed the participants to the actual usage of their instruments by their customers - the students and the teachers. The idea generation and prototype development sessions by Mr. Kulveer Singh Bhati, the designer involved with the Glassware Industry cluster, resulted into the development of a range of new products and applications within the span of five days of the workshop.

Each of these workshops began with sharing of the findings of the need assessment survey, NAS report/s in terms of issues/problems/opportunities identified for the specific cluster at the individual unit level as well as cluster level. These formed the basis of the discussions during the next five days and many of the issues identified - from developing and exploring new applications/markets to developing improved joineries, processes etc. - were taken up further for developing their solutions during the workshop/s itself. Besides these, the participants were exposed to various related areas such as IPR, Lean manufacturing, Integrated Industrial Development, Product Branding, Creative Management and Entrepreneurship etc.

Several leading designers and domain experts made presentations of different case studies and shared their experiences and insights as well as provided guidance and solutions to specific problems.

The initiative started by Mr. Ashwani Goel and Mr. Vipin Sarin, ASIMA, Ambala with positive and encouraging support and the much needed guidance by the PHDCCI, Delhi and facilitated by Mrs. Bindoo Ranjan, Design Clinic Scheme North Zonal Center, Delhi, has now emerged as a major movement in Ambala. Timely encouragements of Shri Satya Prakash, Director, Dept. of Industries, Government of Haryana and Shri Vijay Kumar, Director, MSME DI, Karnal, Haryana have helped further motivate the members to take these initiatives forward. It is indeed heartening to note that the Government of Haryana has approved setting up of the Common Facility Center, CFC at Ambala (and the approval for organizing 10 DAPs for different MSME clusters in the state of Haryana). The unit owners and the members of the industry association, majority of whom earlier looked at each other as competitors, are now actively participating with each other. The e-group formed by them having its members and experts from various fields, universities, research organizations and government, has now become a platform for them for continuous discussion



and information sharing. The younger generation/the young entrepreneurs of Ambala are now taking active interest as heads/coordinators of different sub-groups formed for various tasks/action plans worked out as part of workshop/s outcomes.

MSMEs face many challenges simultaneously in their daily struggle for survival. They find themselves entangled in the web of issues and problems, making it difficult to explore new opportunities. One of the unit owner at Ambala, as told me during my visit... "Ambala main koi bhukhe nahi marta; lekin koi tarakki nahi karta" (nobody dies of hunger in Ambala; but nobody grows) is the telling reality that the MSMEs face today. I hope the initiatives of the Design Clinic Scheme, with encouraging support from its different stakeholders, will help bring in the much needed positive change for the industries and their owners at Ambala, some of which have already been visible now. As Kulveer Singh Bhati, the designer involved with the glassware

cluster mentioned in his conclusion. "I am really amazed to see the strength of the Ambala scientific industry, it's not only a heritage industrial town but also an exceptional production hub with some advancement in technology and improvement in product quality the industry can again reach the heights." The industries at Ambala have the experience and capability to make this much needed change and progression.

*(Excerpts from Ambala Glassware Cluster; Ambala Biological Microscope; Ambala heating Equipment Cluster; Ambala Electrical Instruments; Ambala Physics Instruments; Ambala Electronics Equipment Cluster; Ambala Optical Instruments Cluster; <http://www.designclinicsmsme.org/empanelment-media-reports/reports/design-awareness-programme-reports>)*

## DAPs in Bihar

With majority micro and small enterprises, Design Awareness Programme (DAP) forms critical component of the Scheme as it brings designers to the courtyards of these enterprises. This gives the crucial link to connect MSME unit/s to design application through quick remedial solutions and thereby help convince the unit owners to the benefits of design. Resultantly, it helps connect these enterprises with design. While creating positivity among its participants, design helps improve existing situations. Especially for these enterprises, designer works as catalyst. Most of these enterprises operate in unorganized form, and thus bringing them together on one platform, especially the micro enterprises as a group, was one of the critical challenges. The participants/members of the MSME units would hesitate to openly discuss in a group. The programme thus included the designer visiting individual units to discuss, understand and explore opportunities for improvements.

Learning and experiences gained through organizing these programmes for different sectors of industries across the country were constantly utilized to further improve, systematize and simplify the implementation processes. The Scheme demanded financial contribution and investment from the participants/group/cluster to organise the entire programme. Gaining their trust and confidence was an important first step for the Implementing Agency. Specific forms and formats, detailed process charts, manuals and guidelines were developed to better communicate objectives, processes and benefits of the programme to all the stake holders. The members of the implementing team had to be in constant touch to handhold them from the beginning to the end of the programme, duration lasting few weeks to several months - from the first meeting to introduce the Scheme to the time the expenses are reimbursed. The implementing team members helped coordinate among its various stakeholders, the participants, association/apex bodies, designer/s and govt. organisations etc. to schedule different activities starting from organising need assessment survey, workshop, report development and submission, reimbursements etc.

With the experience and confidence thus gained, the implementation team then focused on further improving the effectiveness and impact of these programmes. As an exercise to scale up this unique design intervention approach across the country, it was important to increase the speed of implementation through organisation of simultaneous and tightly scheduled programmes. 36 Design Awareness Programmes were organised in the state of Bihar in the year 2013-14. Government of Bihar came forward to financially support these



programmes on behalf of the participating units. Sant Mira Samajik Vikas Seva Sansthan, an organisation working for the MSMEs in the region, worked with the Scheme implementing team to organise 14 of these DAPs. These programmes were organised in the short span of two months, February and March, 2014. They were organised at 11 locations, with 417 MSMEs participating and directly benefiting from the same. Upendra Maharathi Shilp Anusandhan Sansthan (UMSAS) a Patna based craft and design institute organised 22 DAPs, from which 12 were organised during June, July 2014 and remaining 10 programmes were organised during October and November, 2014. 549 MSME units participated and benefited from these programmes organised at 16 locations in the state. Total 39 DAPs have been organised in the state of Bihar covering its 14 districts. These programmes covered 11 MSME industry sectors ranging from Ceramics & Glass, Food Processing, Garments, Handicrafts, Machinery, Packaging and Branding, Wood & Bamboo sectors.

Expression of interests were invited from over 1500 designers/design firms/design institutes who had registered with the Scheme by then, to take up these design awareness programmes. The applications/interests received, were then scrutinised together with the organising agencies to select the designer/design firm having experience relevant to the specific cluster. Professors and faculty



members from IIT, Patna; NID, Ahmedabad; NIFT, PPDC, FDDI and designers and design firms from Delhi, Pune, Bangalore, Ahmedabad, Kolkata came forward to work with these clusters and their industries. These designers stayed at the locations for over two weeks and interacted with the unit members individually and in groups to discuss and identify opportunities for improvement and explore remedial solutions. As part of the Need Assessment Survey for the programme, designers visited MSME units to discuss and understand issues at the micro level. Designers also visited and met other stakeholders of the clusters, such as suppliers, dealers, traders, buyers, etc. Before starting their survey, designers prepared themselves with relevant secondary information with respect to changing trends, technology, materials, other competitors etc. The detailed research helped designers gain macro and micro perspective vis-a-vis the status, concerns and issues faced by the cluster. The holistic understanding thus developed, helped designers prepare for the workshops with the participants to explore remedial solutions. Closer interactions with the participant MSME units during the first week of stay at the location, helped designers convince them to come forward and participate in the workshops.

Organisation of workshops at the cluster locations generated lot of interests and also curiosity. For some of them, it was for the first time



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such government initiatives reached to their doorstep. Hon. Minister, Industries, Govt. of Bihar; Principle Secretary, dept. of industries; Director, dept. of industries; Director, MSME DI, and other dignitaries traveled to the cluster locations to inaugurate these workshops. Experts from different fields ranging from technology, processes, marketing etc. visited the locations during the workshops and shared their rich experiences and knowledge with the participants. Workshops created platforms for all the stakeholders to come together, interact and share concerns, knowledge and experiences thereby broaden their perspectives. Findings of the need assessment survey by the designers were shared, discussed and remedial solutions were explored together with all the stakeholders. With the focus on developing contemporary applications, new designs were explored and developed during the workshops. Participants were exposed to

design process and were sensitized to different elements of design. Product quality, usability and functionality, aesthetics and material sensibilities, trends and market segments, branding and packaging, etc. were few of the important design elements introduced and explored during the workshops. Each of the workshops resulted with range of new designs and their prototypes that became part of the exhibition during the concluding sessions of these workshops. Wherever possible, buyers were invited to explore markets for these new designs.

The Need Assessment Survey reports of each of these workshops with their findings, also proposed short term and long term interventions at the individual units as well as at the cluster level. These reports would form the basis for further interventions by different



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agencies. The workshops provided platforms to develop empathetic understandings, the much required contacts and networks and long term relationships between the participant MSME units and the designers, experts from different fields and members of govt. organizations which is sure to blossom further to the benefits of the entire cluster. Removing the suspicions and barriers, participants explored formation of Self Help Groups, SHGs and Cooperative societies, to come together to face outside competitions.

Design sensitization equipped artisans and unit owners with new approaches to look at their products from holistic perspective including users, markets, finance, quality and finishes, etc., and thereby developing the much required positivity and confidence to face future challenges. Product catalogues and brochures were developed of the new designs developed during the workshops for better marketing and distribution. These new designs and further refined and improved existing products were displayed during the state level annual craft fair organised by UMSAS at Patna. The programmes received constant news coverage from both print and television media at the state level. Ministry of Industries, Government of Bihar announced further support to these clusters for long duration design interventions through professional design projects under the Design Clinic Scheme.



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## “लोचा, सोचा और किया”

the MSME approach as described by one of the speaker at Ahmedabad

## Small-scale Industries in India: Challenges and Opportunities

Over 95% of industries in India are MSMEs - micro, small and medium scale enterprises. To cater to the design needs and expectations of these three major Indian industry sectors was thus a great challenge for the Design Clinic Scheme. Each of these sectors, the micro, small and medium scale industry sectors, is fairly different in terms of their characteristics, the issues faced by them as well as their aspirations. The guidelines and formats for the three components of the Scheme had to retain the much-needed flexibility to cater to the individual industry needs, expectations and contexts.

The ardent task of taking this unique design intervention Scheme to the needy MSME units across the country also provided us the opportunity to meet and interact with the owners and members of MSMEs and thus gain better understanding of some of the challenges and issues faced by them. The Need Assessment Survey reports (part of the Design Awareness programme, DAPs) developed by the designers based on their visits to the units and their detailed interactions with the members and owners of these units, have helped generate fair amount of information on their present status as well as opportunities for further improvements.

From the three MSME sectors, the small-scale industry, SSI, sector is the dominant industry sector of the country. This sector contributes significantly in terms of its manufacturing output as well as towards employment generation for the country. These industries are also the main suppliers of the components/parts to most of the products manufactured in the country. Majority of these industries would thus be either vendors, original equipment manufacturers for medium/large industries, fabricators, and/or component manufacturers, thus relying heavily on labor and process costs for their earnings. The sector thus faces constant competition from within and outside the cluster as also from the international suppliers/industries.

Small-scale industries thus face constant struggle for their survival. To survive in today's' fiercely competitive and fast paced global

markets, they either need to develop themselves as more effective and productive vendor/s and component manufacture/s for the larger industries or to move up their value chain to be product manufacturers. As the manufacturer of one's own product, the industries can command value for their core strengths and product features, rather than rely on labor and/or process costs. The Scheme is designed such to support SSIs to improve their existing processes, products and systems to be more productive and efficient and also to explore their own products and unique solutions for the contemporary markets. The Scheme brings designers to the doorstep of these industries to identify opportunities to improve their existing products/components and processes. This helps develop the much needed platform for their constant and continuous interactions.

Small-scale industry usually works and operates around individual/owner's interests, passion and understanding. The ones that have succeeded over the years have normally grown together with its group of workers. It creates a healthy relation between the owner/s and its workers. Amar Industries, the small-scale industry at Samalkha, the industrial town 75 Kms north-west of Delhi, was established in 1965 and majority of its workers are with the industry for more than over 30 years. Similarly Moonlight Engineering Work, a small scale industry involved in manufacturing and repair of dispenser pumps and nozzles in Kolkata has most of their workers with them since the establishment of the unit in 70s. Most of them being school dropouts got themselves trained here. The workers on the shop floor enthusiastically shared and explained many of their improvements/innovations for their existing processes, work area, products etc., when Mr. Niyogi one of its partners took me around to show their factory. As I was late to reach the place, they had postponed their lunch break by an hour so that I can see the factory in its working condition and interact with all of them. The workers here are in charge of his/their work area and/or the specific processes handled.



With further understandings and experiences as the industry grows in confidence, it invests and expands at different levels. It expands internally or set up another industry/unit, thus offering fair degree of flexibility and opportunities to its workers, to the partners and to the relatives/siblings to be part of the growth process. While Moonlight Engineering Work has now set up departments within the unit, Amar Industry has now three units working in tandem with each other. Anjali Products, one of the Kitchen appliance-manufacturing industries in Mumbai developed themselves into cluster of units each owned by relatives/friends that together produce variety and range of products.

The focus of these industries, as majority of them/their owner/s would have started as fabricators, machinists and/or vendors, would

thus be on technicalities of the product/components. Value addition in their products/components in terms of improved quality, finishes and finesse through appropriate design intervention would be an important contribution here. The famous saying "quality products are designed rather than inspected" will be most appropriate here.

While these industries utilise their limited resources - their available manpower, skills, machines, etc. most effectively, the inherent limitations of these resources form barrier for them to compete with today's contemporary industries. Design here should act as catalyst to convert these constraints into unique opportunities. A user-centric approach would help them convert their technological solutions into products and user-specific solutions thereby help create the much needed value addition to their strengths. While developing

such unique solutions/products as per the market and user needs design will help align the solutions to the available resources and capabilities of the individual units. The creative engineering and design approach would help offer solutions to improve their existing products, processes, productivity, the ones that can be immediately implemented with minimum of investment and resource allocations, thereby demonstrate immediate benefits for these industries.

The design clinic approach of design intervention therefore is more appropriate for these industries, and by now interesting results and outcomes have been demonstrated through the design awareness programmes and design projects undertaken with the support of the Scheme. Design approach helps look at the industry and the business in holistic form and develop range of opportunities and their implementation strategy for the specific unit/s. Developing indigenous semi-automated machines and equipment of appropriate scale, capacity and size, the ones that are affordable and practical for these industries, is one such critical area of intervention emerged from these studies.

These industries as they would be operating with limited resources, appropriate common facility centers for their research and development activities, quality improvement processes, data and information sharing, knowledge of market and user expectations and trends etc. will form an important support towards handholding and capability development process. The Product Design and Development Centre, PDDC, Manila, Philippines, and Tapei Design Centre, Tapei, Taiwan are some of the examples of such common facility centers.

Small scale industries by the very nature of their business, are more agile and closer to the markets and their users. These industries are best placed to understand individual user needs and expectations and offer customized solutions and services. The small scale industry that will be able to combine its local understanding and experiences with



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global knowledge and contemporary approaches will gain the much needed edge in mass-customized markets of the future economies.

We have organized 200 design sensitization seminars for different sectors of MSMEs across the country. Also over 80 design awareness programmes for different micro, small and medium industry clusters were organized within two years of Scheme implementation. The need assessment survey reports of few of the small scale industry clusters indicates following broad macro level challenges faced by these SSIs

#### Industry

- Traditional manufacturing processes mostly with low level technologies make units less competitive in regional/national and international market.
- Old, inherited plants make it difficult to compete against today's energy efficient and higher productive technologies.
- Though better and larger markets available, majorly manual processes make it difficult for the units to cater to them.
- Low level of mechanization leading to dependence on unskilled and scarce laborers.
- Poor operational practices and processes.
- Unbalanced investment of resources, ie. Machines, workspace etc.
- Unhealthy competition due to close proximity of large numbers of similar units.
- Lack of cooperation and sharing of facilities among units
- Competition within the cluster/group of units - none stick to the price
- Limited knowledge of newer and advanced technology and processes among the unit owners.
- Lack of interest among younger generation to get involved in their traditional business
- Lower motivation level and professional approach among the unit owners to manage the business
- As mechanization involves huge investments, the unit owners are forced/prefer to work with the existing technology only
- Very few young and qualified entrepreneurs in the profession.
- Younger generation more open to change
- Systematic plan for future intervention/development from government agencies missing
- Collaborative efforts with Academic/R&D institutions are missing.

#### Resources

- Haven't moved/up-graded to modern technologies and designs
- Investment for modernization/mechanization/technology up-gradation, nearly impossible

- Lack of knowledge of standard accessories, newer manufacturing techniques etc. and their availability in the market.
- Limited or no input drawing/data management, revision/change request procedures
- Limited capability/capacity of tool design, development
- No/limited resources for investment as whatever available is used for regular turn over
- Need for R&D facilities, shared design services, designer on demand, CAD tools/training centers, skill-set improvement, up-gradation, further skill-development training centers
- Lack/shortage of skilled and unskilled manpower
- Workers education and lack of use of standard procedures
- No trainer/knowledge provider in the cluster for skill development.
- Skilled workers/graduates from the technical institutes located nearby not connected/do not join the units
- Shortage of molders/machinist (skilled manpower)
- Need for information data base of local skilled workers on demand
- Moulders/pattern makers/machinists (skilled workers) share the design/s with other units
- Unskilled local workers also involved in farming (seasonal work) and thus their non availability during certain period of the year
- Labor/workers shifts from one unit to another
- Unavailability of continuous power
- Poorly constructed roads, internal roads leading to increase in breakage, rejection

#### Raw Materials

- Scarcity and/or unavailability of raw material/s.
- High cost of raw material/s and their price fluctuations
- Use of poor quality and untested raw material/s. The units not able to get the right material individually due to low off take. No efforts made to pool requirements and buy the same collectively to get volume, price and supplier preference

- Units/business developed over the years, around the availability of raw materials (furniture units etc.). With the unavailability of raw materials in the present situation, it becomes unviable for them to compete. New material (wood alternatives) not produced locally and thus has to be brought from outside.
- Productions, manufacturing processes developed around earlier available raw materials and the change of raw materials make it difficult for the units to reorganize their manufacturing set up.
- Unstable and irregular market demands forces the units with steady/good production to store raw materials, products in and around/outside the units.
- Need proper and effective raw material, scrap material, finished and unfinished components and products etc. segregation, storage, inventory methods and management processes, proper storage space and packaging to reduce damages and wastage

#### Products

- Same/similar products manufactured since years/decades, without keeping abreast of ever changing market trends.
- Mostly vendors, the units are dependent on other industries and their product/market demands
- Products mostly of jobbing (job work , made to order) nature and changes from time to time
- Owners need to be on constant look out for new product/parts that can have good volume
- Products/jobs uncompetitive due to poor design
- Units work at marginal profits/only on labor cost, mainly due to poor finish of their products/jobs.
- Poor quality standards and poor packaging techniques make the units unable to cater to export markets.
- With weak/poor brand image of the cluster, the units are forced to sell their products in unorganised markets.

#### Processes

- The level of technical knowledge and practices normally poor across the units of the cluster.
- Limited or no exposure of better and efficient technology and operational practices.
- Majorly manual operation of production used, with limited or no control on quality, finishes, productivity.
- Rejection and rework at every stage due to process inaccuracies and human error
- The methods and practices of manufacturing do not offer much room for achieving cost efficiency in production.
- Wastage at every stage, too much of wastage
- Process does not allow usage of alternate materials
- Higher overheads and maintains
- Improper/unbalanced utilisation of production capacity
- Difficult to scale up operation/s.
- Limited or no in-process material handling system and methods for subcontracting, product delivery, raw material procurement.
- Scope to upgrade skills and overall working method at every stage of manufacturing
- Scope for redesign/improvements to reduce numbers of processes/operations, easier assembly, inventory management etc.

#### Quality

- Final product quality poor/weak, no/limited attempt towards improving the same.
- Lack of Inspection procedures
- Quality inspection not regular as is done with in-house facilities
- Unit wise test lab/department is not available
- Absence of quality inspection leads to wastage and low export market.

#### Work area

- Undefined work areas; unorganized workplaces, storage, tools
- Poor working conditions leading to labor absenteeism and low turnover.
- Inadequate ventilation, inadequate and improper lighting conditions, space congestion, etc. common issues
- Need of proper uniform/work-suits as workers wear loose clothes, improper foot wears
- Very few material handling devices - leading to most material handling tasks performed manually
- Lack of/few basic facilities for workers
- Environmental compliance not strictly followed
- Absence of proper waste/solid-waste disposal system, leading to polluted and unhygienic surroundings
- Pollution control devices normally not installed/not in proper working conditions

#### Marketing

- No brands and/or visual identity of the unit/s and/or cluster
- Unable to compete with branded products
- Lack of orders from organised buyers; restricted to unorganized markets
- Traditional marketing system through middle-persons, weekly markets/bazaars etc.
- Traditional markets fetches them very low margin. Owners are not aware of modern marketing channels
- For years, the units confined to same products, many of them seasonal products thus limited business during offseason.
- No export and no participation in displays/exhibitions in India and/or abroad
- Limited or no knowledge of national and global market expectations and trends.

#### Design

- Product development process lacks some of the key elements of a design process, ie. market context, research, user study, product context, technology integration, material innovation etc.
- Originality, exclusivity & contextual thinking are not always found as core drivers of business.
- Newer segments are not adequately addressed
- Not enough awareness or consciousness about new trends and markets.

#### Finance:

- Smaller units work mostly on credits and thus with weak financial position.
- Low volume and declining markets threaten these units towards financial bankruptcy.
- Lack of awareness of business costing
- Lack of awareness of different government Schemes
- Lengthy process involved in accessing government subsidies and Schemes resulting in unit owners losing interest.

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## Micro Enterprises in India: Characteristics and Concerns

Micro enterprises drive local economies of the country. They provide wide range of vital products and services for their local communities. Thereby micro enterprises help reduce costs and add business convenience. Micro enterprises, many of which are craft enterprises comprise the vast majority of the small business sector of the country. Micro enterprises create jobs at local level, enhance income and strengthen purchasing power. In the context of India with its large rural population, micro enterprises help arrest migration to cities. They create employment opportunities as well as help them diversify their income. Micro enterprises thereby help instill self-reliance, positivity and self-confidence.

Majority of the micro enterprises in the country are founded on the rich heritage of Indian crafts that so beautifully integrate local resources and skills to create utilitarian products for the local needs and markets. "It was found that Shola craft is the key engine driving the economy of Mandirbazar block. A remarkable feature of this economy is the existence of a healthy balance between everyday work, environment and way of living of the local people. The Sholapith craft plays a valuable role in building a local economic sustainability and a contemporary local society in Mandirbazar area." writes Saurav Kumar the Strategic Design Management graduate, in his need assessment survey, NAS report as part of the Design Awareness Programme carried out under the Design Clinic Scheme for the micro enterprises engaged in Sholapith craft products at Mandir bazaar, West Bengal.

Micro enterprises normally would be self-initiated and self-managed. The owner of such enterprises would be fully involved in all aspects of business. He/she may be assisted by family members and sometimes few workers would be employed for manual support. Micro enterprises require relatively simple technology and management methods. They would be based around labour intensive and traditional methods of production. These enterprises normally operate from their home or utilise the space available in or around

their home. They thus operate with minimum of capital investment. These enterprises may be involved in producing tailor-made or single size products in smaller quantities, component/s of product/s or specific process/es. They may be service based enterprises or involved in trading.

The economic importance of this sector also lies in its high employment potential. Over 50,000 people, majority of them women, are involved in Agarbatti rolling industries in Baruipur, West Bengal. More than 60,000 people are engaged directly and indirectly with the scissors manufacturing industries at Meerut. The Meerut Scissors industry is over 360 years old. The Indian footwear manufacturing industries engage around 1.10 million people, with over 2000 artisans involved in ladies footwear industries in Lucknow itself. Channapatna, also called the city of toys, is a hub of micro and small scale units involved in making lacquered toys. Situated at about 65 Kms from Bangalore towards Mysore, the sector engages around 6000 people directly and indirectly. The 150 years old brass and bronze utensil cluster at Pareo, 40 Kms. from Patna, Bihar, employs nearly 3000 people from the village.

These enterprises, as majority of them established to serve local markets, are today struggling for their survival. The immediate markets catered earlier by these enterprises are now flooded with cheaper, mass produced products. Their products, majorly the handicrafts have lost their utilitarian values and the importance that they once held in societal functions, ceremonies, rituals, festivals etc. They are now sold mostly for their decorative and heritage value as gift items. The products and the skills that once commanded value have now been reduced to another labor/a manual work. Though considered as source of innovations, these industries today find themselves vulnerable and at a loss to compete with the fast paced, better equipped industries. And their markets are distanced. Most micro enterprises are today completely cut off from their markets, for getting their raw materials as well as to sell their produces.



Micro Enterprises are thus dependent on local suppliers, dealers, middleman and/or the exporters for their raw materials, for their work/order and also to sell their products. The markets and the business would be controlled by these dealers, the middlemen or by the exporters with strong power of negotiation. These expose the micro enterprises to exploitations. Most work gets done either at a very low labor charges or with minimum profit margins for the artisans/enterprises. In spite of putting in long hours, high volume of production and involvement of family members, these units/artisans normally end up getting daily wages as their earnings. Irregular and limited orders create constant sense of insecurity and competition within the cluster. Being completely cut off from the markets, these units do not get any feedback on their work or their products, making them further dependent on the exporters/traders for their orders.

Without the exposure to contemporary market demands and trends, the artisans feel handicapped to either improve/refine their existing products or innovate new products. These have caused stagnation and saturation of the markets as no new designs have been developed for many years and the traders/exporters normally do not possess these skills. "The current mode of design & product development is copying from the magazines & from the samples sent by the wholesalers." writes Mr. Mansur Lari in his NAS report of the Ladies Footwear Manufacturing Cluster, Lucknow.

Most artisans/workers involved in this sector of industry come from economically and socially weaker strata of the society. Many of them fall below poverty line. Some of them, even if have agriculture land, due to lack of resources would not be in a position to generate

yearly income through the same. The young generation, educated and the ones with even minimum of skill and capability would prefer to move out to cities or take up a job. Micro enterprises and micro businesses are unattractive to the young generation, thus creating severe shortage of skilled labours for these enterprises. The ones thus left, majority of them with lower education and exposure, prefer to work with traditional, many times primitive methods and processes of production, management and business. Though many of these artisans are talented and skilled workers and open to innovation, lack of fund deters them from taking any further development work or any risks. Coupled with this, inconsistent and irregular work/orders make them further dependent on traders and/or established enterprises of the cluster. And in spite of producing same and/or similar products and selling them mostly to the same dealers/markets, the micro enterprises prefer to work as individual units rather than as a group/cluster. One would see income disparity among the enterprises, among the owner/entrepreneur and his/her workers. Even though the products, craft and/or the cluster is well known and well established in the markets, financial conditions of its artisans/workers remain weak.

“Given the very expensive raw material, limited electricity, the need to buy many inputs, inadequate telecommunications and road infrastructure, and a labour force that does not always understand the efficiency demands of the market, the micro enterprises fight an uphill battle against the efficient, low-cost alternate products and their manufacturers.” writes Saurabh Kumar in his NAS report for the Sholapith Craft Products Cluster. Traditional methods of production, labour intensive processes, unergonomic and unhygienic work environment, old and improper tools and techniques, all result in low productivity, lower quality of products and inconsistent outputs. “The process usually practiced to roll Agarbatti here is unergonomic. The uncomfortable sitting posture can affect the spinal cord resulting in critical health problems. Providing proper sitting arrangements and tools will help the workers increase their productivity.” mentions Piyali Baruah in her NAS report of Agarbatti Cluster, Baruipur, West Bengal.



Lack of proper storage space for both the raw materials and finished products, results in increased rejection and wastage.

Micro enterprises demand holistic, multi-pronged interventions to be initiated simultaneously at the individual unit level as well as at the cluster level to improve and upgrade overall quality and productivity of the products. Though each one of them operate as individual

units, these enterprises form a cluster of similar units. Cluster based intervention in the form of Common Facility Centre, Material Bank, micro-finance facility, primary health care facility/hospital and similar other interventions and initiatives that encourage and enhance community and cooperative participation, would form some of the important initial initiatives required at the cluster level. This should result into formation of an appropriate platform that helps connect the strengths of the cluster as well as the individual units to the demands of the contemporary markets. The interventions would also include trainings and exposure to various areas of business, management, technology and production.

Specific design interventions would include new design and redesign of products as per the demands of the markets catered, development of new range of products, improvement of processes, joineries, finishes and product quality etc., design of appropriate support systems including appropriate low cost material handling equipments/aids for internal transport, storage etc., packaging, branding, marketing and communication materials and strategy etc. The design interventions here should focus on improvement of work environments, workstations, development of appropriate tools, techniques and machines,

The objective of these initiatives, while aimed to create the much needed value addition in the existing range of products of these enterprises, enabling them to compete and survive in today's contemporary and highly competitive markets, these should help improve the quality of life of the people involved. “An ideal cluster should be a centre of better eco-friendly environment, quality production, with user friendly workstations and tools, with sustainable practices and processes in place.” writes Piyali Baruah in her NAS report of Agarbatti Cluster, Baruipur, West Bengal. These initiatives will help country's micro enterprises and the artisans/workers involved to move up the value chain in their life.

Some of the important characteristics and concerns of micro-enterprises emerging from the Need Assessment Survey carried out as part of the Design Awareness programmes under the Design Clinic Scheme for MSMEs for few of the micro-enterprises clusters, have been compiled and listed as under:

#### Micro-enterprise

- Uses all/majority manual processes.
- Labor intensive processes
- Traditional (many times primitive) methods of production.
- Inconsistent quality, low volume production
- Reliance on dealers, traders, middleman, suppliers, exporters
- No market exposure and/or marketing arrangements to sell their products
- Similar looking, cheaper, mass produced products available in markets
- Unhealthy competition with similar clusters/industries
- Units/enterprises established nearby, forming a cluster of similar industries
- Most units produce same or similar products, sells in the same markets/dealers
- Lack of unity among the units, prefer to work as a single/individual entity rather than a collective one.
- Mostly unorganised industry/time management an issue
- Appropriate process of costing not followed, sudden changes in prices
- No one sticks to prices - no standard price for products
- No Product standardisation
- Not Suitable for batch production, low production capacity
- Work environment, workstation, safety some of the major issues
- Lack of basic hygiene and health measures
- Logistic issue to cater to market demands on time
- Unavailability of workers, skilled workers
- Young generation's aversion towards this job

#### Workers/Artisans

- Family members involved
- Family members carry out each and every stage of production process.
- Artisans/workers/people involved in this trade mostly from lower income group and many of them from below poverty line.
- From lower strata of society, many of them from minority/schedule cast
- Old, traditional methods and processes still in use.
- No work for artisans during monsoons.
- Lower wages, laborious work, irregular job forces artisans to migrate to cities and/or other regular jobs, like working on construction sites etc.
- Diversification towards other jobs due to better pay & less labor.
- High income disparity between the worker/s and the unit owner.
- Raw material normally provided by local supplier & middle man.
- Increased raw material price.
- Irregular/inconsistent supply of goods/orders
- Do not get regular work for the whole month, sit idle for few days every month.
- Labour charges provided to the workers or the profit margins very low.
- Dependent on traders, middleman, exporter for marketing or selling their products.
- Doing only order work, decreased market orders
- No or limited excess and exposure to market/s, buyers, users
- Don't get any feedback on their work.
- Unable to innovate, improve, refine their work as per market needs and demands.
- Sense of insecurity and competition within cluster.
- No medical facilities nearby.
- Low education level affect their growth
- Lack of technical knowledge
- Illiteracy, lack of awareness hindrance to communicate, to avail benefits of government policies.



- Understanding of business, costing, management low or nil. Sometimes end up selling their products at minimum margin or at the cost rate.
- Lack of awareness about education, technology, work environment and health consciousness.
- Low/no motivation for further development.

- Casual approach
- Unremunerative/low returns deter next generation from taking the cluster forward. No system/plan for future growth/interventions.
- Young generations not very interested to continue the same profession/business, seeking different occupation/new job opportunities.

#### Technology/Tools/Processes/Equipment

- Very few units/enterprises equipped with machines.
- Still use the same old techniques and machinery for production.
- Old machines and manual processes affect the quality of products
- Not much technological up-gradation visible
- Unorganized work environment, working pattern, time management.
- Haphazard layout of the working area/unit
- Poor work conditions
- Poor production quality results in wastage and rejection, especially for exports. Reduces market.
- Laborious and time-consuming processes make it difficult to complete orders on time.
- No system in place to regulate breakage, defects, quality standards
- No quality check/inspection of products and processes in place.
- Difficult to standardize products/production. Variations in work/output.
- Critical aspects of finishing ignored.
- Do not have finishing machine/s
- Restructuring of production process required
- Process improvement required through basic systems, tools & technology up gradation for optimum design & quality delivery
- Appropriate technology interventions to increase productivity, safety and health standards
- Unergonomic and uncomfortable processes practiced
- Uncomfortable work postures (coupled with long hours of work)

results in critical health issues; decreased productivity

- Traditional, mostly outdated tools & equipment used
- Need to develop appropriate hand tools, equipment, logistic aids
- Proper sitting arrangements through appropriate workstations needed to aid correct body postures
- Work environment considering lighting, air circulation/ventilation required
- Appropriate safety kits, masks, gloves etc. required to enhance safety, overall health and hygiene condition.

#### Resources/Raw-materials/Infrastructure

- Raw materials shortage, insufficient supply, unavailability
- Raw material quality varies considerably
- Poor quality of raw materials hampers quality, productivity and production resulting in loosing of markets, exports.
- Improper storage affects quality, property, composition of raw materials
- Lack of proper storage system, infrastructure for storage of raw materials, semi finished and finished products; spaces undefined
- Appropriate storage space, staking facility needed
- Appropriate technology/aids needed to reduce raw material wastage
- Raw material testing facility required.
- Common Facility Centre , Material Bank to provide standard quality of raw materials

#### Training/Skill Up-gradation

- Lack of/low awareness of new designs and techniques developed in other parts of the country/world
- Awareness and exposure of modern techniques and processes required
- Technical training, skill up gradation and skill refinement trainings from time to time
- Training and skill up gradation programme to improve quality, productivity packaging.

- Awareness and training of comfortable work postures to reduce physical strain.
- Handholding and technical support for implementation of best practices.
- Training and awareness of best business, management practices, standard rates of the products (both purchase rate & selling rate)
- Many of them unaware about their buyers, name of the company under which their products are sold.
- Exposure to contemporary market trends, customer demands, emerging life style
- Exposure to creativity, design thinking to improve and develop new products to cater to current market demands.
- Vocational training to make accessories, jewellery and/or small utility products to create and provide employment during monsoon.
- Workshop/training to design and develop new products/ accessories to utilise wastage.
- Need for a platform for regular interaction, collaboration among cluster members to develop ownership, positivity.
- Co-creating strategy for future growth, cluster identity
- Regular participation in exhibitions, industry expo.

#### Product/Design and Development

- Present mode of design & product development is copying from magazines & from samples sent by wholesalers.
- Monotony in design and products
- Lack of contemporary designs make cluster unattractive to buyers
- Market penetration difficult without product variety and range
- Need for diverse range of products as per contemporary market demands
- Product range, specific to the end user needs usage and purpose.
- Contemporary aesthetics and improved finishes required to attract new markets
- Target new market areas not only nationally but also internationally.

- Need for design interventions in the area of processes, material composition, assembly etc.
- Devise modern packaging techniques as opposed to the current manual process.
- Need for attractive, stylish and usable packaging to cater to global market.
- Visual identity, branding, marketing support required
- Development of a common (cluster) brand instead of multiple brands
- Better displays and retail outlets required to showcase products.

#### Cluster

- Majorly a labor based industry; cluster gets formed due to cheap and ample labor around.
- Though good demand and sizeable markets, very little development visible.
- Constraints of processes used, economic imbalance, traditional social structure, some of the issues stagnating the growth of the cluster/s
- Lack of funding major concern and hindrance to the growth of individual units as well as the cluster
- Absence of better, modern infrastructure inhibits international buyers to purchase despite good product potential & demands.
- Established enterprises, larger units work as competitors; micro units do not get guidance, support from them
- Cluster based government interventions much required.
- Unorganized industries, cluster; no cluster association
- Unavailability/shortage of skilled labor, technicians
- Competition within the cluster
- Undercutting amongst the units
- Competition from mass/machine producers
- Over production of low quality goods
- Limited product range
- Dependence on regional market
- Seasonal work only 6-8 months



- Overall level of education within cluster poor
- Transportation and connectivity important issue
- Supply chain issues; common vehicle for the cluster
- Better hospital, health facility, health security required
- Better Connectivity with internal roads to reduce damages, save time
- Cluster and its units dependent for their work and raw materials on local dealers, middle men; exposed to negotiations, exploitations
- Very few fixed clients, dealers; fluctuated orders
- Need to move/expand markets, dealers,
- No brand & market identity makes units depend on wholesalers
- Establish cluster as brand
- Marketing & branding absent
- Not a single website of any unit
- Very less advertisement in markets
- Usage of internet, emails absent
- Change of Government policies such as imposition of duty & taxes

- Need for common facility center/community store/material bank,
- Micro finance/bank credit facility required
- A localized quality testing lab, research and technical suggestions
- Training Center, Product Development Center
- Explore collaborative, joint venture to increase production & marketing
- Need to develop cluster based professional system, approach and business model
- Attract younger generation to take up responsibility
- Awareness and exposure of the benefits of cluster based approach

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## Improving Manufacturing Competitiveness through Design

The importance and benefits of design can be best demonstrated through projects. Major emphasis of the design clinic Scheme thus is on projects, with its over 60% fund allocated for design project support to the MSMEs.

With the target to reach out to around 200 industry clusters, the Scheme will support 400 design projects. This includes support to 300 professional design projects and 100 student design projects. Individual MSME unit or group of MSMEs can apply for the project support. Upon the approval of the project, the Scheme would reimburse 60% of the design project expenses. This includes design fees, model and prototype expenses as well as project related travel and documentation expenses. Individual MSME unit or a group of up to three units can get the financial support maximum up to Rs. 9.0 lakh, while a group of four or more units can get the maximum support of Rs. 15.0 lakh for the professional design project.

The Scheme offers an interesting challenge to the country's design fraternity. The Scheme is launched by the government of India for the country's large micro, small and medium enterprises, MSMEs as part of its National Manufacturing Competitiveness Programme, NMCP, with a specific objective to improve manufacturing competitiveness of these MSMEs. The Design Clinic Scheme is one of the 10 Schemes launched under the NMC programme and is financially supported by the ministry of MSMEs, Govt. of India.

The focus of the Scheme therefore is on improving manufacturing competitiveness of MSMEs through the appropriate use of design.

This subtle but critical difference in terms of design intervention approach to the problems/project is felt missed out by the designers and is visible in the project proposals submitted to the Scheme. The proposals invariably stop at highlighting the design intervention towards developing a new product; improve the existing product in terms of its aesthetics, functionality, addition of new features etc.

Over and above these benefits, each proposal is evaluated from the perspective of its potential/s and scope of design intervention to improve the manufacturing competitiveness of MSME unit's product/business, to increase export potential and/or its potential to import substitute etc.

Each of the proposals submitted to the Scheme are evaluated at three levels. At the first level the proposal is reviewed independently by three external design experts. At the second stage of assessment, this proposal is assessed by the Project Assessment Panel, PAP, comprising of designers, members from industry associations and from government organizations. At the final stage, the recommendations of PAP are discussed and reviewed by the Project Management and Advisory Committee (PMAC) of the Scheme for its approval (details on [www.designclinicsmsme.org](http://www.designclinicsmsme.org)).

The projects completed so far under the Scheme support, have ably demonstrated the strength and capability of design to improve manufacturing competitiveness of the product/s and the businesses as a whole. While design interventions have helped improve these products from their aesthetics, ergonomics, functionality, addition of new feature perspectives etc., these interventions have helped reduce material, weight, product volume, product floor space (foot print area), etc. Design interventions have helped optimize components as well as overall manufacturing process resulting in reduction in production cost and improved product quality. Standardization of parts and components, modular approach, ease of assembly, maintenance, optimized after sale services, etc. have been some of the added benefits of these interventions towards improved manufacturing competitiveness. Design Interventions thus have provided holistic solutions resulting in incredible benefits and major value additions for their client MSME units to stand out in the competition. With the newly designed products now compatible for global trade, these interventions would certainly help develop strong brand value for their MSMEs.



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The project proposal formats and the guidelines have been further refined to help MSMEs and designers include all the relevant and required information in their proposal/s. The complete process of submission of the proposal as well as the information of its status is available online on the Scheme website. The Scheme implementation team is constantly facilitating external experts and project assessment committee, whenever required to connect and get the necessary information/clarifications from the MSME units and/or designer at the earliest.

Country's vast micro, small and medium enterprises, a crucial industry segment in the context of country's economic and social development, demands holistic solutions to improve their manufacturing competitiveness and thereby survive and progress in

the global markets of today. Design can contribute at a major scale to offer such holistic solutions and thereby help the country's MSMEs to move up the value chain. Few of the projects completed so far have ably demonstrated this capability. I am sure the country's design fraternity will rise to this challenge to be part of this major design movement.



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**“हम पहले मशीन बनाते हैं,  
फिर उसकी ड्राइंग बनाते हैं”**

**the design approach as described by one of the product developer at  
Ludhiana**

## Case Studies on Professional Design Projects

Professional Design Projects aim at addressing specific design needs of MSME/group of MSMEs for improving products and processes and/or innovating new products thereby improving quality of products/improving manufacturing competencies of MSMEs and thereby enable the MSME sector to move up the value chain. Through design projects, the MSMEs would be able to test immediate benefits of

design at minimum investment. Successful outcomes of some of the professional design projects undertaken by MSMEs in select clusters are summarized below to get an overview of the background, design objections, outcome and advantages of this component of the Design Clinic Scheme:





### Professional Design Projects

**Project Brief:** Design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**MSME Unit:** JKS Hira Corporation, established in the year 1986, are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

**Salient Features of New Design:**

- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-11-06  
**MSME Unit:** JKS Hira Corporation, Ahmedabad  
**Design Firm:** SKM Design, Ahmedabad



### Professional Design Projects

**Project Brief:** Design of industrial Design of Heavy Duty Machine for ease of operation, maintenance and manufacturing.

**MSME Unit:** Gujarat Ironworks & Machine Works, established in the year 1986, are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

**Salient Features of New Design:**

- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-11-05  
**MSME Unit:** Gujarat Ironworks & Machine Works, Ahmedabad  
**Design Firm:** SKM Design, Ahmedabad



### Professional Design Projects

**Project Brief:** Seed Drill Machine redesign of existing products, targeted to optimize existing product, make it more user friendly and simpler according to requirements.

**MSME Unit:** Vrundavan Engineering Works India has been the pioneer in development and manufacturing of High-Quality Agricultural Machinery and Agricultural Equipments. Their vast product range includes agricultural machines like Multi Drop Trainers, Tractors and Engine Operated, Groundnut Thresher, Heavy Duty Tiller, Double Hopper Seed cum Fertilizer Drill, Tractor Trailer and products are exported to various countries all over the world.

**Salient Features of New Design:**

- Reduced height of seed drill.
- Advanced seed selection mechanism for variety of crops.
- Simple spring mechanism reducing number of parts in plow assembly.
- Reduced weight-making process of seedling faster.
- Easy to operator for ladies as well.

**Commercial Viability:** Prototype is ready and tested with new designs of mechanism. New products is being made ready for new crop for market test and further refinements.

**Project no.:** PDP-12-105  
**MSME Unit:** Vrundavan Engineering Works, Jaspur  
**Design Firm:** SKM Design, Gujrat



### Professional Design Projects

**Project Brief:** Design and development of a Low-cost printing machine for glass market.

**MSME Unit:** 276 Technology was established in 1991 to design the world of printing and printing industry. They are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

**Salient Features of New Design:**

- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-12-122  
**MSME Unit:** 276 Technology Pvt. Ltd., Bangalore  
**Design Firm:** SKM Design, Bangalore



### Professional Design Projects

**Project Brief:** New Collection in Glass Tableware with range of products and various combinations for domestic market.

**MSME Unit:** DM GLASS has been engaged in manufacturing of Double Walled Glass (Bottle/Glass Liner) for Vacuum Flasks since early 1980s. DM GLASS is today one of the largest manufacturer-exporter of Glass flasks from India.

**Salient Features of New Design:**

- Variety of forms to serve in the market in glass.
- Stackable forms with less chances of leakage and to take less storage space in homes.
- Production friendly to serve in different permutation and combination.
- Compact packaging occupying less space in the production & at dealers space.
- The geometric form utilizing refractory property of glass and generates rich and bold patterns.

**Commercial Viability:** Rapid prototypes have been made to check the aesthetic, ergonomic, Dies making and pre production activities are going on to launch the product in near future.

**Project No.:** PDP-11-60  
**MSME Unit:** DM Glass Works Pvt. Ltd., Firozabad  
**Design Firm:** SKM Design, Ahmedabad



### Professional Design Projects

**Project Brief:** Design and development of a Low-cost printing machine for glass market.

**MSME Unit:** 276 Technology was established in 1991 to design the world of printing and printing industry. They are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

**Salient Features of New Design:**

- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-12-122  
**MSME Unit:** 276 Technology Pvt. Ltd., Bangalore  
**Design Firm:** SKM Design, Bangalore



### Professional Design Projects

**Project Brief:** Design of existing machine for small community to make use of available facilities and user's requirement for better office.

**MSME Unit:** Gujarat Ironworks & Machine Works, established in the year 1986, are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

**Salient Features of New Design:**

- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-11-05  
**MSME Unit:** Gujarat Ironworks & Machine Works, Ahmedabad  
**Design Firm:** SKM Design, Ahmedabad



### Professional Design Projects

**Project Brief:** Design and development of a Low-cost printing machine for glass market.

**MSME Unit:** 276 Technology was established in 1991 to design the world of printing and printing industry. They are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

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- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-12-122  
**MSME Unit:** 276 Technology Pvt. Ltd., Bangalore  
**Design Firm:** SKM Design, Bangalore



### Professional Design Projects

**Project Brief:** Design of existing machine for small community to make use of available facilities and user's requirement for better office.

**MSME Unit:** Gujarat Ironworks & Machine Works, established in the year 1986, are a prominent manufacturing company engaged in manufacturing, assembling and marketing a wide range of agricultural machinery, engineering equipment and accessories.

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- Ergonomic and adjustable seat height.
- High quality steel structure using 45# medium carbon steel.
- Very low maintenance and durable for working manufacturing process.
- Increase in the range of use provided by the Commercial Viability.

**Commercial Viability:** The MSME unit is working on the design of office chairs, ergonomic and systems system with good structure, control and operation. The new product designed to make use of available facilities and user's requirement for better office.

**Project No.:** PDP-11-05  
**MSME Unit:** Gujarat Ironworks & Machine Works, Ahmedabad  
**Design Firm:** SKM Design, Ahmedabad



### Professional Design Projects

**Project Brief:** Design and development of a Low-cost printing machine for glass market.

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**Project No.:** PDP-12-122  
**MSME Unit:** 276 Technology Pvt. Ltd., Bangalore  
**Design Firm:** SKM Design, Bangalore

## Background

In an environment conscious era, where effective use of power resources, that enhance air-conditioning efficiency through optimal use, a volume control damper, (VCD) is almost a mandatory feature for integrating air ducts of centralized air conditioning systems, to control quantum of air flow into specific rooms, as also to maintain the flow of air, temperature and pressure there. Technically, a VCD is a valve or plate that regulates the flow of air inside an air duct, or other air handling equipment. They are classified on the basis of shape and could be rectangular or circular, manual or motorised, with aerofoil blades, flat, aperture and shutter type material of galvanized mild steel and stainless steel. A damper, installed inside the duct, may be used to cut off central air conditioning (heating or cooling) to an unoccupied room, or to regulate temperature/climate controlling room-by-room basis.

DesignLife is professional Industrial Design Consulting firm having experience in designing a wide range of products including home appliances, engineering products, medical devices, hand and machine tools etc. M/s\_ Airpro Engineers Pvt. Limited on the other hand, is in the field of air distribution products as well as engineering and execution of Air-conditioning and refrigeration projects for over 15 years. They were looking for a break through solution, simplifying manufacturing process, packing and storage along with onsite assembly, controls, service and maintenance, keeping the existing functions of the products unchanged. The product having overall crude look, gave it a low perceived value. Besides, the time and labour consumed for assembling due to welding was not commensurate as it required powder coating to cover the welding joints. Paucity of skilled labour for welding, grinding and powder coating and weak design in sections made it prone to denting and unwanted bending. Differentiating its products in the market with good aesthetics and usability with help of Industrial Design, it was felt, would help export the products.



## Design Objectives

The process of redesigning the existing volume control dampers entailed undivided replacement of basic manufacturing techniques like riveting and welding, by bolts and systemic process of assembly for ease of manufacturing and transportation. Selection of better materials, improvement of manufacturing processes, enhancement of aesthetic appeal of the product through use of innovative materials and finishes and implementation of innovative designs to surpass competition, were considerations. Opening and closing scale marks near the control lever were a new feature to enable precision and ease of control.

## Volume Control Damper (VCD)



**The MSME**

Airpro Engineers Pvt. Ltd.  
Thane (W), Maharashtra  
Website : [www.airproindia.com](http://www.airproindia.com)  
Contact Person : Mr. Kailash Khairnar



**Designers**

Design LIFE,  
Thane (W), Maharashtra  
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Contact Person : Girish I Lone



*'Optimizing energy, and comfort in the air conditioned living space at a lesser cost'*



## Design Journey

Design LIFE moved in a phased plan for the preparation of the redesigning process of the volume control damper. In phase one design research was the focus, where a “self search” for understanding the client’s vision and long term goals with respect to this project and current product analysis was conducted. This was followed by phase two or concept generation stage. Phase three included concept refinement and then phase four where prototype development and evaluation took place with the final phase five, where refinement and final engineering presented the concluding segment of design preparation.

The redesigning included bending of channels and blades and assembly of structure with welding, as the main joining process. Grinding of welded joints and powder coating and finally cling wrap, before readying for dispatch, were the other processing features. Realizing that, aerofoil shaped blades are efficient but costly; a cost effective way of manufacturing aerofoil blades was identified as a requirement. The 1.5 mm thick triple “V” groove blade was used for maximum strength. The additional blade seal is attached within the blade, leading to low noise generation, critical smooth flow and low leakage for increasing efficiency of the device. It was realised that straightening channels could make them stronger and dent resistant.

Finished edges and filleted corners with the introduction of the new production process and material offered a huge advantage in a highly competitive, cost driven industry, besides ease of use.

Further it was recognised, that once the installation was done, the direction of blades was not visible to the inspecting person, who did periodic checks of systems, hence the provision for better visibility of angle gauge from the ground and indication of direction of blades.

Other areas that needed addressing to optimise functioning through redesigning included, use of corrosion resistant materials, replacement of welding with suitable joining processes, imposition of guides for precision and accuracy, etc. It was preferred that the assembly be done by a single, skilled person or technician. The conclusion was that design could offer the option for up-gradation of the manual controlled damper, to motorized after installation.

On the Branding Design aspect, it was suggested, that the product carry the Airpro branding at various touch-points to enhance brand recognition. It was also recognised, that primary packaging added more value to the product from the customer’s perspective and therefore helped to enhance the brand image.

## Way Forward

With the manufacturing processes and joining method having been proven, the design is being implemented by the client in the manner conceived. It enjoys good cost reduction compared to the earlier design, material use, manufacturing and finishing processes. As the design also encompasses clear branding, it increases the brand value of the MSME.



## The Advantages

The improved design of the volume control damper has good strength, with least chance of denting. It is well finished, clean, with a strong design persona that builds confidence and good brand value. It is easy to assemble without the need of welding. There is no need to paint or powder coat, unless required by the client, or to give a special finish to the product. Besides, bolting or VHB, it allows fast and easy assembly almost like a DIY process. It encourages saving of power bills and energy with the elimination of welding and does away with the requirement of skilled welders, expensive and scarce resources of time consuming labor for grinding, finishing and clean-up for powder coating, giving strength through clean and straight edges, showing manifold superior aesthetics in comparison to original products. A neatly designed angle plate with the client’s branding gives it a more reliable image in the market, generating confidence and brand recall. Moreover, introduction to new material and processes like pultrusion makes the design light weight and stronger with a unique proposition offering to the end customer.

These steps have led to saving energy and labor cost, resulting in production processes becoming faster and efficient, saving money and time.



## Background

With the increasing demand for processed food, medicine and liquor, the demand for sophisticated food packaging systems from these industries has increased manifold, especially owing to awareness of higher product quality and health standards in the food packaging sector for bottling.

Large volumes and wide variety of glass bottles produced in modern bottle manufacturing plants necessitates automated inspection to detect defects like metal and stone inclusions, air bubbles, folds, non-uniformity in height and shape and dark spots in the bottle sidewalls. The significance of defect detection lies in that visual inspection is not adequate for detecting defects. Aberrations like glass residual and burrs during the manufacturing process could go into the stomach along with packaged food and other routes like medical liquid leading to fatal internal injuries. The bottling vision machine takes care of this critical aspect.

Advanced automatic systems are required by the Indian packaging systems. Automated, vision based on-line inspection systems ensure improved inspection, increased throughput, and reduced inspector fatigue, with enhanced quality and consistency of inspection. However, these systems have been prohibitively expensive so far. The critical pre packaging inspection of glass bottles saw manufacturers largely dependent on imported machines, as the Indian counterparts were perceived as less efficient and technically not at par with imported ones.

Duravision Systems has been manufacturing bottle vision machines installed in Indian food processing industries. It is considered as the only company in India, manufacturing state-of-the-art glass bottling machines, for bottles used in the food processing, pharmaceutical, cosmetics, and wine and liquor industries. What makes this product so relevant is its versatility in detecting defects on the assembly line before filling the content, which can't be identified using any visual inspection method. The defects include 'bird swing' (thin glass wires

present in containers), glass burr, cracks and geometrical defects which lead to leakages etc.

Increasing demand for a more precise, faster and competitive version drove the MSME to explore design and technology intervention and thereby upgrade their existing product. Aware of the design process and its long term benefits, Kishor Durve, owner Duravision Systems was keen to take up with NEODES, a Pune based design house, the redesigning of the glass bottling machine for over a year, but were not in a position to bear the cost of investing in design. The price of the machine was Rs.20 lakhs, while the new redesigned one was projected to be sold at Rs.40 lakhs. The aesthetics and design of the old machine did not justify the steep cost and therefore urgently required face upliftment and technological up gradation. The new design, it was expected would create a substitute for import and value adding to the existing model of the glass bottling machine, that is more versatile, efficient, aesthetically appealing and cost effective.

## Design Objectives

"The objective in the re-designing of the glass bottling inspection machine was to make it look modern, cost effective and resolve critical details, enhance efficiency and help establish a design language for Duravision Systems, to enable it to compete with international players in every respect. The design to be targeted was one that could ease manufacturing and assembly of all parts and at the same time improves aesthetics to demonstrate right value of the new generation technology" observes NEODES in their design brief.

## Bottling Vision Machine



**The MSME**

Duravision Systems  
Pune, Maharashtra  
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Contact Person : Kishor Durve



**Designers**

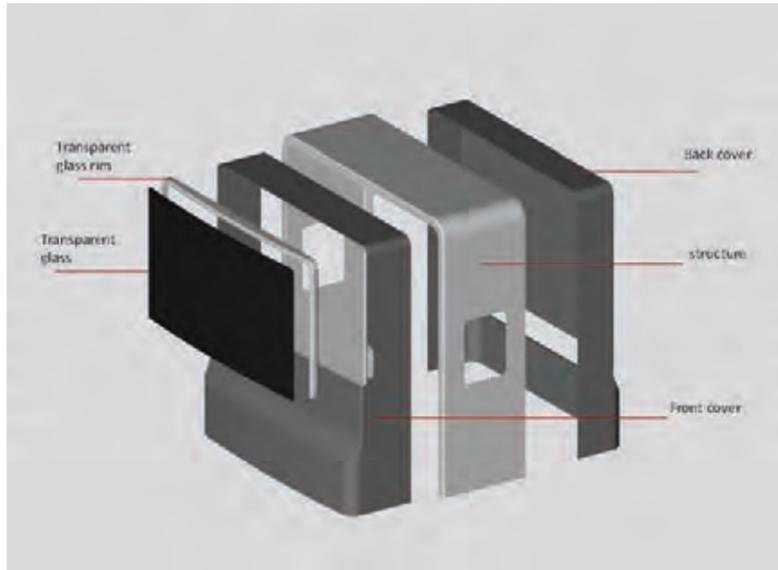
NEODES  
Pune, Maharashtra  
Website : [www.neodes.in](http://www.neodes.in)  
Contact Person : Abhijit R Takale



*'An improved, versatile, safe, aesthetic, cost effective version'*

## Design Journey

NEODES created a phased plan for this design project, in which during phase one, or the research and competitor study stage, some interesting user task analysis observations emerged. In phase two, design concepts were frozen and they moved into working on detailing of the product, where they addressed accessibility issues for maintenance, mounting details and 3D modeling, besides exploring the new design use in single cost cutting manufacturing processes, eg. enhancing camera technology. Phase three was essentially the engineering design activity which saw them graduating to the specifics of freezing critical dimensions and 2D part draw up, ready for mould design. It was also the time when NEODES identified potential vendors for further sourcing. In the final phase four, they created the alpha prototypes. Use of dark film on the front, to help cameras work more efficiently and give the machine a modern look; a front door access to the interiors, which offer more accurate, precise and faster processing in terms of bottle inspection; a common mould in the front and rear which saved cost by Rs.50,000/- (i.e. half), adapting the same machine for different bottle and conveyor sizes; were some of the salient features enhancing design advantage in the existing product.



## Way Forward

Kishor Durve summarising the outcome of the Design Clinic Scheme effort says, "One prototype production was supplied to Piramal Glass Ltd. in Surat, a manufacturer, packager and supplier of bottles. It was expected to enhance the commercial viability of the project in relation to manufacturing and other relevant industries. Design has played an important role not only in terms of improving the function and aesthetics of the glass bottling machine, but has also helped in improving our strategy to cater to the domestic and international market. With the new design, the machine is better presented in international markets and we are now more confident to take up bigger challenges in terms of improving existing products and introducing new ones into the market."



## The Advantages

In the original machine 120 minutes were needed to fix the 4 cameras, in the re-designed machine it takes only 30 mins to fix 12 cameras, which results in a more thorough inspection. In the redesigned model, defects as small as 0.3 x 0.3 mm are easy to detect. It is also simpler to switch bottle types with low setup change time, catering to bottle sizes with diameters from 16 to 26 mm; height 35 - 55 mm, with a capacity for inspecting bottles at the rate of up to 400 bottles per minute. Other highlights are flexibility for quick set up of new bottles, display of defects on screen, view of recently failed bottles, generation of reports shift-wise, web support, camera wise defect image etc., which in turn makes the workers' job less stressful."

The other USPs that have emerged with redesigning include use of locally available high impact composite material, that enables less sophisticated manufacturing processes, without compromising on performance. With lesser number of manufacturing steps, the business house achieved a lower bottom line and higher margins. The geometric form conveys robustness, reliability and speed! The subtle curves lend DBV12™ an air of authenticity. Also, the choice of white, grey and large transparent surface conveys the high-tech DNA of the product, as does the emphatic typography.

In a nut shell, simple design intervention has led to increased margins for the client and enhanced perceived value for the product.



## Background

In a scenario where ice-cream enjoys the status of “First Dessert” and universal popularity as a refreshing fun food the world over, the significance of an ice cream freezer cannot be underestimated. The size of the ice cream market in India has been estimated to be around Rs. 2,500 crore per annum and is expected to grow by 25% this fiscal year despite a lesser profit margin. The growth is directly related to raw materials, machines and production capability of manufacturers and therefore the role of Indian ice cream machines are very crucial in achieving the quality, production and sustainable profit margin for makers of ice creams.

Set up in 1994, Synergy Agrotech Pvt. Ltd. is a full-fledged manufacturing company that commenced operation in 2000. They are a leading manufacturer of plant and machinery for ice cream projects and developed a continuous ice cream freezer indigenously for the first time in India. With more than 800 installations in India and abroad, the MSME today holds commendable client trust on the reliability of their products. Energy efficient, reliable machinery at an affordable cost is their forte. Focused on small and medium scale production of quality ice cream, with a good market potential, across the industry in towns and cities, supported with an established reputation for quality, it was thought to be the only logical route to enhance aesthetics and retain the lead.

Platypus Design Pvt. Ltd. is a design consultancy firm, led by a team of industrial designers. It has an in house prototype making facility in varied materials including wood, metal, plastics, stone, ceramics and textile weaving. The main focus is on optimisation and experimentation.

## Design Objectives

The end objective was to propose the redesigned layout of the components and get validation of feasibility of the new arrangement, revise the design of chassis and cabinet covers, redesign the front cover and display control panel, make the prototype and finally to submit detailed design drawings. Leakage disposal from the cylinder, component drying, better communication of instructions, operational ease, good aesthetics and regular periodic maintenance of the machine were some of the identified areas for design interventions.



### The MSME

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Contact Person : Dilip Sarda



### Designers

Platypus Designs Pvt. Ltd.  
Gandhinagar, Gujarat  
Contact Person : Prakash Vani

*‘Creaming up the ice cream experience’*

## Continuous Ice Cream Freezer



## Design Journey



Design plays a very important role not only in creation of new products and processes but also helps in improving existing systems. Products serving their users sometimes need to take a relook at their functions and features, to remain competitive in the present context.

Essentially, the design team worked on giving the machine a distinct personality. In the redesigning process, all controls and process information was brought to the front, a well defined display control panel was standardised for all models, so the operator did not need to open the machine. Any leakage of cream could be immediately identified and the splashguard prevented the inside of the machine from getting dirty.

Cost saving was effected in the chassis, cabinet, packing crate and transportation, and standardization of cabinet covers reduced inventory. The possibility of an in house cabinet fabrication offered excise benefits, improved performance of the machine and proper air flow in the electronic switch box, prevention of entry of roaches, rats and insects. It presented dedicated space for drying of components, after each cleaning, thereby preventing loss of small components and damage to machine.

Summing up, Mr. Dilip Sarda, Director, Synergy Agrotech Pvt. Ltd. says, "As such there were no major challenges, apart from may be two, namely convincing the engineering department that chassis weight can be reduced, without affecting the stability of the equipment, which was subsequently proven, after making the working prototype and acceptance of control panel from engineering plastic, instead of traditional use of stainless steel, where form and function came together seamlessly, every part contributing to the whole, in a way that is inevitable."



## Way Forward

Says Dilip Sarda, "A core discovery was that our engineering and production team realised the advantages of design thinking, even in a hard core engineering product, which I am certain will manifest into a significant long term development for us. We will introduce the new range of energy efficient continuous ice cream freezers with a scroll compressor next season."

The outcome of the redesigned version of the product is unique and comparable to the best available, that will enhance their experience with the international benchmarks.



## The Advantages

By redesigning the inside arrangement of the components, multiple results were obtained, namely reduction of weight, size and inventory, ease in maintenance and overall cost reduction. Components which were otherwise inaccessible for thorough periodic cleaning were made easily accessible. The chassis was designed from SS pipe sections instead of sheet metal fabrication. This resulted in cost reduction, better inventory control, possibility of in house fabrication instead of depending on a vendor, with multiple advantages. Besides an established, better quality cost reduction due to MODVAT in excise, apart from cheaper and stronger sections.

The modular design of the cabinet made it possible to keep the cabinet covers ready for use for various capacity models. The new control panel design gives a unique aesthete that sets it apart from other dairy industry equipments that have a well designed communication system, which can prevent a few avoidable maintenance calls. Besides heat dissipation of electronic gear is another positive outcome.

The redesigned product is expected to save material cost on fabricated components by 15%, reduce assembly time by 20% and maintenance cost and time by 20%. Besides 30% reduction in weight of the chassis and cabinet covers and 20% reduction in the volume of the equipment, the condenser cylinder can now be opened from both ends, facilitating thorough cleaning, where maintenance is faster and more efficient. Furthermore, it is compact, saves space, material and is easy to assemble and maintain, besides being user friendly.

## Background

Usually, ENT doctors and General Practitioners have access to basic, rudimentary tools like mirrors, torches and tongue depressors for examination of patients. In urban areas, they may have access to evolved, endoscopic diagnostic tools that are few in number and expensive, both as initial investments as well as on cost per usage. The problem is more aggravated in rural healthcare centers, where on a typical ENT check-up day, one doctor may have to attend to hundreds of patients. With the current infrastructure, the doctor is unable to make timely and accurate diagnosis. Besides, he is unable to refer to previous examinations and offer continuity of treatment. In the medical area, the significance of ENT functioning and its bearing on the health of the rest of the body cannot be underestimated.

Icarus is a Design firm based in Bangalore offering services in Industrial Design and Branding, with about 17 years of experience in working for Indian and international companies. Icarus is a team of 35 with diverse design and allied expertise.



## Design Objectives

The existing ENT scope market was flooded with bulky devices incorporating scope probe, central unit and large LCD screen, mostly installed at fixed locations like hospitals, clinics or mobile vans. These machines could not be carried to remote locations, required power source and were not easy to operate.

The redesigned ENTview was visualised as an examination tool that enables better visual access to the problem areas of the ear, nose and throat for early and accurate diagnosis. The objective was to produce the multiscope at a reasonable price, to be used by trained technicians in rural settings for primary ENT screening and for telemedicine, where the technician should be able to do the preliminary screening in a remote village, for example and then take simple remedial action if the problem is simple. If the problem is complex, the data should be easily transferred to an ENT specialist by email and receive advice over the phone, from a specialist from any point in the hospital. The portable device would also allow recording and retrieving of data for future reference.



## Industrial Design of Multiscope



### The MSME

Zandig TQM Solutions Pvt. Ltd.  
Bangalore, Karnataka



### Designers

Icarus Design Pvt. Ltd.  
Bangalore, Karnataka  
Website : [www.icarus.co.in](http://www.icarus.co.in)  
Contact Person : Sapna Behar  
Brainchild of : Late Sunil Sudhakaran  
(Director - Icarus Design Pvt. Ltd.)

*'A state-of-the-art tool for ENT specialists that adds speed and accuracy to diagnosis'*

## Design Journey

In their phase of preparation for the designing process the design team focused on elements such as the target group, performance criteria, essential and desirable features, also time, money, resources and constraints including working assumptions.

The Design team visited the people at the grass root level looking for insights, interpreting and then finalising a design. They then configured the multiscope to become more user friendly, after which, they refined it aesthetically and then moved into prototyping. They took the prototypes to the field and refined the electronics integrated in it as they worked with an electronics development partner.

Design team decided to move with an ergonomically comfortable version of an ENT multiscope in which the LED light would be integrated to the body and merged with the light pipe of the scope, for a quick release. They considered the nuances and focused on human needs by including a wider range of human aspirations - rational, emotional and cultural - to enhance the pool of diversity for rich problem solving.



In the redesigned version of the multiscope, the ENT recorder (device) enclosed the Kodak CD 14 camera, combining the two AA batteries of the camera and the Li-ion battery (of LED) into one Li-ion battery, which charges using a charger, connected to the device through a simple jack. The operational controls (like image capture, video start/stop and zoom in/out) were planned to be at the finger tips (on/near the scope housing). PCB's were placed in a manner where they were connected to the camera USB port, which was also required on the device to transfer files to a computer. The light source (1.25-3W super bright led) was required to be mounted on a small PCB and placed below the scope's light pipe. The LED intensity controller circuit and control were worked upon and they explored the possibility of the LCD screen rotating 90 degrees.

Designers looked into the issues of safety (falls, crash guards), balanced and crashes, bulk distribution, visibility of probe end during scope entry and screen during examination, single handed use, position of controls, catering to frequent operations, long and repetitive use, ambidexterity, grip, maneuverability, presence of obtrusive projections, ease of flexibility options (eg. non standard lights on probes), comfort in holding all three positions, intuitive controls, easy fixable and removable scopes and feeling of robustness.

The other aspects that were taken cognizance of, while working on the design details, were related to aesthetics, functionality, manifesting assembling, servicing and mechanical integrations.



## Way Forward

On the future plans, Icarus Design plans to develop an integrated software system so that all patient data, audio video-text information goes into a database that can be easily searched, retrieved and transmitted.

ENTravier was awarded gold medal at the 'Innovators Competition' at the DST-Lockheed Martin India Innovation Growth program - 2012. It was adjudged among the top 30 technology innovations in the country among a total of over 800 technologies evaluated.



## The Advantages

The ENTravier is an effective integration of a mechanical adaptor, light source, hardware and software into a compact, battery operated, handheld device that is highly ergonomical to use.

The mechanical adaptor allows easy interchangeability of ear, nose or throat scopes. These scopes are FDA approved bought outs. The light source is built in and optimised for the three scopes. Video recordings of the examination can be stored in the device and transferred to a computer. The interface is very simple and easy to use, requiring almost no training for doctors to begin using this product. Health care workers can use it with a bit of training.

Multiscopes used in big hospitals are expensive. The price typically ranges between Rs 7 lakhs and Rs 30 lakhs. These high-resolution systems are designed for surgeries and only hospitals can afford them. The ENT multiscope is targeted at independent physicians and ENT specialists with small private practices, specifically designed for health workers in rural settings, where the image that is created is not of a good quality. The new multiscope has a digital camera with a light attached to it, which makes it easier to see and the quality of the image is also better. This device is primarily going to be a screening device used by trained technicians in remote villages, where there may or may not be doctors or only visiting doctors present.

In the new redesigned version, the light source is integrated to the product and it looks like a safe, confidence inspiring medical product.



## Background

Thrust washers are an important segment of wheel assembly and commonly used in automotive functions. Over a period of time, thrust washers replaced flat washers due to their functional advantage and are high in demand in the automotive sector. Automatic thrust plants produce thrust washers, using the forging operation. Kahlon International has been producing thrust washers for various automotive companies for a long time and are today one of the leading suppliers in the region.

Kahlon International had been facing issues in the manufacturing process of thrust washers and found the process of manufacturing time consuming and slow, requiring too much human intervention. The productivity of machine, quality of outcome and effort of operators were the leading issues in the existing machines, which lacked automation and precision of final outcome.

There is a huge demand for new techniques and technologies that will help achieve optimum results in production processes. Manufacturers are incorporating various techniques and process improvement methodologies that focus on process excellence, quality, operational efficiency and customer satisfaction. Again, design plays a very important role here.

Thrust washers in India are being made either on manual machines, with very low production capacity and total dependence on labour, which is very difficult to find these days. Some manufacturers started making thrust washers on the CNC machine with a very high production cost (Rs.150/- per piece), apart from high investment cost. Making a thrust washer on an automatic thrust with pneumatic control and PLC, costs 10 to 15 paise per piece. With this, export and local orders will be completed on time and more orders may be booked. The same machine can further produce orders for supplying to other manufacturers of thrust washers.

Ludhiana based Kahlon International, owned by Mrs. Pritam Kaur a technocrat with about 20 years experience, is a manufacturer of bolts, nuts, washers, auto parts and earth mover parts, exporting products to several countries worldwide. The turnover of the company was approximately Rs.5.41 crores in the year 2009-2010.

Harjit Turners, manufacturer and exporter of auto parts and earth moving parts, is a company engaged in designing and manufacturing special purpose machines as per requirements of component manufacturers. The owner of the firm Tarsem Singh, has about 25 years experience in making hydraulic, pneumatic and PLC machines.

## Design Objectives

The project is very relevant, as this will solve the problem of paucity of labour and also reduce the cost of manufacturing. In the market, the rates of raw material and labour were increasing day by day and therefore the finished product rates too faced stiff competition.

The project aimed at developing an automatic thrust turning plant capable of offering 15 times more production than the existing conventional machine, and also one that could reduce dependence on labour, while ensuring that the quality of the products maintained uniformity. The objective of redesigning a special purpose machine, supported by pneumatic controls and PLC made the machine more productive with the thrust washer, lowering the cost, as compared to a manual or CNC machine.

## Automatic Thrust Turning Plant



**The MSME**

Kahlon International  
Ludhiana, Punjab

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Contact Person: Mr. Gurpreet Singh Kahlon



**Designers**

Harjit Turners  
Ldhiana, Punjab

Website : [www.harjitturners.com](http://www.harjitturners.com)

Contact Person : Mr. Tarsem Singh



*'Enhancing productivity and quality'*

## Design Journey

The process of redesign included simulation, prototype-development, trial run and finalisation of design and manufacturing details, based on its mass-production requirements. During the assigned thirty days for steel fabrication work, 3 persons worked on steel fabrication and infrastructure related work, with casting and machining of heads, including boring and grinding, and work on spindle and shafts, completing the work before time in 25 days.

Simultaneously, in the second stage the hydraulic and pneumatic systems were fitted after completion of stage one, within 25 days. Motors purchased from the market and electrical panels made in-house, were fitted within 30 days. In stage three, steel fabricated covers made an assembly of all sub-components and the painting was completed, after which a final trial run was conducted. Loading of product in hopper and conveyer did pose a bit of a challenge in the process.

The new design addresses the issue of loading raw material in the forging process. The loading time has been reduced drastically, which made the process very easy for the operator. The machine is operated by hydraulic power and requires no human power for operation. This has translated the whole process into an automatic, error free one. The new design has improved the human ability to work on the machine and in turn save a lot of time and energy for production of thrust washers, besides also helping improve productivity of the MSME unit in the same setup.

## Way Forward

The MSME is enthusiastic about the re-design outcome and has been using two more machines for their internal production purpose. They are planning to start the production of new designs for other manufacturers as well and hoping to produce two to three machines per month.



## The Advantages

The redesigned automatic thrust turning plant with pneumatic control and PLC, now provides consistent product quality. Productivity has improved from 28 pieces per hour on manual machines to 450 pieces per hour on the redesigned machine. The cost per piece has reduced from Rs.1.50 per piece, to 15 paise per piece. Moreover, the improved design has enhanced production order possibilities. The other significant advantage that accrued included automations, reduction in man power, enhancement of quality and increase in production.

Kahlon International had a projection of approximately 10 machines and they expect to produce over 10. The new design helped them in improving the sale, turnover, and market share by 30% and augmented profits in the last financial year by 5%. Commonly known companies and brands have started using the redesigned product and there is possibility of its use by other companies in the near future.

The cost of the redesigned product decreased by 20%, the saving on production time and labour was 6 to 7 times. Besides, efficiency enhanced 8 times.

## Background

Manhole covers are a critical safety insurance feature in frequently used areas with great wear and tear in municipal and public places, industry, airports and several others, where critical underground amenities like sewage systems, water and electrical lines need to be kept safe and functional, to ensure a basic quality of living. They are best if easy to install, maintain and are durable in terms of longevity and effective use, to meet benchmarks of good quality manhole covers. In public places theft of these manhole covers is a common occurrence and poor quality covers can be dangerous, resulting in accidents. Moreover, due to the increasing theft rates, alternate approaches have been adopted and these include concrete manholes amongst others, which have not proved to be successful options in the long run. Considering the extended and critical use of manholes, a theft proof cast iron manhole, which provides safety, strength and ease in operation, undoubtedly is a significant product for offering basic security and efficiency.

Crescent Foundry Co (P) Ltd. was established in 1980. They export most of their castings to 45 countries as leading manufacturers of grey iron and ductile iron, municipal castings, counter weights, agricultural wheels, industrial castings and accessories in one place. Designlipi Projects Pvt. Ltd. is the first of its kind in eastern India, offering comprehensive design solutions in the domains of Products (Concept to Reality), Packaging (Structure and Graphics), Branding and Communication, Retail Experience, Research, Strategy and Innovation. The Core of Designlipi's services is focused on projects, where design, strategy, design thinking and design itself can play a significant role, presenting very high importance for business as well as stake holders, customers (internal and external), also consumers and end users.

## Design Objectives

In countries like India and Africa, where the MSME wants to penetrate domestic and international markets, it is imperative that this product be theft proof, as the cover itself is expensive and can be stolen relatively easily. Removal and stealing of cast iron man holes is a familiar occurrence, where they have a high resale value. Also, once removed it becomes dangerous for pedestrians as well as vehicles crossing the open manhole, where cases of accidents and deaths because of falling into open manholes, are a tragic commonality.

They have to be leak proof as these products are used to cover critical and expensive cables and electrical joineries, where contact with water and other liquids is not desired, as it may cause severe faults and accidents. Its huge wear and tear through usage and exposure of very rough and heavy materials exposed to outdoor vagaries of environment like heat, cold, UV and other adverse weather situations, also need to be kept in mind.

These key factors, which are absent in the original manhole covers presented specific redesigning areas in the existing products. The design team therefore worked on a design that was intuitive enough for operation by untrained workmen. It was modular and easy to adapt to different shapes, sizes and product models with its functional and reliable design.

## Cast Iron Man Hole Covers



**The MSME**

Crescent Foundry Co (P) Ltd.  
Kolkata, West Bengal  
Website : [www.crescentfoundry.com](http://www.crescentfoundry.com)  
Contact Person : N. Pitchaiah



**Designers**

Designlipi Projects Private Limited  
Kolkata, West Bengal  
Website : [www.designlipi.com](http://www.designlipi.com)  
Contact Person : Sanbid Golui



*'Sturdy safe manhole covers,  
offering efficient protection to critical  
civic systems'*

## Design Journey

The design team decided to go back to the basics for finding very simple yet feasible solutions rather than employing a conventional techie design approach considering the product, usage, environment, manufacturing, materials, process, cost and market.

After visiting the site and a couple of rounds of discussion with the R&D team and identifying the need (marketing) and problem areas (R&D), the design team found that, as a human being and engineer, whenever we think of 'locking', the solution visually is to have a 'lock and a key' and make the key common, difficult to duplicate and usable for specific manholes and available with a service person only in possession of a master key, which can open all, along the lines of a hotel locker systems, where all rooms can be accessed with different keys along with a master key. Another usual solution is to make a lock in the cover with very special fixture tool, other than a key, to open the cover. Another thought was to make a very unique tool fixture (other than a key) to open the closed manhole cover and accessible to authorized people only.

In phase one namely the Design Research and Ideation segment, finalized from the usability research, competition and general research benchmarking of products, three design concepts in 3D photo realistic rendering and short listing of one design for further exploration and refinement was done. In phase two, Refinement and Detailing with basic 3D models of one selected concept, based on client's inputs of form, function, usability, material and manufacturing, preliminary design check for manufacturability, mechanism, reliability, cost and design finalization, along with agreed specification was achieved. In phase three, Engineering Design detailing of the selected concepts for complete product (parts and assembly), detailed 3D model release for mock-up prototype, scaled down mock-up prototype of one selected concept (partial or full) was concluded. Through phase four, Engineering data, 3D files and drawings of the final design were refined.

In the redesigned manhole cover, the hinge was designed to go in and lock inside a pocket of the frame, with the help of a small connector. This was integrated with an expansion bolt and supported by features like a self-locking tilted cover.

In the case of a leak proof reinvention, the design evolved with the client - the MSME, to create a passage of water in the hinge location. Instead of an introduction of a rubber gasket, this simple solution helped protect from damaging the materials and electrical equipment, placed inside and exposed to a highly unpredictable outdoor climate situation and rough usage. This solution solved the purpose, as well as saved on the cost of the product, besides maintenance cost. This goes as a regular offering, but the product can now go with the gasket as its offering now depends on the requirement and relevance.

There were various challenges faced during the design process to achieve the desired objective. There was a huge constraint of the current manufacturing process and achievable accuracy in casting. Installation and maintenance done by unskilled people was a major factor in the process, as countries like Africa and India can't adopt easily to a highly technical solution, and thereby demand simplicity.

There was a restriction created by an in-house manufacturing capability and resource crunch. Issue of vastness of the product portfolio and variety of applications, augmented by material constraint, installation process limitation, an environment and usability restraint (vertical locking mechanism, manual operation and weight of the components creating safety issues while someone is inside). Transportation and installation friendliness remained the other issues.

## Way Forward

The final product has been prototyped and is going through the rounds of refinements. There have been queries from customers from overseas markets. "We are confident of the redesigned product's potential" mentions N. Pitchaia

## The Advantages

The advantages that emerged out of the redesigning effort included it becoming a theft proof manhole cover with an inbuilt solution, without any extra components, at a cost easily affordable to African countries as well as India, where stealing manholes is a big problem. Moreover, the design is very simple, easy to manufacture and assemble on site and cost effective.



## Background

Probably one of the most taken for granted but prominent elements in our living environment is a light 'fixture', also known as 'luminaire'. This is primarily an electrical device used to create artificial light with the use of an electric lamp, integral to urban spaces. All light fixtures have a body and light socket to hold the lamp and allow for its replacement. Fixtures may also have a switch to control the light and require an electrical connection to a power source, to which permanent lighting may be directly wired and moveable lamps plugged in.

A 300 crore decorative home lighting market in India is a small constituent of the 5000 crore macro market in this segment, which is growing 20% annually as against 7% growth of the overall lighting market. Lighting is doing well in both online and regular retail stores for both personal use and for gifting. In the appropriate price range, it falls into an impulse purchase category.

With increasing focus on home decoration, the demand for attractive lighting at various price points has increased, leading to the creation of a high potential market. The market is therefore becoming competitive for MSMEs due to the entry of international products from China, Italy and other countries and Philips Lighting India, Bajaj Electrical Ltd, Crompton Greaves Ltd etc. in the domestic market.

The SEC A/B consumer, typically educated and well travelled with exposure to global products, owns large homes and is willing to spend to own and maintain a modern and well decorated home. On the lookout for world class products closer home, he is willing to pay for the right kind of product.

Indira Engineering Company is a small time manufacturer of electrical fittings, switch boxes, moulds for rubber auto parts and rubber matting. They function as vendors for larger manufacturers and wholesalers including dyes for sheet metal products, body parts and accessories for industries that deal in auto rickshaws, power tillers and

machinery used in the civil construction industry.

The MSME planned to enter the decorative lighting market by making better looking, cheaper products, out of locally available materials copying already existing products and sell the products directly. However, they were not able to match the cost.

Alcubis is a Design Solution company working with organizations, helping them design and bring to the market meaningful products and services, identifying gaps in their services and products, and deriving comprehensive product strategies. Their capabilities include Product Design and Styling, Retail, Color Material and Finishes, Design Research and Strategy.

## Design Objectives

There were very cheap Chinese products dumped in the market and Indira Engineering Company was unable to compete with the same. Moreover, the production cost was high in Kerala due to higher labour, space cost etc. Lack of supporting facilities for finishing, plating, aluminum welding, glass working etc only compounded the situation.

It was evident, that design intervention in this project would well be the stepping stone for the MSME, to transform into an innovative and quality lighting fixture manufacturing brand, from a small time manufacturer of metal parts. With the right skill levels of the setup, the project held the potential of providing the local consumer high quality locally manufactured products, designed to meet his specific needs at the right price.

The project aimed at enabling growth for the MSME unit through design and development of a range of lighting fixtures varying from basic products to decorative chandeliers, specifically aimed at the domestic Kerala market.

## Let There be Light



**The MSME**

Indira Engineering Company  
Kottayam Dist, Kerala  
Contact Person : C. K. Jaya Krishnan



**Designers**

Alcubis Design Solutions  
kottayam, kerala  
Contact Person : Elizabeth John

*'Enhanced attractiveness in common lighting fixtures'*



## Design Journey

A market study was conducted in phase one, where local stores of lighting fixtures were examined. This gave a thorough understanding of the competitive landscape. It included scoping on study of the unit's capabilities on access to design intervention, vendor base associations, availability of skill sets in the vicinity, followed by market analysis to identify like kinds of products required. A design brief was generated with a clear and specific understanding of design interventions and boundary conditions to be agreed upon by the client and consultancy. The design segment covered design research, mockup development, testing etc., which were a precursor to prototyping, documentation and marketing support that included product shoots, material generation eg: brochure development and finally documentation.

The aim was for the Designers to be able to have an idea of existing product categories in various markets and thereby not be limited by previous experiences or what is present in the local market. Care was taken to broadly categorize and present different types of fixtures like pendants, wall, floor and ceiling mounted. Till then they had only manufactured wall mounted lights. An introduction to various luminary categories was also initiated with images for clarity. A focus was maintained on redesigning to create good aesthetics and work with availability of locally available material only, e.g. discontinuation of lamp shades or curved glass not available locally.

Approval of the design output took place in two progressive stages, by a single point contact from Indira Engineering Company. The payment terms were outlined with 40% of the designers fees in advance towards the formal initiation of the project and in three pending installment 20% at the end of Phase 3, Phase 5 and final one at the end of Phase 7.

The focus was on redesigning ambient lighting to light up the room evenly with minimal shadows, accent lighting, directional lighting or lighting that highlighted a certain object or architectural feature in



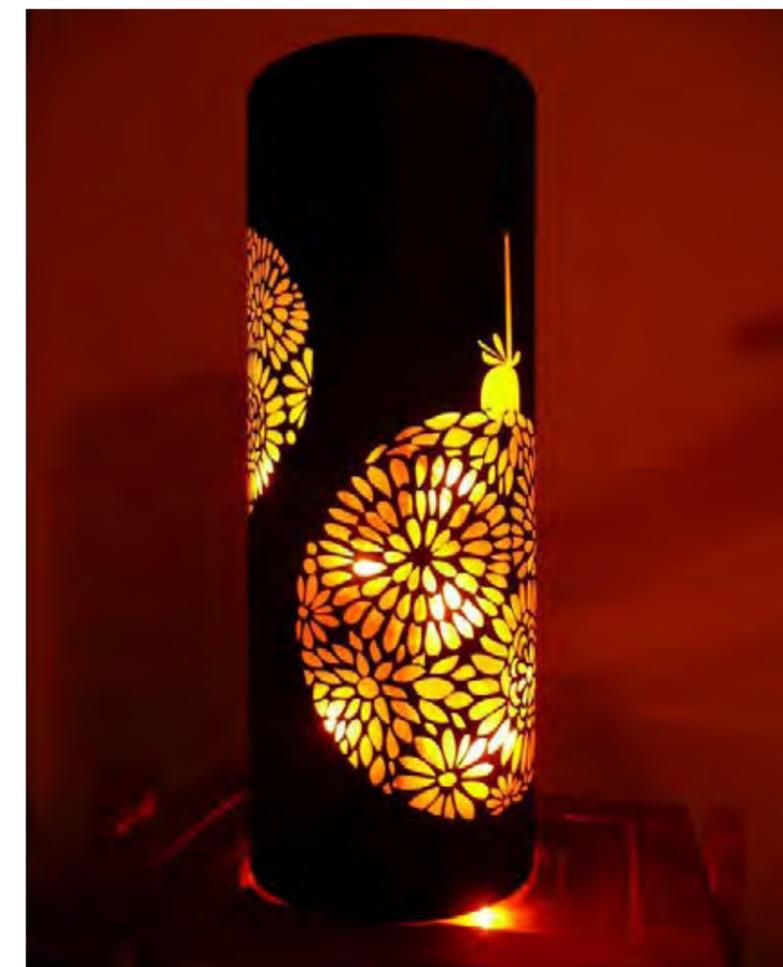
the room. Then there was a range of task lighting for specific activities like reading, writing, cooking etc. as also ornamental. All this with an understanding, that "lighting not only provides light but also acts as a decorative object or work of art, keeping in mind the consumer and retail opportunities available to IEC in the room."

Low capital was always a primary concern in the project throughout. Having experimented with a few ideas, the design team settled on using decorative plates from a single blade. When used repeatedly on sheet metal cut to size, the blade efficiently generates decorative fins without any material loss. These can then be arranged in clusters to form decorative lamp shades. The concept found immediate resonance with the MSME, as the initial investment into blade making, as against mold making was low. The traditional shapes and finishes (brass, gold and silver) were popular in Kerala, a state that used brass extensively in interiors. The current architectural preference being strongly towards the traditional, the product emerged completely suited for the market.

Multiple fin shapes based on the same concept was designed to allow variety and choice. To take the product range further, at a later stage, to allow multiple lamps to be arranged, to create large chandeliers.

## Way Forward

Indira Engineering Company retains the rights to produce and sell the designs under their own name. The Design rights remain the property of Alcubis Design Solutions and can be used by them for their own purposes like competitions, work display, in their own name. However the designs cannot be sold by Alcubis Design Solutions to any third party for commercial purposes.



## The Advantages

When compared to the older version of the lighting fixture, the MSME unit has benefited in terms of volume, having produced 200 pieces of the redesigned version. The marketing plan includes sales through established lighting fixture retailers in the area, besides e-sales through existing sites like e-Bay

From a marketing perspective, the range delivered high volumes through easy to manufacture economical products that captured the imagination of the target segment. It enabled Indira Engineering Company to reach from the smallest to the largest retailer. From the design perspective, it was the right time to introduce glass as a material to Indira Engineering Company.





**“The Design Clinic Scheme is a good platform for designers and manufactures to work together on. It is difficult otherwise to find designers to come down to work in small towns like Thangarh.”**

**a MSME unit Owner, Thangarh**

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# Writing a Project Proposal

The core objective of the Design Clinic Scheme being to improve manufacturing competitiveness of the MSMEs in the country, design projects form important component of the Scheme. The design outcomes of the projects completed so far with the financial support from the Scheme have effectively demonstrated the benefits and capabilities of design towards achieving this goal. These projects have helped improve productivity and also the market share for their beneficiary MSMEs. Design interventions have helped reduce materials, weight, and product size/foot print area, etc. of the products designed. Product components and manufacturing processes have been optimized. The products have been improved from their usage/ergonomics, functionality perspectives. These design interventions have helped improve product aesthetics and overall brand image for their beneficiary MSMEs.

The Scheme Secretariat as of October 2013 received 240 professional design project proposals and 143 student design project proposals. These proposals have been received from as many as 14 different MSME industry sectors. The project proposals are first assessed by external experts and then placed, along with their recommendations, to the concerned Committees (Project Implementation Committee, (PIC) for the student project proposals and Project Monitoring and Advisory Committee, (PMAC) for the professional projects) for their final approval. The project implementation team facilitate the entire process right from encouraging MSMEs to take up project; help identify designers wherever required; guide, advise and facilitate applicant MSME and the designer/s in developing project proposal; scrutinize the application/proposal as per Scheme guidelines; facilitate external experts for project proposal assessment; present the proposal and the recommendations to the Committee and finally informs committee's decision to the applicant MSMEs/Designers. Thereafter the implementation team facilitate the awardee MSME and the designer complete the required formalities to start the project, process their requests for payments etc., and constantly monitor the progress at every stage of the project.

Implementation team's association with each project and with its main stakeholders, i.e the MSME and the designer/s, thus ranges from minimum of 8 weeks to more than about a year. This close association with the projects submitted to the Scheme, have helped the team understand the concerns and expectations from each of the stakeholders of the Scheme - the MSME unit owner; designer; subject experts, designers and/or academicians as project evaluators; industry apex bodies as members of the committee, and that of the government. Each proposal is thus scrutinized from different perspectives, reviewed and discussed in detail, before arriving at the final decision for its approval or rejection.

Financial support, as can be availed only once and by the first time users of design, majority of the applicant MSMEs may not be aware of the design process followed as well as the expectations from the design project. For majority of the MSMEs, even though financially subsidized, their part of contribution for the design project and the subsequent investments required to take the new design further to the market becomes a major investment and commitment. Thus,



while developing the guidelines and formats for the projects, we were conscious in retaining the required flexibility and scope for the MSME unit and the designer to develop terms and conditions suitable and agreeable to both; their commitments and project deliverables as well as the approach to be adopted for the project. The objective being to reduce the financial burden and the risks involved in exploring design, through reimbursing part of the design cost and providing assurance of deliverables through detailed scrutiny of the proposal, comparative assessment and supervisions are avoided and kept to a minimum, only to monitor the progress of the project.

The Design Clinic Scheme is one of the ten components of the National Manufacturing Competitiveness programme (NMCP) of the ministry of MSMEs. The Scheme thus expects design to be used as a tool to improve the manufacturing competitiveness of this crucial sector of Indian industry. The criteria of assessment are developed accordingly ([http://www.designclinicsmsme.org/Prof\\_Project\\_Evaluation\\_Criteria.pdf](http://www.designclinicsmsme.org/Prof_Project_Evaluation_Criteria.pdf)), and thus include productivity improvement; processes, components, material optimization etc., as part of the expected project outcomes. The project that assists industry move up the value chain, reduce import substitute, increase export potential are some of the important Scheme criteria. The project evaluation team - the external experts and the members of the committee, thus face difficult task, starting from gauging the experience and capabilities of both the MSME and that of the designer to undertake the proposed project; scope for design intervention and for the introduction of new design in the market; as well as to gauge the design fees and the project duration proposed; besides assessing the project from the perspective of the Scheme criteria mentioned above, and the expected basic design criteria.

From the project proposals received, 135 professional projects and 77 student projects have been approved and are at various stages of their progress. Over 35 professional projects and 30 student projects have already been completed from these approved projects. However,

as far as the design projects are concerned, we have not been able to achieve the targets at the speed we had expected. As mentioned earlier, design project outcomes are important to create the much required interests in design among the MSMEs. The slow response, as is understood from the analysis of the projects and their progress, is due to variety of reasons, some of which can be listed as:

(a) Slow response from MSMEs in taking up projects - As new user of design and with substantial investment (even though subsidized) from the point of view of MSMEs, they do not find themselves to be ready to explore this option of design projects. MSMEs would like to be convinced of the benefits through demonstrable outcomes.

(b) Delays of completing approved projects - The approved projects are getting delayed during different stages of their progress for the reasons ranging from differences of opinion between MSME and the designer; reduced level of interest and motivation from MSME while the project is in progress due to their other commitments, new priorities and/or changed situations; non availability of funds, materials for prototype; etc.

(c) Slow response from the Indian design fraternity - The Scheme is yet to be embraced by the Indian design community at the level expected, and for them to be its ambassadors to take the message of design to the needy MSMEs of the country. Though the projects have been approved at a fairly good overall rate of approval at about 60%, the rejection of the project proposals do create disappointments, especially considering the small design community in the country.

Though various new initiatives such as field executives visiting individual MSMEs to explain the Scheme and it's benefits; actively participating in various industry expo, exhibitions, conferences etc.; setting up a webpage for interested MSMEs on Scheme website, etc. have been implemented by the team, the conversion of MSMEs' interests into project proposals is still low.

Design projects are normally generated by the designers/design firms through their personal contacts and personal repo developed with the industry/client. The proposals are thus discussed at individual level, clarified and negotiated before its approval by the client. As a normal practice followed, the design task/design process for the proposed project is initiated by the designer only after the contract/agreement is finalised and the advance amount of the design fee is released. Unlike in architecture, where the architect pitches for the project with the proposed design direction/design concept, thereby providing required clarity for its client to understand the expected outcomes from the project before entering into the contract, design projects are normally undertaken on the basis of the project proposals developed based on initial discussions. Such proposals, developed with limited information and within short time, would then comprise of generalized statements within a common proposal format developed based on individual experiences. These proposals lack the much required clarity and specificity, in terms of its detailed scope of work, process to be adopted, as well as the expected deliverables of the project. MSMEs expect handholding support from the designer till the product is launched in the market. In the absence of any R&D department/activity within the industry, designer is expected to develop all the necessary details himself and if required, help develop new vendors for the new design. These proposals would thus leave scope for unexpected situations, misunderstandings, conflicts in the process.

Over and above these, in the case of the Scheme, though all the efforts are made to get the clarifications wherever required before its final decision by the committee, largely distant/remote evaluation process leaves limited scope for further addition, clarifications and/or corrections in the proposal once submitted. Sketchy proposals would fail to create that much required clarity, transparency and confidence among its evaluators. These proposals would fail to communicate and reflect the purpose, vision and understandings of the designer and that of the client. It is important to note that for the Scheme and the

distant evaluation process thus followed, it is the project proposal that is being assessed, and not the capabilities of the designer/design firm, which is normally the case for the projects undertaken at individual level.

The expectations of the Committee normally is to see the project creating measurable, significant and demonstrable difference from the one already exists in the markets. These improvements are expected to be in the context of the NMCP criteria. The project proposal is thus expected to clearly highlight, and as far as possible in a tangible form, the opportunities/gaps identified, scope for improvements/changes, and the expected outcomes of the project. Inclusion of background study, product and business audit, market analysis, other related references, thus form important support document/information to clarify, convince and justify the scope for the project and thereby help substantiate the proposal. Detailed project specific terms and conditions, considering variety of factors affecting each stages of the project would help plan required resources well in advance.

Little investment of time and efforts from the designer at the stage of developing the proposal, would help create the much required clarity for all the stakeholders involved, that is the MSME, the designer and the evaluators. Avoiding undue delays, conflicts and disappointments, would help complete the project in a systematic, timely and professional manner. Specific, detailed and contextual project proposals, would certainly help address majority of the issues for slow response mentioned earlier. While offering better clarity to the client and the evaluators, thereby reducing its chances of rejection, and once approved, increasing chances of their timely completion, the clarity developed at the initial stage of the project forms crucial parameter towards achieving the success of each of the projects and thereby the overall objectives of the Scheme.

The implementation team, based on the experiences gained over these last three and half years, is constantly improving and refining the proposal format to assist the MSME and the designer to include all the necessary information and thereby help effectively communicate their views and objectives of taking up the project. Though proposal writing and especially detailed description of every step may not interest most designers, it is felt most necessary for establishing the clarity and confidence among the evaluators. As a broad-based Scheme covering so many industry sectors (Scheme has covered 28 industry sectors through seminars and awareness programmes and received proposals from 14 different industry sectors of MSMEs), from such varied enterprises as micro, small and medium enterprises, and from across the country, specific and contextual details of the proposal would help evaluators and the committee members better understand the MSME's and that of the designer's perspectives and intents for undertaking the project.

The project proposal, especially from the point of view of the Scheme, can thus be divided into the following sections:

Background/context - As the proposal is being submitted to the Scheme (a third party) for financial assistance, it is critical to establish the background and the context for the project to be part of the Scheme. The purpose for undertaking the project therefore needs to be clearly established upfront. It is also important to establish the capabilities and availability of resources to undertake the project and subsequent efforts to bring the product into the market. Providing details in terms of MSME unit's (including the owner/s) historical background; experience, capabilities and interests; range of other products/components produced by the unit; market share and unit's current position in the market (may include list of few of its clients); competitors and competition faced in the market; technology and market trends; etc. will help develop the much needed confidence among the evaluators and the sponsors (in this case the government) to support the project. As a formal requirement, the Scheme guideline

expects the MSME to be profitable for the last three years. These, and any other supporting documents for the information/details provided in the proposal as suggested above, would help better communicate the intent and seriousness to undertake the project.

Scope of the project - Detailed product description at this stage of the proposal, would help bring the reader/evaluator and the designer/author of the proposal to a common ground/level of understanding. The description should cover all the different aspects of the product, including its technology and operational details, functionality and features, usage, areas of application, etc. It will be advisable to consider that the reader/s of the proposal may not have experience/knowledge of the product being discussed, considering the vast range of products and the industry sectors the Scheme covers. Coupled with this, providing reference of competitors' products would help reader understand the status of the product discussed and the need for its improvements/design.

Mapping the opportunities/gaps to develop specific scope of work, forms the core of the project proposal. This calls for systematic, detailed and holistic product, processes and business audit. Investment of little time and efforts at this stage will help clearly identify areas of improvements leading to developing possible directions for project in consultation with the client. Detailed criteria for project assessment developed for the Scheme and uploaded on the Scheme website as guideline may be used for carrying out this audit. While helping narrow down the scope of work for specific and focused design intervention efforts and avoiding over ambitious commitments, these would also help quantify (provide tangible form) the level of improvements proposed for the project. Each of the areas of improvements identified and quantified (as is expected as part of the project proposal, as per the format) can then be clearly justified through proper visual documentation and description. While providing the much required confidence to both the client as well as to the evaluators, the clarity thus developed will help develop concise

project proposal with clear deliverables. It will also help plan and arrange for the resources required at different stages of the project.

The Scheme objective being to improve manufacturing competitiveness of the products thereby focusing majorly on their redesign, the format thus developed will be applicable for most of the projects proposed. The visual documentation of the audit process would form major support to contextualize, clarify and justify majority of the improvements proposed.

Design Process - As mentioned earlier, most MSMEs would be new to design application. The proposal should help explain the quantum

of work and efforts involved. Every steps of the design process to be undertaken by the designer, therefore need to be described in detail. By their very nature, most MSME's would be impatient as far as the outcomes are concerned. Projects of longer duration may reduce their level of interests and motivation. The project therefore should be tightly scheduled with clearly defined phases and tangible deliverables at the end of each phase. Lack of communication can create doubt. The MSMEs therefore need to be constantly engaged, informed and involved in the project.

Deliverables - It will be easier for both the MSME client as well as for the Scheme Secretariat to monitor and gauge the progress of the

project, if clear deliverables are identified and agreed for each step, for each phase and for the entire project. These deliverables should be in tangible form and as far as possible should be quantified, to avoid any dispute, misunderstandings or conflicts at a later stage. Design project specific terms used in the proposal should be well described and clearly defined (design drawings, mock-up models, renderings etc.) The Scheme expects prototype of the new design as the final deliverable for every design projects supported.

The MSME needs handholding support from the designer up to the time the newly designed product is launched in the market. The Scheme expects the designer to be involved with the MSME/with the project at least up to the completion of the first prototype. However in most cases, the responsibility of making the prototype as would be left on the client/MSME and with its/his largely unorganised approach, it becomes difficult to complete the tasks in time. It is therefore important to plan this activity well in advance, right from the beginning of the project, with well defined tasks and schedule. The closure report of the project should include detailed guideline for the MSME, in case of any further development work required.

The Scheme reimburses 60% of the total approved design project cost (max. up to Rs. 9.0 lakh for individual MSME unit and Rs. 15.0 lakh for group of four or more MSME units) covering the design fees, prototype and project related expenditure (travel, documentation etc.) on actual basis. Detailed description of the steps/design process and that of the deliverables along with the list of resources (including human resources) helps develop and justify the project fees quoted. Detailed breakup of the involvement of human resources including their duration of involvement/engagements with the descriptions of the tasks/responsibilities, rate of their payment, etc. and similarly, breakup of the deliverables in the form of materials/resources, estimated quantities, labor and processing costs, etc. will help estimate the project cost on a fairly realistic level. This will also help better explain the fees charged, to the client MSME and the sponsor

(evaluators and the committee members). Though prototype and other project related expenditure are reimbursed by the Scheme and thus also charged by the designer, on actual basis, it will be important to help MSME/client get the overall and realistic estimate of the project cost.

Well developed project proposal would thus help clarify most doubts and help instill confidence among the client MSME unit and the sponsors. While increasing chances of its approval, it will help successfully complete the project within the specified time duration. Such detailed and contextual proposals will help designers deliver projects in transparent and professional manner, thereby helping MSMEs gain the much needed confidence to compete in today's fast changing markets and plan their future progress to move up in the value chain.

Guidelines, proposal format, project assessment criteria, list of approved projects etc. can be found at <http://www.designclinicsmsme.org/about-dcs/design-project>

**Professional Design Projects Criteria for Assessment**

**Evaluation by Project Assessment Panel Member**

Project Code: \_\_\_\_\_

Project Title: \_\_\_\_\_

Member's Name: \_\_\_\_\_

Date: \_\_\_\_\_

Place: \_\_\_\_\_

Signature: \_\_\_\_\_

**Criteria Factors**

**Applicant Criteria**

- Whether beneficiary unit(s) (Applicant) is a micro, small or medium enterprises as per the definition of MSME Act 2006.
- Has the applicant used internal or external design expertise before.
- Is the Applicant a profitable entity in the last 3 years of its operations.
- Whether the MSME demonstrate either an export performance or potential to export.
- Whether the MSME units involved in the similar product manufacturing for which they are seeking the financial and experts' assistance.
- In case of new range of product, has MSME units provided the valid justification for taking up the project with production, profitability and market share projection.
- Any other relevant factors (based on the measurable positive difference that a design intervention will bring to the MSME either in absolute revenues (indicating higher profits) or in percentage terms).

**Co-Applicant Criteria**

- Whether the Designer or the design company or acclaimed institute (co applicant) bodies or companies established or incorporated in India under the Indian laws with ongoing business.
- Whether the Designer or the design company or acclaimed institute have demonstrated expertise and qualification in the problem area that it seeks to solve for the applicant MSME.
- Does the Design expert demonstrated the ability to complete the project as proposed with the help of in-house / collaborated agencies.
- Whether the cost of project proposal justify the capability, expertise, collaboration and commitment shown in the proposal as per the scope and deliverables in the project.
- Does the timeline and phase wise breakup of design activity justify the project feasibility.

**Design Criteria**

- Whether the design intervention would result in an innovative new product or add incremental value to an existing product.
- Will the product have improved aesthetics/looks, ergonomics, safety features, functionality/utility, etc through the design intervention?
- Does the project proposes the transformation in product from a wider design perspective addressing the factors like users, market, technology, features, ergonomics, etc which will generate value in the form of IPR, which may comprise of patent, copyright, industrial design registration etc.
- Whether the project introduces the innovative functions, low cost technology in (product/manufacturing process).
- Whether the proposed intervention brings value addition to the MSME offering.
- To what extent, the project can help improve design team business process.
- To what extent the project can help commercialisation of new products or services and finding pathways to market.

**NHCP Criteria**

- Whether the project will help create a competitive offering to the market through the new design.
- Whether it will help in improving the process of manufacturing and productivity through the project.
- Whether the design project help reduce rejection, wastages in material, process, resources and the drudgery in labour.
- Whether the design project will increase the market share and profitability by adopting the designed approach.
- Does the project help in improving product manufacturability, serviceability, manufacturing process, packaging, logistic operations, etc.
- Whether the design intervention will help the MSME in export performance or create potential to export.
- Whether the design intervention would create a visible impact and effectively develop the capabilities of the MSME.
- Whether it is helping MSME units to become more competitive at the end of the project.
- To what extent the project can help transform design activity into credible deliverables, be it product or service, that manifests exploration and deployment in the form of intellectual property, which may comprise patent, copy right, know-how or design Registration.
- To what extent the project can add value to the products or services concerned and increase their competitiveness.

**Overall Assessment:** (Based on the measurable positive difference that a design intervention will bring to the MSME, either in absolute revenues (indicating higher profits) or in percentage terms).

**In case of recommendation to revisit the Design Project Proposal please detail out among the following areas:**

- Design Intervention
- Duration of project:
- Cost of Project:
- Deliverables:
- Any other:



**“We could upgrade our product only because of the financial support of the Design Clinic Scheme. The cost involved in design up-gradation never existed in our budget.”**

**a MSME unit Owner, Nashik**

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## Design Projects by Students

One of the important components of the Design Clinic Scheme, Student Design Projects encourages young design minds to study design problems of MSMEs and bring out innovative design solutions to improve manufacturing competency. The Scheme provides opportunity for the MSMEs to explore design through engaging final year design and engineering students to take up relevant problems as part of their graduation/thesis projects. Thereby it helps explore and create the much needed industry - academia linkage at this level. The Scheme reimburses 75% (maximum up to Rs.1.5 L) of the expenditure for the final year thesis/diploma projects of the young designers.

Country's large micro, small, and medium sectors of the industry provide ample opportunities to designers for design interventions. The vast reach of multiplicity of clusters, variety of design issues, and social and economical relevance of the sectors are quite inviting to the Designers to be actively involved in developing innovative design solutions relevant to the sectors. While understanding the unique characteristics, their strengths and constraints, the students get to apply their learning in the real life situations and prove their capabilities. The project provides the opportunity to interact with all the stakeholders of the product/problem undertaken, from the unit owner, workers, maintenance and service personnel, users, to dealers, competitors, etc., get their feedback and accordingly improve, refine and test outcomes, and in the process gain valuable learning and rich experiences. Thereby help the student develop relations, contact and network and in the process gain the much needed confidence to step into the real world. Exposure to this important sector of industry so critical to country's economy will help these young and emerging designers, while develop the much needed empathy and connect with the Indian context and explore this sector as their career option.

A large number of upcoming young designers pursuing design related studies in their final year have shown considerable interest in understanding and finding design solutions for the micro, small and medium sectors. Over 115 student design projects specifically

aimed at design intervention for the MSMEs have been registered out of which 95 have been completed. 52 Academic Institutions (engineering/technology/design related studies) have registered with the Scheme and are showing active interest in promoting student design projects. Many of these design solutions are note-worthy and would certainly encourage other MSMEs to go for design intervention in their process and products.

The student design project helps MSMEs explore design with limited financial burden and risks. The graduation project, a critical phase and component of the student's study constantly monitored and guided by faculty, to be finally evaluated by the institute, would provide the much needed assurance and level of comfort to the MSME. Student's enthusiastic involvement with required seriousness, sincerity and level of maturity being a graduation project ensures in-depth and systematic process of study and research and required explorations thereby resulting into the final outcome as expected from professional projects. Through the process, the MSME will benefit by getting exposure to the latest tools and techniques of research, new developments in the fields, new perspectives, user feedbacks and market trends etc. The student designer will act as a catalyst to bring in positivity and new energy in the unit, and rekindle the entrepreneur spirit to explore, experiment and try out new approaches and solutions, the ones that could not be taken up due to busy schedule.

A coffee table booklet covering 51 of these completed student design projects listing their salient features and relevant extracts was released in the form of e-book. This booklet gives a glimpse of the design awareness generated among MSMEs and contributions of the young designers to these vital sectors and show enthusiasm of these youngsters who preferred to address the design demands of the micro, small, and medium enterprises. Detailed project documents of these projects are uploaded on the Scheme website. These young designers, it is felt, would continue to patronage the design needs of this vital sector in the later part of their career. The student designers

have worked in the sectors ranging from health, safety and security; agricultural equipment; auto components; machinery; handicrafts; garments etc. While some of these project outcomes have already been launched, other projects are in the process of their further developments. The project 'Design of Electric Chimney and Solar LED Street Light to Drive The Economy of "Reuse"' by the student designers Anand Karelia & Nitish Maurya, for the MSME unit Epsilon Engineering Pvt. Ltd., Gandhinagar, Gujarat has been awarded i-design. Another project titled 'Low Cost Sanitary Napkin Making Machine' by the student designer Surbhit Arora of ITM university, Gurgaon, won 1st prize during the national seminar on "Rural Entrepreneurship: Tapping the Grass root Innovation in Micro Enterprise". The e-book on various student design projects is available on the Scheme website and can be viewed at <http://www.designclinicsmsme.org/wp-content/themes/default/docs/designblossoms.pdf>

The financial support provided from the Scheme for final year thesis project/graduation project encouraged students to take up projects in the area of their interests to then explore and develop proposals/solutions showcasing new directions to the industry and the society. V. Sakthivel, a final year student of M.S.Ramaiah School of Advanced Studies, MSRSAS, Bangalore designed a Two Wheeler Medical First Aid Vehicle, that will be able to respond to a medical emergency much faster than a car or van in heavy traffic, thereby increase survival rates for patients suffering from cardiac ailments. The project focused on victims of accidents in the 'golden hour' and save their lives. The two wheeler ambulance would be equipped with all the apparatus and medicines required to treat victims at the accident spot itself. A Foldable, portable medicine kit with life saving equipment that can be carried on shoulders was part of the new design proposal. Burra Chidroopa Kalyani, a final year student of National Institute of Fashion Technology, NIFT, Delhi, developed a range of utilitarian products by recycling waste human hair. Experimenting on feasibility and amalgamation of hair with different chemicals to change the basic structure of hair, she designed and prototyped range of new

products. Productive usage of waste human hair, according to the student designer, will create a niche market and can thus create a lot of employment opportunities. S.Uppili, final year student from Vel tech Dr. RR & Dr. SR Technical University, Chennai developed an indicating device to monitor the clogging level in Air filters. Whenever the air filter reaches warning levels, the driver will get a clue through this instrument to clean or replace the air filter, thus avoiding sudden stoppages and lower performance levels.

Catering to the modern day needs of a fast urban lifestyle and lack of space, Neha Bhanu, a final year student of Srishti School of Art, Design and Technology, Bangalore, designed a convertible furniture for the young, working middle/upper middle income group in the urban sector and are living in small spaces. Focusing on the portability and ease of handling, this multi-purpose furniture fulfils various needs like storage, work, sitting and sleeping within the same unit. Similarly, realizing that in the present scenario, kitchens are made for well-planned spacious houses but space saving kitchen designs which are efficient, visually appealing and comfortable are not available, Saleem Hongal, MSRSAS, Bangalore designed a portable modular kitchen unit. This functional and aesthetically appealing kitchen targeted to the people staying in single room and can be folded when not in use. While on the other hand Jayasree KG, final year student of School of Planning and Architecture, SPA, New Delhi designed a Portable System for Weekly Market Vendors. Even though, with the advent of technology and demands, weekly markets have been subjected to considerable changes in course of time, there is immense scope as the project demonstrates, for design intervention in this area. This cost effective design solution minimizes the efforts in terms of time/energy of setting up the stall.

With the view to explore technology to create contextual solutions, Aakanksha Kulkarni, SPA, Delhi designed a device for filtering and re-using grey water from the kitchen sink. This pre-built grey water recycling system which can be bought off the shelf and installed uses

sand filter as pre filter along with reverse osmosis technology to provide clear water. The design thus helps reduce the nutrient load from the waste-water discharges into waterways, thereby reduce and prevent pollution. Dileepa C of MSRSAS, Bangalore designed a manually operated washing machine for use, especially in the rural sector. The machine works on the principle of pulsate with a vacuum cup that works as pulsating medium. It uses a simple mechanism fixed on the cap that in turn can be fixed onto any bucket available. The new design uses comparatively small quantity of water. Bhushan Gosavi, Vel tech Dr. RR & Dr. SR Technical University, Chennai on the other hand designed a Remotely Piloted Aircraft for Collecting Aero Biological Samples. Fitted with a suitable Bio Sampler, the aircraft flown by a ground pilot is designed to fly specific patterns and collect aerobiological samples at an altitude of interest.

The outcomes of these and similar other projects, developed in the form of full scale mock up models and/or prototypes were displayed at various forums and conferences by their respective institutes and Scheme secretariat to the interested MSMEs. The project outcomes also include detailed design drawings and thus are ready for their implementation and commercialization.

Few of the Student Design Projects (SDP) Case Studies are briefly illustrated below to understand the background of the design project, analytical problem approach of young design minds and the innovative solutions brought up by them for the MSME sectors. Many of these design outcomes have been well appreciated by the MSMEs and design fraternity.

**Student Design Project**

**Project no :** SDP-12-43  
**Student Designer :** Dhruv Jain  
**Design Institute :** IITM University, Gurgaon  
**Project Guide :** Mr Ashwini Sharma

**Project Brief :** Multi-Litely Load trolley  
**MSME Unit :** NA  
**Salient Features :** Our product is very easy to use with NO cumbersome or highly complicated parts. The components are very easy to assemble and the device is easy to use. Therefore, our final device will comprise of  
 • Front, Overhead and Rear loading plate  
 • Front and Back support members (with attached wheels)  
 • Detachable headrest  
 • Side clamped adjustable belts  
**Commercial Viability :** This product will revolutionize the lives of the common labourer, who forms 40% of Over 400 million population in India alone, by simplifying the day to day body hampering load-carrying work.

**Student Design Project**

**Project no :** SDP-11-25  
**Student Designer :** Manas Ranjan Mishra  
**Design Institute :** M.S Ramaiah School of Advanced Studies, Bangalore  
**Project Guide :** Manas Ranjan Mishra

**Project Brief :** Design and Development of a Water Purifier for Rural Areas. The design purifier is made of local materials and is easy to use and maintain. It is designed to purify water from any source and is suitable for use in rural areas.

**Student Design Project**

**Project no :** SDP-11-26  
**Student Designer :** KUMAR.V  
**Design Institute :** MS Ramaiah School of Advanced Studies, Bangalore  
**Project Guide :** M.N.Sudhindra Kumar, Manas Ranjan Mishra

**Project Brief :** Design and Development of a Cardamom Harvesting machine. The machine is designed to harvest cardamom plants in a field. It is a simple and easy-to-use machine that can be operated by a single person.

**Student Design Project**

**Project no :** SDP-11-26  
**Student Designer :** KUMAR.V  
**Design Institute :** MS Ramaiah School of Advanced Studies, Bangalore  
**Project Guide :** M.N.Sudhindra Kumar, Manas Ranjan Mishra

**Project Brief :** Design and Development of Cardamom Harvesting machine. Project includes the documentation of literature review on harvesting machines and understand the latest trends, present practices and collect relevant data.

**MSME Unit :** Institute sponsored  
**Salient Features :**  
 • The unmanned ground vehicle is used for functioning in place of humans.  
 • Remotely operated and controlled by human or autonomous.  
 • The field observation or viewing done through a camera and controlled by operator via communication link.  
 • Create QFD on basis of customer voice to meet the field requirements.  
**Commercial Viability :** Project is complete and can be implemented with the help of interested MSME unit as per the guideline of Design Clinic Scheme.

**Cardamom Manual picking**

DESIGN CLINIC SCHEME NATIONAL INSTITUTE OF DESIGN, PALDI, AHMEDABAD, GUJARAT | designclinicindia@nid.edu

**Student Design Projects**

**Project Brief :** Playful Color-Sorting kit for age group 2-4 years.  
**MSME Unit :** Elex India Pvt. Ltd is the world leading manufacturer of soft toys of the highest quality. The company was founded in 1980 as a trading company for engineering equipments. Their high quality, safe and beautiful soft toys become universal gift for both children and adults.  
**Salient Features of New Design :**  
 • Soft toys come in a decorative box  
 • Playful products more attractive for the children  
 • Unit fronts innovative product in child furnishing product world and custom price.  
**Commercial Viability :** MSME unit is in the planning of production and get to realize the best of products.

**Student Design Projects**

**Project Brief :** Design and Development of a Two Wheeler Medical First Aid Vehicle for rural areas. The vehicle is designed to provide first aid services in rural areas. It is a simple and easy-to-use vehicle that can be operated by a single person.

**Project no :** SDP-11-25  
**Student Designer :** V. Subhojit  
**Design Institute :** M.S Ramaiah School of Advanced Studies, Bangalore  
**Project Guide :** Prof. C. Giridhar

**Project Completed :** Government health organizations and private hospitals, which are in need of such a vehicle, will be the target user group along with many private organizations and government groups.



Exploring ceramics as a unique ornamental material, a range of jewellery for high end market was designed by Diya Kalia, a student designer of Ceramics & Glass Design, National Institute of Design, Ahmedabad as part of her graduation project. Ochre Ceramics & Pottery a Anand, Gujarat based MSME sponsored the project. This new collection of accessories was developed for its brand Ochre Beads established in the year 2011. The project concluded with branding the collection that included tags, product literature, packaging and portfolio along with products.

Ochre Beads was started with a vision to encourage women and boost the confidence in them by utilizing their hand skills to work and in return give them a sustainable source of income. The unit employs a team of 8 women staying nearby the village. The women after finishing their house hold work and sending their kids to school come to the work place at 12 o'clock in noon for five hours and work till around 5 o'clock. Each woman has a particular reason behind working. The money they get is used to fulfill the additional requirements of their family.

The designer's work here was not restricted to just designing the products to meet the requirement, but also to design in a manner that enabled the women to create those designs themselves. Divya had to act as a catalyst, involved at all the levels of development. She played a vital role in understanding the current market and user's requirements and incorporating it into further development. As part of design process Diya explored various techniques special to ceramics like noricomie, engraving, embossing etc. Colored clay was used so that the finished product enjoys a rich and unique look. "The whole journey of my diploma was a to and fro process of getting market feedback, generating ideas, explorations, training program for women and testing market again and again which was very laborious but gave immense learning, opportunities and experience", writes the student designer in her report, further adding "ceramic is a very obedient material; it can take customized expression because of

its characteristic of flexibility and plasticity. In comparison to other materials ceramic has its own charm and tremendous qualities." Kavita Pandya Ganguly, the owner of the MSME, Ochre Ceramics & Pottery says "the design initiative with Diya Kalia helped us to understanding the products we are manufacturing in a deeper sense. So we could reorient our existing range of products as well during the process. The emerging market demands, contemporary designs and creative approach towards the existing and possible new products have changed the manner we understand and approach our customers. Since this was a first time experience of designing the specific product categories, the outcome is encouraging for us. Initially we started selling our products through FAB India and now selling them in majority of craft fairs in India. In year 2013-14 we were able to sell products worth Rs. 7-8 lakhs and could sell approximately Rs. 2.0lakh products in the export market. These are encouraging figures and we are hoping to increase our production by more than 25% in current financial year."

Enumerates Kavita Pandya Ganguly, "Training and simplified production methods have resulted in a great saving on time and money, moreover packaging and branding have added value to the products. A 30% saving on labour and time and other factors have resulted in an increase in the profit margin and made the unit self sustainable. Earlier the price of the original product was between Rs.100/- to Rs.200/-, whereas with the new design the MSME unit is able to fix the price of the products between Rs.300/- to Rs.500/."

## Handmade Ceramic Jewelry Design

**MSME Unit**  
Ochre Ceramics & Pottery, Anand

**Student Designer**  
Diya Kalia

**Design Institute**  
National Institute of Design,  
Ahmedabad

**Project Guide**  
Neelima Hasija



This project is an attempt to look into the bigger picture that lies within the system associated with water, various other factors that indirectly affect the consumption of safe drinking water and perception of people about it. Increasing cost of bottled water, sustainability issues, ease of access, cost of filtration devices, etc. are growing concerns of safe drinking water especially while travelling or in case of an emergency.

The significance of pure water cannot be underestimated. The problem compounds for individuals 'on the go' and mostly travelling, for instance defence personnel, students and people living or travelling in areas where drinking water is to be obtained directly from the natural sources and require treatment/purification before consumption. The project proposes equipment that assures the user safe drinking water with ease.

Gulmohar Khan, final year student of M.Des, Product Design at I.I.T. Delhi, contacted Planin innovation, Delhi for his final semester project. The project was then financially supported by Design Clinic Scheme for MSMEs.

Once the problem area was identified, similar products available online were studied. These included Life Straw, a product invented for water purification in scenarios where nothing else is available; Life Saver Water Bottle, the one designed to last approximately 250 Liters; Steripen, a device that sterilizes water by ultraviolet rays generated by a lamp inside the device; etc. The student extensively traveled to different places to gather first hand information covering user groups, manufacturing facilities, molding process, fabrication process, markets for gauging supply chain, manufacturability and cost assumptions, etc. During the study, Gulmohar Khan visited railway stations for detailed observation of usage of public taps by people. Ease of use, cost effectiveness, use of available products and technology, handling and consumer behaviour were some of the critical factors identified to be integrated in the new design.

The size of the new product was kept similar to the presently available 1 litre water bottles. This was because if the product becomes significantly bigger than the present packaged water bottles, the consumers will not switch from such bottles to the redesigned one. Also, this may hinder the portability of the product. The filtration unit is a membrane based filter, capable of removing small particulates and pathogens- up to 99.9%. The form of the product is driven by its functionality. The inclined position helps in giving the product stability while it is filled. The design of the outlet reveals a simple and beautiful design for single handed use. The rubberized gasket seals when closed and the snap fit rotation locks it in a secured position.

The Student Design Project helped MSME understand the process of design by being part of the journey beginning from opportunity mapping, information collection, ideation, concepts, prototyping and finally product execution phase which helped in changing the mindset of the people involved at various stages of the project. It helped organisation acquire design thinking approach and incorporate these methodologies in their activities to be able to adapt to arising needs. The msme is now enthusiastic to take up projects and products which are otherwise considered to be USPs of the western world in terms of technology and design.



## Water Storage Cum Filtration Kit for Temporary Stay Scenario in India

**MSME Unit**  
PLANiN Inno. & Consultancy. Services  
(P) Ltd

**Student Designer**  
Gulmohar khan

**Design Institute**  
Indian Institute of Technology, Delhi

**Project Guide**  
Sumeer Singh



The project was aimed at conceptualizing and developing platforms to sharpen logic and reasoning abilities of the children in the age-group five and above. The maximum retail price of the game was positioned at not exceeding Rs.500/-. While maintaining the international safety standards, the new design should merge with existing company profile. The game should induce children to think beyond the normal realm. Towards this, it was aimed that the graphics be colorful and interesting, to sustain the child's interest for a longer period of time. The characters and illustrations used need to be child friendly to enable them to relate to it more efficiently. Besides maintaining flexibility the game should enable the child to play in a group as well as individually.

Pegasus International, a micro scale industry is a fast growing toy manufacturer which markets its diverse range of toys under the popular TOY-KRAFT brand. "Educational Value" is the core strength of the product line and fittingly, the company has expanded rapidly in categories that provide children with this important function. Apart from domestic markets, Pegasus International also has substantial exports and they participate in and display their products at all the major toy-fairs around the world.

Ketki took up this project as a challenge to convert a universally drab idea of logic and reasoning into something that would appeal to the selected age group. Her preliminary market study showed that the products available were generally either only for fun, or only for learning. Ketki then carried out detailed user research. The questionnaire for teachers was targeted at understanding the standard educational aids used in schools and degree of response to each by the students. To determine the children's choice and preference in terms of color, graphics and difficulty level, the study was conducted across 10 children and their parents.

Quick study models of design alternatives were developed and tested with the user groups. Based on the feedback from parents, few changes were made in the information booklet. While playing in the group, the children suggested trying out different moves to solve it with minimum effort. Color coding was suggested by the parents to help child figure out formations comfortably. This helped the child to understand the concept of formations and groups in an effective way. Color options for both sides were also taken for user-study and the child and his parents were asked to select the look which appealed the most and were incorporated.

'Turney Journey' is a game which helps a child to reason and reach her destination or multiple destinations using the appropriate tiles. This game helps the child to think of alternate and effective ways to reach the destination. The game also induces in the child, a sense of direction, where the game can be played individually or in a group. The material contents of the game includes a game board, spinner, path tiles, dice and 'Turney Journey' cards, where the objective of the game is to collect a maximum number of 'Turney Journey' cards by reaching maximum number of destinations indicated on the spinner. The puzzle's answers were provided in the game to enable the child to compare and rectify errors. The mood board is deliberately cheerful, vibrant, lively, colorful, energetic, happy and rhythmic. The technical drawings include path tiles, game board, cards and spinner.

At preset these projects feature in the Pegasus International catalog and can also be seen on their website; [www.toy-kraft.com](http://www.toy-kraft.com) 'Turney Journey' and 'Crazy Cattle', both the games developed as part of the project are renamed "Old McDonald's Farm'. Both the products are doing very well in the market and have been accepted by the Indian and international audience. The MSME unit participated in Toy - Fairs in Nuremberg, New York and Hong-Kong and displayed the new products. In the Nuremberg Toy fair Spielwarrenmess 2013, a Polish company approached Pegasus International for purchasing the manufacturing license of 'Old McDonalds Farm'.

## Logical Playthinks

### MSME Unit

Pegasus International, Mumbai

### Student Designer

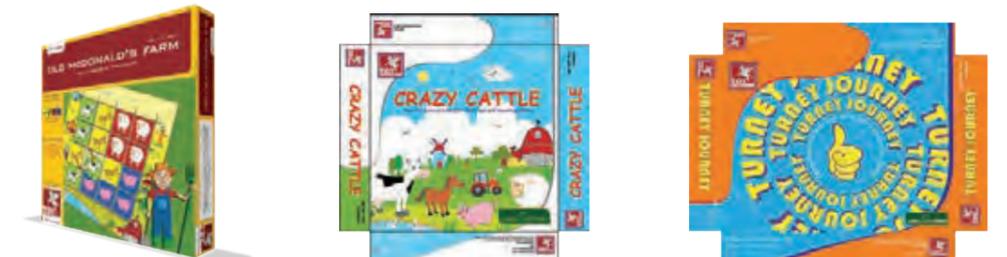
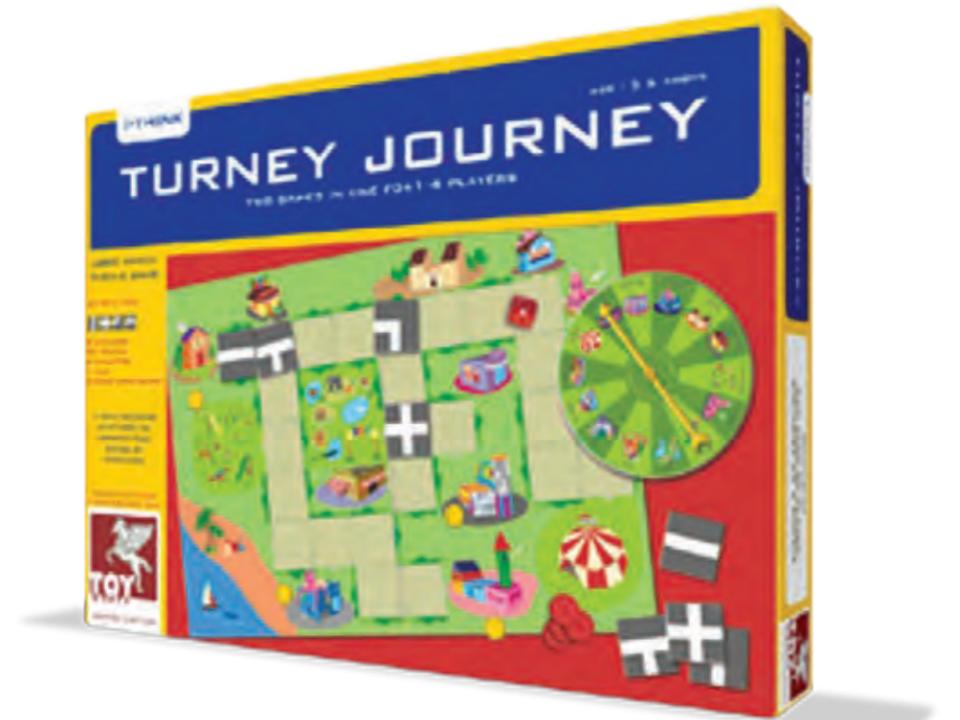
Ketki Paritosh Deshpande

### Design Institute

National Institute of Design,  
Ahmedabad

### Project Guide

Gayatri Menon



India is a country where the larger population living in the rural areas remains deprived of various critical facilities that their urban counterparts enjoy. Amongst these, access to certain life saving drugs and vaccines that require a specific temperature to maintain their efficacy, assume immense significance.

Even in the urban scenario, accessibility and transferability of critical medicines is a necessity in emergency as well as routine situations. Medicines that need to be stored in specific temperature conditions require a system for transporting these susceptible to spoil medicines, under perfectly maintained temperature conditions, is, undoubtedly, a very significant step for maintaining the country's health and well being. The need is thus for a portable cooling container system for storage and transportation of life saving vaccines for primary health workers, for benefitting humanity at large cannot be underestimated.

Nearly 70% of the vaccines are temperature sensitive, ie. it loses its effect if exposed to temperatures beyond recommended limits. A large number of vaccines are wasted due to poor and inappropriate storage and transportation. It's a challenge to make sure that the last mile of the journey in rural India should be equally protected and safe.

The project required Ashutosh to design a portable vaccine cooler with a good cooling capacity keeping rural scenario in mind. The objective was to study critical issues which occur during the storage and transportation of vaccines and propose a solution which will address all such problems without affecting the optimal potency of vaccines. The design has to be robust, rugged, friendly and simple besides facilitating ease of use. The arrangement and accessibility of vaccines need to be addressed to assist the ANMs (our primary users) and other concerned people for better operation. The design opportunity, it was understood, lay in manipulation of existing vaccine carriers to offer ergonomic advantages and certain amendments in the form, so that the weight and size of the product are reduced, without affecting the overall internal cooling. The product could also



accommodate the accessories and little personal belongings of the health workers.

A systematic design methodology was followed from research to implementation. Initial research included extensive reading and literature survey on design in the social sector. Field surveys and ethnographic studies were further conducted, by interacting first hand with the problems caused by existing vaccine carriers on different rural sites and recording related observations and insights. Vaccination sites of different villages from three states (Gujarat, Madhya Pradesh, and Rajasthan), were covered as part of this research. The size of the product, usability scenario and practical constraints of those who interact with it on a frequent basis and are keen to seek design intervention were some of the assessment areas.

After extensive research and survey, design development was initiated, in which various concepts were developed and mockups built, simulated and tested by replicating actual scenarios to arrive at an appropriate solution. The thickness of PU insulation, quantity of water used for ice packs and other features of the final portable vaccine cooler were determined. The other challenge lay in providing appropriate arrangements for packaging and accessibility of vaccines.

The redesigned product is a compact, robust and ergonomically designed one with a lighter, smaller footprint that offers improved usability, when compared to current vaccine carriers. It is designed to keep 15 - 20 vaccine vials at a time, for 12 -15 hours of uniform cooling and 1kg ice can provide required cooling for the duration. The product has been successfully tested in various user environments.

## Portable Vaccine Cooler for Last Mile Connectivity in Cold Chain

**Student Designer**  
Ashutosh Biltharia

**Design Institute**  
National Institute of Design,  
Ahmedabad

**Project Guide**  
Gourab Kar



Channapatna, a small town on the way to Mysore, Karnataka, is known for its Lacquer ware craft. It is also known as 'Gombe-gala-ooru' in Kannada, 'Gombe' meaning toy in Kannada and 'ooru' meaning village. The artisans here manufacture wooden toys for children that are colored with natural dye or lac on a lathe machine. The lacquer ware craft is characterized by vibrant color Schemes and simplistic designs. Organic materials and vibrant colors of the Channapatna craft make it ideal for children's products.

As part of her graduation project during her 2 year specialization program in Product and Interface Design at Srishti School of Art, Design and Technology, Bangalore, the student designer Ashwini Shashidharan decided to work with these artisans to explore the possibilities of venturing into the home decor sector with the craft. The exercise was aimed to expand the range beyond the 'toy imagery' that Channapatna has acquired over the years. She designed a range of bedroom accessories for children between the age group 5 to 10 years. The accessories can be built by assembling different pieces of turned wood, and also in combination with other materials like regular wood. The limitations here being that large pieces of wood more than 10" in length cannot be turned on the lathe, thus requiring design to use smaller pieces of wood that could then be assembled together to form bigger objects.

Maya organic is a Non-Profit Organisation, working towards providing livelihood opportunities for rural artisans in the Channapatna district in Karnataka. Maya organic assists artisans through skill development, enterprise building for self reliance and designing and marketing support. They currently export fine quality hand crafted wooden toys made by the artisans in Channapatna.

Ashwini started her project with extensive survey of the town of Channapatna meeting with the artisans to study their skill sets, the processes and the material used; the machinery the artisans use and market access they had; the numbers of Government sponsored

units and private units; etc. The study was aimed to understand the dynamics of this traditional craft, its struggle to stay relevant in changing market conditions in an ever changing economy and the potential for young designers like her to renew the interest and demand of consumers towards this craft. She also conducted extensive user research as part of the study.

Ashwini then started her ideation, experimenting with different kinds of wood such as teak wood, Bamboo, Sal wood, Honne wood etc.; different joineries; lacquering techniques etc. Addressing the critical challenge while designing furniture for this particular age group where the child eventually outgrows it within few years, her initial concepts focused on developing a furniture piece that could be increased in height. Designing a table that would serve as the child's very own art gallery was also one of the directions explored.

The newly designed range of furniture included 'the tick-tack-toe display unit', a table with a storage rack made of interconnected lac spindles, that provides a small space for kids to keep few books, a pencil holder or a stuff toy on it; 'Stationery tray' to keep stationery items like erasers, scales, staplers etc. ; 'Bird clips' to clip paintings onto the display unit; 'Chair that grows in height' by adding another turned piece of wood from the bottom. It includes a combination of dowel joinery and D-nut screws to construct the chair; 'Warli art Inspired bookshelf', a form that is fun and utilitarian at the same time; 'Bedside lamp' with a small shelf to keep bed side essentials like a bottle of water, a story book, an alarm and a stuff toy, next to you throughout the night; etc.



## Creating Home Decor Products Using Lacware Craft

### MSME Unit

Maya Organic Support Services,  
Karnataka

### Student Designer

Ashwini Shashidharan

### Design Institute

Srishti School of Art, Design and  
Technology, Bangalore

### Project Guide

Satish Kumar



Women's health and hygiene are of primary concern and related to safety and quality of life, where their well being determines the entire family's and on them the entire country's. Uncontrolled inflation has curtailed fulfilment of basic needs including personal hygiene, further compounded by those living in rural areas. Health problems in women therefore emerge as serious issues, where the sanitary napkin is a universally required product. In this context, the conventional method of making a sanitary napkin is very costly and thus, a larger segment of the rural female population remains deprived of this basic health and hygiene necessity.

The project focuses on the design and fabrication of a Low cost sanitary napkin making machine, so that, the sanitary napkin making process gets revolutionized wholly and can be sold in rural and remote areas at a much lower price than available in the market. Only 12% of India's 35 crore women use sanitary napkins, primarily owing to high cost. This causes various issues related to hygiene, health and at an average causing loss of days in the school and at work. The project also focused on automation of the process to increase production efficiency, and lowering of the overall cost to help these machines installed in rural areas so as to provide employment locally.

Surbhit followed a logical sequence common to all design projects, including market survey, definition of specifications of product, selection of proper mechanism, preparation of general layout of configuration, design of individual components and preparation of assembly and detailed drawings. The working of the conventional machines was analyzed and various other parameters discussed in order to reduce the cost of the process and product substantially, without compromising on quality. Various configurations were explored keeping in mind all the parameters and finally a new design with automation was made and tested virtually. The material required for fabrication was surveyed and procured from the local market according to the requirement.

After fabrication and assembly, the machine was tested for endurance, production quality, and efficiency as a precursor to launch in rural areas.

Various designs were made for solving the identified problems. One prototype has a foot operated scissor lift manual mechanism, with a foot rest. The selected prototype is an automatic, pneumatic one. The finalised sanitary napkin machine design is based on simple mechanical processes, which will simplify production and increase efficiency. The sealing and cutting machine is a simple pneumatic based one, which will seal the material and cut the unwanted part from the sides, to give it the required shape. The basic parts of the machine include, a pair of plates connected to each other with nuts and bolts with embedded sealing element, outer casing of the plates (which act as a cutter), mould, guide mechanism, pneumatic system, wiring hoses etc. The machine requires a single phase of electricity for 2HP drive (air compressor) and for heating the tungsten element for sealing. The machine has the capacity to produce 4 napkins per minute. The material used for making sanitary napkins is wood pulp and is biodegradable. A pad of wood pulp will be made, sealed with soft touch, sensitive heat control, giving final shape to the napkins.

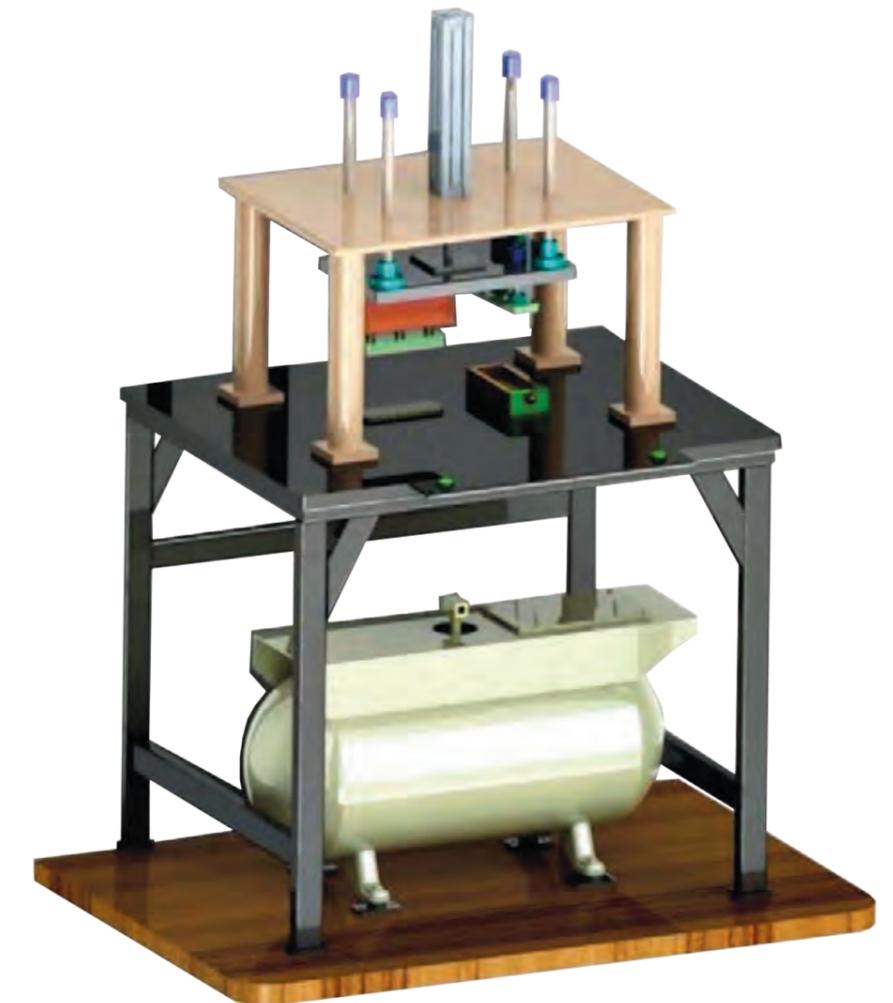
There are other benefits as well. For instance the machine can produce sanitary napkins of high quality at a very low price, allowing the rural women to take care of their personal hygiene. It is semi automatic in nature and consumes very small amounts of power. The controlling system of the machine has the ability to upgrade as per customers' reasonable requirement. Moreover, the machine is compact and portable in nature and can be installed and used at any place with minimum installation time. Besides fabrication and installation, running and maintenance cost of the machine is low and provides employment to women in rural areas. The sanitary napkin redesigning project was awarded "Most Innovative Project" at the National Rural Entrepreneurship Seminar held at JK Lakshmi Pat University, Jaipur.

## Low Cost Sanitary Napkin Making Machine

**Student Designer**  
Surbhit Arora

**Design Institute**  
Institute of Technology and  
Management University, Gurgaon

**Project Guide**  
Ashwini Sharma



### Integrated Play System

**Student Designer :** Richi Mohanty  
**Design Institute :** School of Planning and Architecture, New Delhi  
**Project Guide :** Manoj Mathur, Abid Bilal, Navoon Rempel, Vinod Gupta

To design an indoor integrated play system for children of age group 6 to 12 years to be installed in semi-public spaces such as malls, market places etc. which comprises of multiple games to keep a child occupied for hours.

**Salient Features :**

- Tunnel escape creates a structure in rows so that children may race through it using crawling, bending and tunneling technique which requires motor skill development.
- The tunnel escape is a modular structure that can be rearranged as per the space available.
- Tyres used extensively as reused material.




### FLACED: Convertible Furniture

**Student Designer :** Richi Mohanty  
**Design Institute :** School of Planning and Architecture, New Delhi  
**Project Guide :** Manoj Mathur, Abid Bilal, Navoon Rempel, Vinod Gupta

FLACED is a furniture system designed for flexible use in public spaces. It consists of modular units that can be rearranged to suit different needs and spaces.

**Salient Features :**

- Convertible furniture for flexible use.
- Modular units that can be rearranged.
- Use of recycled materials.
- Easy to assemble and disassemble.
- Lightweight and durable.
- Available in multiple colors.



### Identifiable: Design & Development of Playful, Interactive Products with Local Crafts & Co-Operation

**Student Designer :** Richi Mohanty  
**Design Institute :** School of Planning and Architecture, New Delhi  
**Project Guide :** Manoj Mathur, Abid Bilal, Navoon Rempel, Vinod Gupta

Identifiable is a collection of interactive products designed to promote local crafts and co-operation. The products are made from recycled materials and are easy to assemble and disassemble.

**Salient Features :**

- Designed to promote local crafts and co-operation.
- Use of recycled materials.
- Easy to assemble and disassemble.
- Lightweight and durable.
- Available in multiple colors.



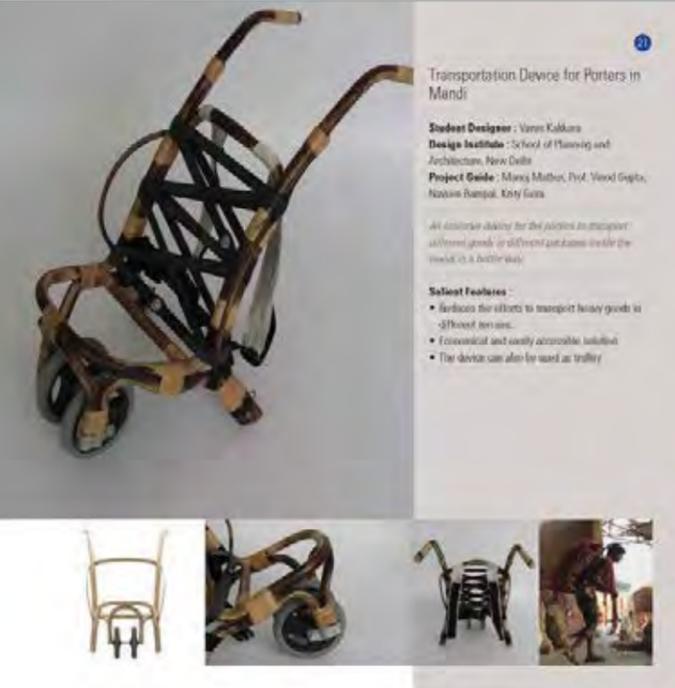
### Transportation Device for Porters in Mandi

**Student Designer :** Varun Kulkarni  
**Design Institute :** School of Planning and Architecture, New Delhi  
**Project Guide :** Manoj Mathur, Prof. Vinod Gupta, Navoon Rempel, Richi Gupta

An innovative device for the porters to transport all heavy goods in different patterns inside the Mandi is a better way.

**Salient Features :**

- Reduces the effort to transport heavy goods in different patterns.
- Economical and easily accessible solution.
- The device can also be used as trolley.



### Design of a Kiosk for Emission Testing for Vehicles

**Student Designer :** Binay Mishra A V  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Suresh H. S. C. Reddy

Automobile pollution is a major environmental issue faced by the people of our world. Aim of this project is to improve the existing emission testing system by designing it as a Kiosk, classifying ergonomics, cost, usability and aesthetics.

**Salient Features :**

- A compact design for vehicle emission testing named as Emission Testing Kiosk.
- The portability of the Kiosk assists the operator to relocate easily.
- The tablet computer improves the user interface and also reduces the space.
- Adequate storage facility.



### Design and Development of Camera Stabilize Device for Photographers

**Student Designer :** Mohan Ravi S  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Divya Darshan, Supradip Das

The aim of this project is to design a camera stabilize device for photographers. The device is designed to be used in semi-public spaces such as malls, market places etc. which comprises of multiple games to keep a child occupied for hours.

**Salient Features :**

- Easy to use and portable.
- Reduces the effort to transport heavy goods in different patterns.
- Economical and easily accessible solution.
- The device can also be used as trolley.



### To Design a Device for Recycling of Grey Water

**Student Designer :** Binay Mishra A V  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Suresh H. S. C. Reddy

The aim of this project is to design a device for recycling grey water. The device is designed to be used in semi-public spaces such as malls, market places etc. which comprises of multiple games to keep a child occupied for hours.

**Salient Features :**

- Easy to use and portable.
- Reduces the effort to transport heavy goods in different patterns.
- Economical and easily accessible solution.
- The device can also be used as trolley.



### Economical Pkg Machine

**Student Designer :** Binay Mishra A V  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Suresh H. S. C. Reddy

The aim of this project is to design an economical package machine. The machine is designed to be used in semi-public spaces such as malls, market places etc. which comprises of multiple games to keep a child occupied for hours.

**Salient Features :**

- Easy to use and portable.
- Reduces the effort to transport heavy goods in different patterns.
- Economical and easily accessible solution.
- The device can also be used as trolley.



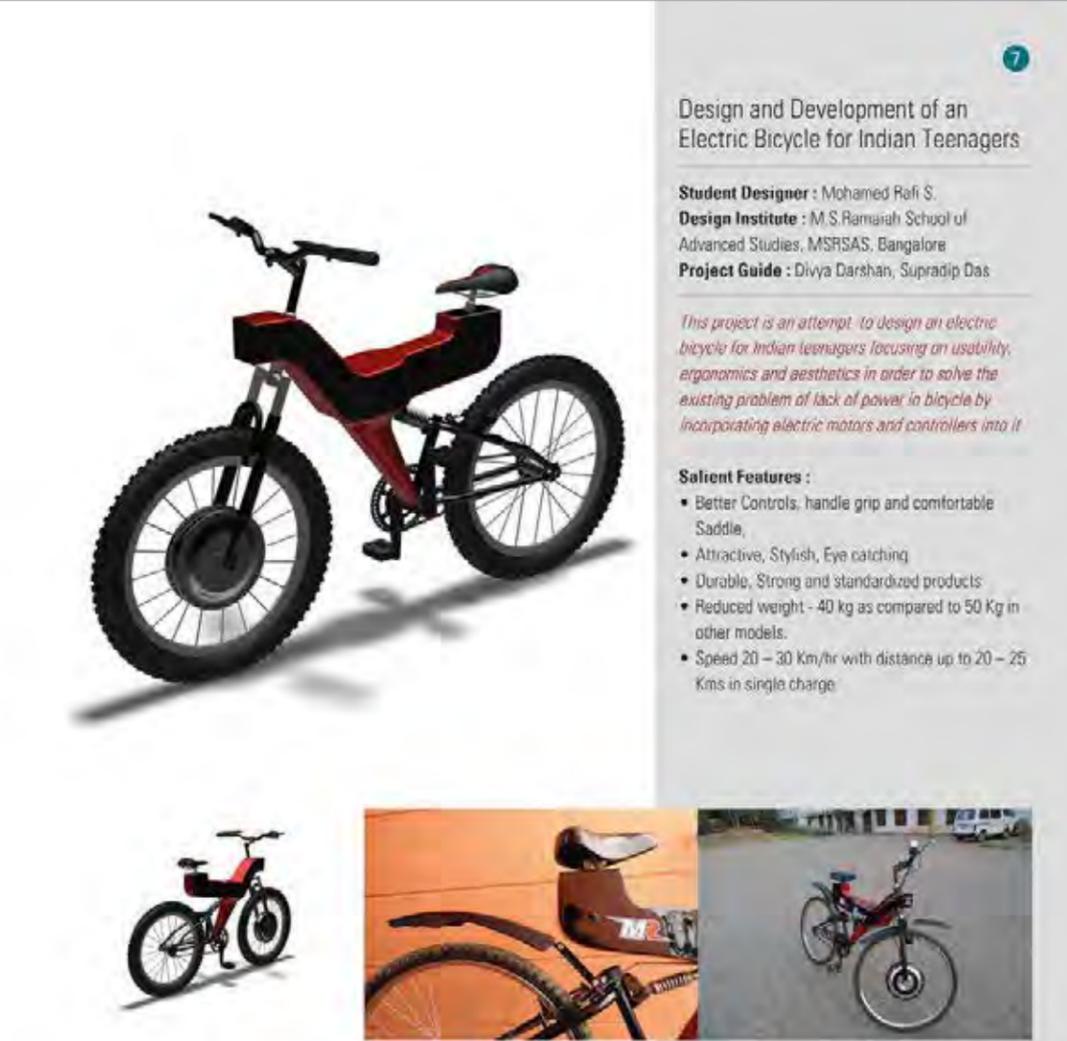
### Design and Development of an Electric Bicycle for Indian Teenagers

**Student Designer :** Mohamed Rafi S  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Divya Darshan, Supradip Das

This project is an attempt to design an electric bicycle for Indian teenagers focusing on usability, ergonomics and aesthetics in order to solve the existing problem of lack of power in bicycle by incorporating electric motors and controllers into it.

**Salient Features :**

- Better Controls; handle grip and comfortable Saddle.
- Attractive, Stylish, Eye catching
- Durable, Strong and standardized products
- Reduced weight - 40 kg as compared to 50 kg in other models.
- Speed 20 - 30 Km/hr with distance up to 20 - 25 Kms in single charge



### Water from Single Charge

**Student Designer :** Binay Mishra A V  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Suresh H. S. C. Reddy

The aim of this project is to design a device that can produce water from a single charge. The device is designed to be used in semi-public spaces such as malls, market places etc. which comprises of multiple games to keep a child occupied for hours.

**Salient Features :**

- Easy to use and portable.
- Reduces the effort to transport heavy goods in different patterns.
- Economical and easily accessible solution.
- The device can also be used as trolley.



### Identifiable: Design & Development of Playful, Interactive Products with Local Crafts & Co-Operation

**Student Designer :** Richi Mohanty  
**Design Institute :** School of Planning and Architecture, New Delhi  
**Project Guide :** Manoj Mathur, Abid Bilal, Navoon Rempel, Vinod Gupta

Identifiable is a collection of interactive products designed to promote local crafts and co-operation. The products are made from recycled materials and are easy to assemble and disassemble.

**Salient Features :**

- Designed to promote local crafts and co-operation.
- Use of recycled materials.
- Easy to assemble and disassemble.
- Lightweight and durable.
- Available in multiple colors.



### Design and Development of a Chair - A Chair, A Chair, A Chair

**Student Designer :** Binay Mishra A V  
**Design Institute :** M S Ramaiah School of Advanced Studies, MSRAS, Bangalore  
**Project Guide :** Suresh H. S. C. Reddy

The aim of this project is to design a chair. The chair is designed to be used in semi-public spaces such as malls, market places etc. which comprises of multiple games to keep a child occupied for hours.

**Salient Features :**

- Easy to use and portable.
- Reduces the effort to transport heavy goods in different patterns.
- Economical and easily accessible solution.
- The device can also be used as trolley.





**“The Design Clinic Scheme helped us to understand the process of design and facilitated the conducting of this ‘experiment’ in a smoother way.”**

**a MSME unit Owner, Panipat, Haryana**

## Reflections

The Micro, Small and Medium Enterprises, MSMEs constitute over 94% of Indian Industries. They are the backbone of Indian economy. The MSME sector is amongst the largest contributor in terms of employment generation in the manufacturing sector in the country. The country will require creation of 220 million jobs by 2025. The focus therefore is now firmly shifting to labor intensive manufacturing and to enhance the share of manufacturing in GDP to 25% within a decade. The labour intensity in the MSME sector is estimated to be almost 4 times higher than the large enterprises. The sector therefore would have to be the bulwark of these employment creation initiatives in the country.

Spread across the country covering both the rural as well as urban areas, all of its three sub sectors, the Micro, the Small and the Medium scale industries are quite different from each other, in terms of their characteristics, the issues and challenges faced by them as well as their aspirations. The diversity in terms of the size of the enterprises, the products manufactured and services offered, the levels of technologies used, the people involved, their impact and connect with the society, all make MSMEs as one of the most complex and challenging sector to work with. Majority of them are component manufacturers, original equipment manufacturers and/or ancillary units complementing production of large industries.

The manufacturing competitiveness of these MSMEs is facing a major challenge of change. The competitive pressures of globalisation, today's free market economies, and rapid changes in technologies, are all catching up in India. MSMEs thus need to be vitalized for competitiveness and sustainable growth. They need to move up in the value chain, from OEM to ODM. These call for the change from traditional methodology to an innovative product development process and the ability to remain in the business with competitive advantage. However their immediate focus today is towards tackling their day-to-day issues and challenges. Improvements of their existing business, processes, technology used, products etc. are their priority.

Majority of issues here are intertwined. These industries cannot afford full-fledged R&D and/or design interventions.

The first of its kind design intervention scheme for this sector, the Design Clinic Scheme for MSMEs, launched on 17th February 2010, thus had the humongous task of bringing design intervention to the doorstep of these needy MSMEs and help them move up the value chain. As one of the ten components of the National Manufacturing Competitiveness Programme, the design interventions here are aimed at improving the manufacturing competitiveness of the participating MSME unit/s, which is quite different from its conventional role. This reimbursement based Scheme, with its three almost independent components, i.e Design Awareness Seminar (DAS), Design Awareness Programme, (DAP) and Design Projects, with their time durations ranging from one day (for DAS) to around eight to ten months (for Projects) and each components with two to four phases of their execution, had its own complexities and challenges of implementation.

It took three months to organise the first Design Awareness Seminar, (DAS). DAP and the Design Projects, the other two components of the scheme demanded financial contribution and investment from the participants/group/cluster. Largely unorganised sector, with few formal associations and/or authorised members, initially the progress was slow, as it required establishing trust among the stakeholders. For efficacy and better impact, it was important to maintain the pace of implementation. Variety of options, mediums and models were constantly explored to reach out to the key stakeholders. The field executives travelled to over 400 clusters across the country and personally met with over 5000 MSME owners to explain the Scheme and its benefits. Persistence, patience, agility and openness to learn and improve the system helped to quickly move forward. Besides the MSME associations and the individual units who came forward with their share of contribution/s, some of the local banks, large-scale industries, state governments, etc. also came forward

and contributed on behalf of MSMEs for DAPs and/or Projects. 100 DAS were completed within the first year. 36 DAPs were organised in the state of Bihar in the year 2013-14 itself, 14 of which were organised in a short span of two months. 10 DAPs were organised in Ambala itself, an industrial town in the state of Haryana. The implementation team reached out to over 25,000 MSME participants across the country in a short span of five years through organisation of over 350 DAS, 200 DAPs, 236 Professional Design Projects and 98 Student Design Projects. 787 designers/subject experts presented and shared their rich experiences through these seminars. 219 DAPs helped bring as many designers to the doorstep of 4569 MSME units. The programmes were organized in 36 states and UT of the country, covering 27 MSME industry sectors. Over 270 MSME associations and over 1500 designers/design firms/design institutes registered with the scheme, helped take the message of design to the needy MSMEs.

The scheme has succeeded in creating and encouraging symbiotic relationship between the MSMEs and the design fraternity of the country. It helped create awareness of design among these MSMEs. The Scheme has helped bring designers to the doorstep of the MSMEs to interact, explore the benefits of design and through the process improve their products and processes. While design interventions have helped improve their products from aesthetics, ergonomics, functionality, addition of new feature perspectives etc., these interventions have helped reduce material, weight, product volume, product floor space (foot print area), etc. Design interventions have helped optimize components as well as overall manufacturing process resulting in reduction in production cost and improved product quality. Standardization of parts and components, modular approach, ease of assembly, maintenance, optimized after sale services, etc. have been some of the added benefits of these interventions towards improved manufacturing competitiveness. Design Interventions thus have provided holistic solutions resulting in incredible benefits and major value additions for their client MSME units to stand out in the competition. These have certainly created the much-needed positive

and catalyzing effects, for the MSMEs to move up the value chain.

Educational Institutions can experiment and explore different approaches to develop contextual solutions and newer directions for industries and the society as a whole. Design Clinic, the design intervention approach specific to MSMEs of the country, aptly demonstrates this strength of the institutions. However scaling up this unique design intervention approach as a scheme to be implemented across the country was in itself a challenge. Different guidelines, formats etc. developed to standardize and simplify the processes required flexible and empathetic approach to accommodate enormous diversity involved at regional, sectoral and individual levels. Scheme's web based platform, e-news letter etc. created the much-needed platform for continuous interactions and learning to build design capabilities among these MSMEs. A critical component of innovation, design is an investment that the industries today cannot ignore. The robust system of implementation now developed, will help create multiplier effect in taking the message of design to the MSMEs. This process thus initiated through the Design Clinic Scheme, is sure to create a sustainable design ecosystem for the country's large MSME sector. This will eventually help increase employment opportunities leading to sustainable economic growth of the sector.



**“A core discovery was that our engineering and production team realized the advantages of design thinking, even for a hard core engineering product, which I am certain will manifest into a significant long term development for us”**

**a MSME unit Owner, Ahmedabad**

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## Acknowledgement

The MSMEs, the key stakeholders of the Scheme, are the foremost in the credits of this book. It's their admirable spirit to compete, survive and move forward that kept all of us, the implementing team, motivated in this herculean task of reaching out to MSMEs across the country and convincing them of the need for design intervention for increasing manufacturing competency and improving quality of products. Thanks to all of them who took the risk of sailing along with us in the design intervention strategies.

Thanks indeed to the MSME associations, apex bodies, and government and non-government organizations working with the MSMEs, who registered with the scheme and helped us reach out to the needy MSMEs.

The design fraternity of the country; the designers, design firms, design institutes and design students who rose to the challenge to demonstrate the scope of design in improving manufacturing capabilities of the MSMEs, I am thankful to them for their wholehearted participation in the Scheme and for their patience and perseverance in educating MSMEs of the benefits of design intervention for their products and services.

The Office of the Development Commissioner, Ministry of MSMEs, Government of India entrusted us, an educational institution, with this major responsibility to implement the Scheme across the country. I am grateful to Shri Madhav Lal, former AS & DC for his guidance and handholding that helped us develop the momentum for the Scheme in the initial stages. Subsequently during the later part of the Scheme implementation, we could share the success of the scheme, when he took over as Secretary, Ministry of MSMEs. It was indeed our privilege to work with officials of the office of DC, MSME and MSME Dis to take the Scheme to the doorstep of MSMEs.

I am thankful to Director NID Pradyumna Vyas for the confidence reposed on me, by entrusting me with this responsibility to head this

project. His support and guidance at critical junctures helped us avert bottlenecks and move forward smoothly.

The energetic and enthusiastic team spread across five zonal offices made this challenging task of implementation enjoyable and enriching for everyone. With a common goal to take the message of design across the needy MSMEs, the obstacles and problems were together addressed and experiences and successes were shared to learn, improve the system and move forward. I am indebted to them, may be just for the fact that all of us stuck it out together for five years. My special thanks to P.S.V. Kurup and Jitendra Singh Rajput, who were among the first to join the team and helped keep the boat steady all the while.

The proposal was first prepared as an approach paper in the year 2007. I am thankful to Dr. Darlie Koshy, former Director, NID, for providing me the opportunity to be part of the team that prepared this visionary approach paper.

The task of this scale calls for continued support and cooperation from all quarters and my sincere thanks to the members from the accounts and administration department at NID and the faculty and staff members for their unwavering support all throughout.



Credits are also due to: Ravindra Jumani, Kirti Parmar, Jaimin Dave, Vimal Nair, Kumarpal Parmar, Gulab Singh Rathore, Sanjay Valera, Raju Dhulera, Kirit Chavda, Jitendra Sinh Chavda, Maunish Rajput, Vaishali M, Rugnesh Desai, V.Ravi Shankar, Prathap Murthy, Akarsh J, Bindoo Ranjan, Soumen Ghosh, Sudev Mandal, Nilufar Moidun Shaikh, Purandar Datta, Ankita Gajjar, Dimpal Patel, Vishal Pala, Shilpa C, Ali Imam Abidi, Pinki Panchal, Prasujya Phukhan, Prassun Saha, Nayabb Lokhandwala, Amita Bhatnagar, Snehal Pawar, Yatish Dravid, Soumyajit Ghosal, Achuta Rao, TVP Chaudhary, Divya Darshan, Suma, Chavan Sheetal Chander, Nayaz Paza, Lokesh B.C., Srinath Bhadram, Manu T, Gayatri Singh, Sandeep Kumar, Devendra Jaiswal, Atul Das, Sunny Kumar, Nikhil Sachdeva, Manish Kumar Singh, S. Suresh, V.A. Antony, Ashok Mondal, Ankit Majumder, Barenya Bhushan, Molthoinoo, and Sukanya Bor Saikia.

All of them have been associated with the scheme secretariat during the period of its implementation.

# Notes

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## List of Abbreviations

AOTS	Association for Overseas Technical Scholarship	FISME	Federation of Indian Micro and Small & Medium Enterprises	NIESBUD	National Institute for Entrepreneurship and Small Business Development	UPS	Uninterruptible Power Supply
AP	Andhra Pradesh (a State in India)	GDP	Gross Domestic Product	NIT	National Institutes of Technology	USA	United States of America
AS & DC (MSME)	Additional Secretary & Development Commissioner (MSME)	GIAN	Grassroot Innovation Augmentation Network	NMCC	National Manufacturing Competitiveness Council	USB	Universal Serial Bus
ASIMA	Ambala Scientific Instruments Manufacturing Association	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit	NMCP	National Manufacturing Competitiveness programme,	USP	Unique Selling Proposition
BAMWA	Baruipur Agarbatti Manufacturer's Welfare Association	HCCI	Howrah Chamber of Commerce & Industry	OBM	Original Brand Manufacturing	UT	Union Territory
BBNIA	Baddi Barotiwala Nalagarh Industries Association	IAS	Indian Administrative Service	ODM	Original Design Manufacturing	VCD	Volume Control Damper
BCDI	Bamboo & Cane Development Institute	ICSID	International Council of Societies of Industrial Design	OEM	Original Equipment Manufacturing	VHB	Very High Bond
BWWA	Bengal Women Welfare Association	IL&FS	Infrastructure Leasing & Financial Services	PCB	Printed Circuit Board		
CAD	Computer-Aided Drafting	IIE	Indian Institute of Entrepreneurship	PDDC	Product Design and Development Centre		
CNC	Computer Numerical Control	IIT	Indian Institutes of Technology	PDPs	Professional Design Projects		
CFC	Common Facility Centre	IITF	India International Trade Fair	PGD	Post Graduate Diploma		
CI	Cast Iron	ITC	India Tobacco Company	PHDCCI	PHD Chamber of Commerce and Industry		
CII	Confederation of Indian Industry	LCD	Liquid Crystal Display	PIC	Project Implementation Committee		
CTTC	Central Tool Room & Training Centre	LED	Light Emitting Diode	PLC	Programmable Logic Controller		
DAP	Design Awareness Programme	MCED	Maharashtra Center For Entrepreneurship Development	PMAC	Project Monitoring and Advisory Committee		
DAS	Design Awareness Seminar	M.Des	Master of Design	PPDC	Process & Product Development Centre		
DC (MSME)	Development Commissioner (MSME)	MODVAT	Modified Value Added Tax	PU	Polyurethane		
DCS	Design Clinic Scheme	MP	Madhya Pradesh (a State in India)	R&D	Research & Development		
DCS-MSMEs	Design Clinic Scheme for MSMEs	MPLUS	Madhya Pradesh Laghu Udhyyog Sangh	SBA	Small Business Administration		
DCW	Design Clinic Workshop	MSMEs	Micro, Small and Medium Enterprises	SDP	Student Design Project		
DIC	District Industry center	MSMED	Micro, Small & Medium Enterprises Development	SHG	Self Help Group		
DIY	Do it yourself	MSME DI	MSME District office	SPA	School of Planning and Architecture		
DNAS	Diagnostic Need Assessment Survey	MSRSAS	M.S.Ramaiah School of Advanced Studies	SS	Stainless Steel		
DSR	District Sub-Registrar	MT	Metric Ton	SSI	Small Scale Industry		
DST	Department of Science & Technology	NAS	Need Assessment Survey	SWOT Analysis	Strengths, Weaknesses, Opportunities, and Threats Analysis		
ENT	Ear, Nose and Throat	NCR	National Capital Region	UAE	United Arab Emirates		
EU	European Union	NGO	Non-governmental organization	UK	United Kingdom		
FDA	Food and Drug Administration	NID	National Institute of Design	UMSAS	Upendra Maharathi Shilp Anusandhan Sansthan		
FDDI	Footwear Design & Development Institute	NIFT	National Institute of Fashion Technology	UP	Uttar Pradesh (a State in India)		
FICCI	Federation of Indian Chambers of Commerce and Industry						

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Programme Head: Kulveer Bhati



**“The scheme proved extremely beneficial to all our members. The DAS created the platform for us to interact; the DAP helped us understand the drawbacks and helped us improve our processes and products; the outcomes of the Design Projects for our members got excellent response from Foreign Buyers.”**

**Jodhpur Handicrafts Exporters' Association**

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## Author Profile



**Shashank Mehta**  
Principal Faculty, Industrial Design  
National Institute of Design

An NID alumnus, Shashank Mehta is currently principal faculty at the National Institute of Design, Ahmedabad Campus and also heads the institute's Professional Education Programmes. He successfully spearheaded the Design Clinic Scheme for MSMEs at NID, a unique design intervention scheme for India's large MSME sector. The scheme was supported by the Ministry of Micro, Small & Medium Enterprises, Government of India.

A qualified mechanical engineer and product designer, Mehta has worked with small and large scale industries and the craft and social sectors as a designer, design consultant, and consultant retainer. Through this, he acquired that much needed holistic understanding of integrating user aspirations with industry constraints and demands and this consequently led him to develop viable design solutions.

At NID, Mehta has led several curriculum development initiatives. He has worked extensively in the area of technology and design fusion, sustainability, and indigenous innovations. He conceptualised the first e-learning module on package design and also helped set up the country's first design business incubator at NID. In 2005, Shashank co-organised an international conference on design education in Asia and also co-edited its proceedings titled Design Education: Tradition and Modernity-Scholastic Papers from the International Conference, DETM 05 (2007). Mehta has published widely and has lectured on subjects as varied as: technology and design interface, design education, design in the Indian context, service design, and design for sustainability to name a few.

Mehta serves as the member of advisory committees and review committees for international conferences and also serves on the boards of industry associations and NGOs.



**“We were very impressed with the manner in which the Design Clinic Scheme, a government initiative was conducted - quite unbelievably so!”**

**a MSME unit Owner, Pune**

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A unique and ambitious design intervention scheme, the Design Clinic Scheme for MSMEs, aims to bring design to the doorstep of these industries. Spread across the country covering both the rural as well as urban areas, over 94% of the Indian industries comprise of MSMEs - the Micro, Small and Medium Enterprises. For India, a labor abundant country, MSMEs are the major source of employment generation and foreign exchange earnings. The diversity in terms of the size of the enterprises, the products manufactured and services offered, the levels of technologies used, the people involved, their impact and connect with the society, all make MSMEs as one of the most complex and challenging sector to work with. The manufacturing competitiveness of these MSMEs is facing a major challenge of change. They need to move up in the value chain, from OEM to ODM.

The Scheme has succeeded in creating and encouraging symbiotic relationship between the MSMEs and the design fraternity of the country. Within the span of five years of its implementation, the scheme reached out to over 25,000 MSME participants across the country.

As multi-layered accounts, the articles bring to the fore the typical characteristics and concerns of the Indian MSMEs and scope for design intervention in this crucial sector of the economy. While demonstrating the design intervention approach that is appropriate and contextual to this sector, it highlights the role of academia in developing such sector specific solutions and approaches. And it portrays the design journey to scale up this unique approach across the country.



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