Entrepreneurial Empowerment through Design

Volume - 2

Case Studies of Design Projects under
Design Clinic Scheme for MSMEs

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About Design Clinic Scheme

The Design Clinic Scheme for MSMEs (DCS-MSMEs) is a GoI sponsored design promotion initiative undertaken by the central government to infuse design sensitisation amongst the Indian Micro, small and medium enterprises (MSMEs). The scheme is a part of the National Manufacturing Competitiveness Programme (NMCP) to enhance the manufacturing capabilities of micro, small and medium enterprises through design intervention strategies. The scheme is being implemented across the country through Design Awareness Seminars (DAS), Design Awareness Programme (DAP) and Design Projects (DP).

ENTREPRENEURIAL EMPOWERMENT THROUGH DESIGN, is a compilation of design thinking and application process of 21 MSMEs who took advantage of the financial benefits extended under the Scheme for Professional Design Projects (PDP) was published earlier. Volume 2 of this booklet is now being published presenting 31 blue prints of successful design intervention case studies of MSMEs assisted by the Design Clinic Scheme. Information contained in this booklet will help the MSMEs and Design Professionals in the country to understand their design needs and benefits of design intervention for improving product quality and manufacturing competency.

Reaching out to MSMEs

The Design Clinic Scheme has completed 5 years on Feb 17, 2015. One of the most challenging tasks was reaching out to MSMEs across the country and bringing them on to a platform with design experts in sharing their manufacturing and product quality related design problems. In last 5 years, several print, media and visual communication strategies were adopted to highlight the scheme activities and the benefits available to the MSMEs in understanding and applying design strategies in their business to increase their manufacturing and quality product competencies. The strategy of reaching out to MSMEs even in remotest part of country by establishing one to one connection for long term design interaction through Field Staff of the Scheme had a tell tale effect . Design awareness, funding support and availability of designer to work on specific requirements of MSMEs are few challenges in meeting the scheme objective of design intervention in MSMEs. An initiative, "MSMEs awaiting designers", started on the web site, based mainly on the feedback of the Field Staff during their field visits, about 4 years back inviting design professionals to meet MSMEs and understand their design needs has turned out to be one of the great success stories of the Scheme. Field executives from all the zones, meet MSMEs at their door steps, exhibitions or DCS organized seminars and collect information and design needs of these units. The information is compiled as design brief and uploaded on official website for designers reference. The designers contact these MSMEs and once agreed, submit project proposals for financial assistance. The approach not only increases the interaction between MSMEs and designers but also creates a platforms for future interaction.

The Scheme promotion activity has been able to reach more than 5000 units in 200 cities/towns/cluster centres and generated more than 800 design project briefs, besides arranging opportunities for Design Sensitization Seminars, Design Clinic Workshops and Orientation Programmes. The interaction has converted in more than 185 project proposals. The Design Clinic Scheme has been able to cover vital MSME clusters like Agricultural Implement, Auto Components, Ceramics & Glass, Electrical, Electronics Equipment, Engineering & Fabrication, Energy, Food Processing, Garments, Gems & Jewellery, Handicraft, Handloom, Jute, Leather, Machine Tools, Medical Equipment, Metalware, Packaging, Plastic, Rubber Products, Safety & Security, Sport Goods, Textiles, Toys, Bamboo, Wood and Steel Furniture etc sectors and generated design projects, which is a major achievement in terms of spread and reach of the Scheme to the MSMEs of India.

Sr.	Industrial Sector	Total
1	Agriculture Equipment	15
2	Auto Components	25
3	Ceramics & Glass	15
4	Electrical Equipment	32
5	Electronics Equipment	52
6	Engineering & Fabrication	85
7	Food Processing	2
8	Garments	6
9	Gems & Jewellery	13
10	Handicraft	32
11	Handloom	1
12	Jute Products	12
13	Leather Products	24
14	Machine Tools	6
15	Machinery	106
16	Medical & Lab Equipment	52
17	Metalware	7
18	Packaging & Branding	20
19	Plastic Products	3
20	Sport Goods	2
21	Stone & Marble	3
22	Textile Products	5
23	Toys	12
24	Wood & Bamboo	18
25	Wood/Steel Furniture	36
		584

Professional Project Status

Status	West	North	South	East	North-East	Total
Approved	135	67	64	23	22	**311**
Rejected	62	28	35	15	8	**148**
Under Evaluation	42	13	20	43	7	**125**
Total	**239**	**108**	**119**	**81**	**37**	**584**

MSME Brief on website

Status	West	North	South	East and N-East	Total
Open	277	106	201	70	**654**
Proposals Received	115	16	41	11	**183**
Total Received	392	122	242	81	**837**

Status as on 30th April 2015

Case Studies :

LED Lighting

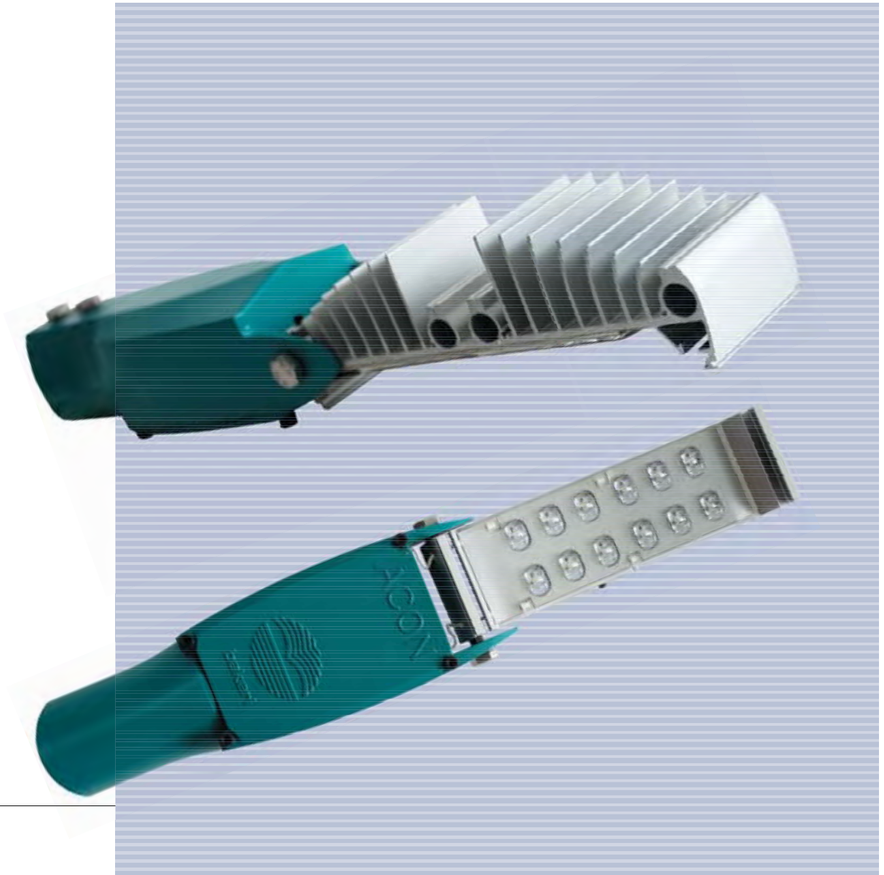
Efficiency enhanced

The MSME

Suveg Electronics
Ahmedabad, Gujarat
Website: www.suvegelectronics.com
Contact Person: Kartik Bakeri

The Design House

Cosire
Ahmedabad, Gujarat
Website: http://www.cosire.com/
Contact Person: Ankit Vyas



LEDs are operationally cost effective in long run but it is very essential to ensure that the other factors play their crucial role in supporting the longevity of complete product. Product design ensures the higher efficiency and long life of electronic parts, cooling fins and structure. Aesthetics is addition to all these.

Left - New design of LED street light, highly efficient and attractive

Right - Old LED light, an easy competition to many similar assembled products.

Introduction :

The USPs of LED lights are well known and increasingly gaining popularity vis a vis conventional lights, owing to their environment friendliness, largely because of the absence of toxic substances like sodium, mercury and argon gas. They are also healthier for the eyes, in the absence of UV light emission. Their use is widespread in a variety of street uses, similarly in industrial areas and as flood lights in different kinds of spaces – for security, aesthetics and basic utility, for instance.

Says Kartik Bakeri, (Director - Suveg Electronics) "Since all conventional light products, especially street lights were using glass and customers were wary of glass, we placed substitution with modular polycarbonate optical lenses as an objective. As these not only provide good optics, but also ingress protection upto IP67, to the LEDs."

Says Ankit Vyas (Co founder – Cosire), "Existing competition in the market was immense, owing to low entry barriers and most products in the market, have several deficiencies. However, customers are not aware of these and end up buying inefficient, cheap products." Suveg Electronics strives to improve the functionality and efficiency, while minimising deficiencies in existing products. Their creative competence is visibly reflected in aesthetic design, superior features, high energy savings and a good price-value proposition. Many of their innovations have been patented and are accustomed to hostile environment conditions.

Cosire is a multi-disciplinary design company providing design services like Product Design, Design Strategy, Branding, Packaging Design, Interior Space Design and UI/UX Design. Cosire approached Suveg Electronics through Design Clinics Scheme's initiative announced on its website section, 'MSMEs Awaiting Designers' where Suveg Electronics placed their interest in discussing working on the design project with designers.

Design Objectives :

Says Kartik Bakeri, “There were certain shortfalls in our existing LED lights, which we realised required addressing. These include the use of glass laying, loss of efficiency and deterioration in lux distribution, collection of dust, insects and moisture within the fixtures. Also due to a lack of tiltability of fixtures, lux distribution could not be adjusted as per requirement of the area to be illuminated. Moreover, inefficient thermal dissipation was a downside. All these shortcomings urged us to seek design intervention under Design Clinic Scheme.”

Design Journey :

Says Ankit Vyas, “The design process started with an early discussion on establishing the forms and features to be incorporated in the new design. The major target segments were street and industrial lights, where the life of the product, maintenance and serviceability were to enjoy equal importance, to ensure an aesthetically appealing outer shell. We focused our target on creating a shape that would be functional and offered an added advantage to the product’s functioning. During the exploration, we discussed issues faced by the products, to figure out some of the areas like mounting, cooling, casing and structure with Kartik Bakeri and basis that commenced on our journey from research to prototyping.”

Further, he elaborates, “The leaf was the inspiration of the final LED light design which we thought of incorporating. The heat sink (cooling fins) were designed in the shape of a leaf and enjoyed an exceptionally great cooling ability, owing to the shapes derived during the analysis. It serves the purpose of helping to maintain a low temperature, which in turn enhances the longevity of the product and provides an outstanding look, when compared to the international brands in this product segment. The overall design also eliminates the use of additional components like a LED cover which in the long run ask for maintenance and repairs. This has helped in reducing the cost of the final product.”

Way Forward :

Summarises Kartik Bakeri, “Our redesigned LED lights were launched in the market in August 2014 and within 3 months we have sold more than 2000 lights. We have been able to offer 3 variants to meet different requirements according to spaces. While there has been no noticeable increase in the profit margin, for the redesigned LED light, we have procured an order of Rs.4.5 crores from Gift City, India’s first design based intelligent street lighting project, where price evaluation procedures also included actual energy saving, translated into monetised gain, over the usage period.”

He further clarifies, “We have definitely gained through the Design Clinic Scheme and are very encouraged by the officials and team members, who were very cooperative and found the procedures simple and easily implementable. We now look forward to a future association with this scheme.”

Left extreme - LED street light installed

Left - Over hanging product version

Right - Higher capacity version in the family of street lights.

The Advantages :

Says Kartik Bakeri, “ In the new redesigned version, we have recorded increased lumen efficiency by 10% and uniformity by 20%, also enhanced thermal dissipation and IP protection from IP65 for the LED area, provided tilatability for increasing effective uniformity by nearly 50% and the overall life of LED lights from Suveg Electronics has improved remarkably.”

Summarises Ankit Vyas, “Suveg Electornics’ brand image has definitely improved and educated customers who are knowledgeable about efficiencies, are opting for our products.

Electro Surgical Device

Efficiency in critical health care

According to the medical equipment trade association, AdvaMed, Medical devices industry has the potential to touch the USD 30 billion mark over the next ten years. The MSMEs are going to play a vital role in bringing innovation in the segment as there are challenges not only related to products, but also buyers, geography, class and category of health care institutions and cost.

The MSME

Alan Electronic Systems Pvt. Ltd.
Mumbai, Maharashtra
Contact Person: Suresh Malunjkar (Director)

The Design House

Neodes
Pune, Maharashtra
Website: www.neodes.in
Contact Person: Abhijit R Takale

Left - New design with improved aesthetics and ease of control

Right - Old electro surgical device manufactured by MSME unit.

Introduction :

Critical, emergency surgeries, resulting from sudden accidents call for swift, life saving actions, which for successful implementation, undoubtedly require excellent quality tools, that leave no scope for error. Electrical power sources in electrosurgical units can heat and cut or join tissue during surgery and in that can prove to be critical and indispensable. The ELSY 360 series electrosurgical unit is one such, used by technicians and doctors in operation theatres.

Recalls Suresh Malunjkar (Director - Alan Electronic Systems Pvt. Ltd.), "There were a few shortfalls in the original product, that urged us to seek design intervention. The electrosurgical unit is packaged and transported in VIP and Samsonite hard bags and every year, the bag has a new design and there is no control on the OEM design, which decreases branding possibility for off the shelf bags.

Says Abhijit R. Takale (Head Design and Managing Director – NEODES), "The display, control alarm and non critical setting were set side by side, which led to confusion, this was compounded with the colour coding and mode selection. Additionally the rear connector was not accommodative and modular and sufficient distance was not maintained around the PCB. Besides, there was an issue of high voltage."

Adds Suresh Malunjkar, "In the original machine, the volume did not allow for an easy grip and the transport volume was also large for lady doctors and the overall construction of equipment was not sturdy enough to sustain frequent transportation. The top instruction sticker merely complied with the feature list, but was not usable at all. The trolley was absent and there was no dedicated packaging. The original machine packaging method elicited several damage complaints and did not justify the machine cost and brand value."

Neodes, a multidisciplinary design firm established in March 2007 enjoys a focus on healthcare industry, supports various businesses and non – profit organisation, creating integrated value for various stakeholders.

Alan Electronic Systems Pvt. Ltd. is a well established MSME unit in the field of industrial electronics. It enjoys substantial market share for its specialised products, micro-controller based embedded systems, power electronics and electro-medical systems.

Design Objectives :

Says Abhijit R. Takale, "Our objective was to develop a cautery machine, with unique aesthetics and a language with the potential of extending to the MSME's and other electro surgery products i.e. light source and insufflators. Besides, we wanted to improve the overall product architecture, by relocating the connectors and speaker, to reduce product height and make it portable, as well as reduce the overall visual bulk."

Adds Suresh Malunjkar, "We wanted to design for manufacturing and assembly, to reduce the capital investment and improve overall productivity in the current manufacturing context. The design logic was to suit for customisation. It was proposed to focus on heat sink optimisation, make it spill proof and vandal proof, through appropriate selection of materials and overall architecture of the product."

Abhijit R. Takale specifies, "The proposal was to encompass new features, functionality and give the old machine an international look and feel. Besides, we proposed, that the new design should help in getting CE and FDA approval to expand the market share. The mechanism and detailing was required to be simple, in order to reduce manufacturing cost." Continuing, he says, "It was proposed to keep the design to suit simpler manufacturing techniques in sheet metal and minimise tooling cost. It was also expected to be cost effective and enjoy intuitive functionality."

Design Journey :

Says Abhijit R Takale, "In phase one – we focused on the market survey, synthesis and developing product strategy. This included analysing competitors, pairing comparisons, where we identified "must have" and "nice to have features" and then created a product strategy document. In phase two, the emphasis was on Design Concept development, where concepts were presented for the cautery machine (3 concepts), trolley and hard packaging (1 concept). A basic interaction design concept was created and internal component architecture and usability logic was structured. In the third phase, which included design engineering of selected concepts, the internal component mounting was worked on an aluminium chassis, that considered ease of maintenance and EMI /EMC requirements."

Below - Variants of electro surgical device

Elaborating further he says "The final split logic considering maintenance logic, to optimise the number of plastic parts and easy after sales service, without any high voltage hazard was executed. Here too, the internal component architecture and basic usability logic was presented in JPEG format. In the final, fourth phase, the mock-up and prototyping was supervised and the alpha prototype, with all functional features were developed for internal testing."

Summarises Suresh Malunjkar, "We pursued a modular approach to reduce assembly problems and improve the overall reliability of the product. Simplification of the internal chassis helped to create an easy manufacturing process, using laser cutting and CNC bending. Further," he continues, "In the new design, we used aluminium in the main body part, for a maximum life span to improve heat transfer, which we realised will help in EMI /EMC shielding because it's a very high frequency generation machine."

Way Forward :

Says Suresh Malunjkar, "Through the redesigning effort we are hopeful of getting our certification 510K (FDA), to expand our market and regulate it to attract foreign collaboration to improve the sales and brand value. Also, design in the new product is playing an important role, demonstrating our state-of-art technology by providing all the necessary features."

Enumerates Abhijit R. Takale, "The MSME unit has a projection of approximately 5000 units per annum and the new design has helped to improve their sale / turnover /market share by 40%, having augmented profits in the last financial year by 30%." Says Suresh Malunjkar, "We are proposing to launch three design variants which have been substituted, of which we have introduced only the first design so far. The response from our customers is encouraging"

The Advantages :

Enumerates Abhijit R Takale, "The disintegrated front and back design approach has helped to reduce the overall product volume, and the radical product architecture has made the machine more useable and serviceable. The common front and back design for 3 variants reduced initial capital investment. The logic for 3 front keyboards was to reduce inventory and control the cost. Moreover, the customised hard packaging facilitated all necessary accessories and main units to enhance portability."

Adds Suresh Malunjkar, "Design of the low cost trolley along with main cautery has facilitated accommodation of all necessary accessories and foot switch. The redesigning of the user interface has reduced setting errors and time. Besides, the new design helps in making quick adjustments according to the patient's need. The anti glare keypad with anti microbial polyester film for membrane keypad facilitates easy viewing and maintenance, which protects, it from bacterial growth."

Continues Abhijit R. Takale, "The new product proposition with a global aesthetic language recorded a cost 40% less than the competitor's product. Further, it has emerged as a good foreign substitute, that can help several Indian clinics and small hospitals. Also, through its user friendliness and state-of-the-art aesthetics, the ELSY 306 series is enjoying global appeal."

Says Suresh Malunjkar, "The before and after design intervention saving on production time and story was remarkable, as it recorded labour saving, increase in production and positive response from customers. The efficiency was enhanced in that the original design sold 150 pieces per month. The increase in profit margin is also commendable – in that the original product was available for Rs.1,75,000/-, but the redesigned version with a trolley and hard packaging commands a price of Rs.2,00,000/-."

Ophthalmology
Operation Table and Chair

Excellence in diagnostics and treatment

THE MSME

Nox India Corporation
Ahmedabad, Gujarat
Contact Person: Nayan Brahmbhatt

The Design House

Design Edge Consultancy Pt. Ltd.
Ahmedabad, Gujarat
Website: www.designedge.co.in
Contact Person: Amit Paul

The medical industry imports over Rs 27,000 crore worth of devices. The opportunity is huge for design intervention to elevate the functionality and suitability to Indian requirements at cheaper prices and equivalent quality.

Left - New design of ophthalmic chair
Right - Old chair from MSME unit

Introduction :

Eyes, that offer a window to the world, a significantly important part of the body and their care, are of critical use to an individual's health, well being and productivity. Eye care is undeniably key to contributing to a wholesome life style. The 'accessories' that facilitate proper examination and treatment to this delicate organ, namely the operation table and chair cannot be underestimated.

Says Amit Paul (Head Designer - Design Edge), "Two products were proposed for redesigning. The first one was an ophthalmology diagnostic chair which is used by the ophthalmologist to examine the patient in detail and offer a diagnosis on the ailment. It comprises of a chair for the patient to sit comfortably on and be examined, and a movable table, where the diagnostic machine is kept with a stand, housing the control panel unit and a lens carriage."

Says Nayan Brahmbhatt, (CEO, Nox India Corporation), "The biggest challenge we faced was related to improvement in the aesthetics, at a very low development cost. Since the market was a price sensitive one, there was fierce competition and the only way to differentiate it was to create a new visual language. An aesthetic revamp with minimal change in the machine hardware, which included the hydraulic system, electronic controls, seats, rotating table mechanism and others presented a critical question mark."

Adds Amit Paul, "The stand houses a variety of electronic hardware and the mast, which has the light and glass mirror. The seat was lifted up and brought down with the help of a hydraulic mechanism, placed below the seat, which reclines to 160 degrees, from the seat angle, with an adjustable foot rest. The other one was an ophthalmology operation table, used for various eye surgeries, comprising of a central seat, with a back and leg rest, that can recline, to form a bed. A head rest is designed to keep the head still during surgery and it has the facility to move the table up and down, with a hydraulic device, to allow the surgeon to enjoy a comfortable height for the operation."

The ten year old Ahmedabad based firm Design Edge believes in adopting the right approach in utilising creativity, innovation and design to support their strong 'new product development' process, where a flexible approach gives products the required edge.

Nox India Corporation has more than two decades of industry experience in the field of manufacturing and supplying a wide range of operation instruments, diagnostic equipment and implants, medical surgical instruments and titanium surgical instruments. They have a wide range of surgical and medical equipment, well established to serve the requirements of ophthalmic/dental clinics and hospitals.

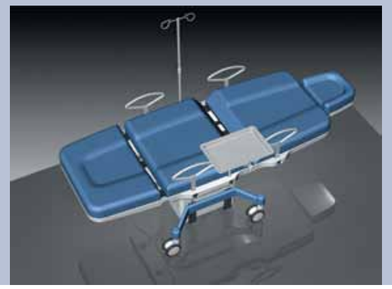
Design Objectives :

Says Amit Paul, "Our objective was to redesign the ophthalmology diagnostic chair (DIAGONOX refraction chair unit) and operation table (OPTODEX operation table) with the idea of giving it an international aesthetics, with ease in making and assembling it, besides making it cost effective and adhering to existing parameters."

Design Journey :

Enumerates Amit Paul, "To begin with, we studied the existing Diagonox and Optodex in detail. We had a detailed discussion with a leading ophthalmologist in Ahmedabad and clearly understood, what was expected of the product. Having done that, we sat with the Nox India corporation team and finalised the design specifications. The first phase invested in understanding the product, the market, perspective of the user and defining the design objectives. Thereafter, we created concepts and presented them to Nox India Corporation and got the concepts approved. In the second phase, we focused on detailing out the concepts of a tangible final product in CAD, and then presented it to the client. On receiving approval on the concepts we worked on refinement and moved to phase three"

Nayan Brahmbhatt adds, "The third phase was related to releasing the final detailed drawing and commencing on the prototype construction. Even though the prototype was made in our workshop, the pattern for the ABS plastic parts and fibre glass parts were made at the design house workshop, in order to retain the design elements. In the final phase, the assembling of the prototype was done, at Nox India Corporation."



Recalls Amit Paul, "The primary focus in re-designing was to make the product more user friendly, in terms of look and use. The handles were made softer so that they did not hurt. The seat was made a little wider to make it more comfortable and the contour of the body was provided in the cushion, for better comfort and ergonomics."

Recapitulates Nayan Brahmbhatt, "The challenge of the project was key in that the aesthetic revamp had to be done, with minimal change in the hardware of the machines, which included many things like the hydraulic system, electronic controls, seats, rotating table mechanism and others. "

Adds Amit Paul, "The other concern was that the unit comprised of materials and processes, which were varied and required specialised expertise in different fields of engineering. Therefore we kept our focus to make the product better and distinct keeping the investment minimum in the post design activity."

Way Forward :

Says Nayan Brahmbhatt, "We are very excited about the new products and especially the design intervention aspects. We feel that the ophthalmology diagnostic chair and operation table, with their new, fresh look can be sold as premium products and have a very high potential for export. The products have already been showcased in overseas exhibitions to clients and the response has been very positive in the development phase, and will shortly move into production. We were very happy with our Design Clinic Scheme experience and would like to take up more projects in other areas as well, under the scheme in the near future!"

Left - Rendered images of final design
Right - Ophthalmic and operation chair

The Advantages :

Nayan Brahmbhatt says, "The original diagnostic chair price was Rs.60,000/- and the operation table Rs.50,000/-, with a marginal increase in the cost owning to the design intervention, the redesigned products today can command a price of Rs.90,000/- and Rs.80,000/- respectively."

Sums up Amit Paul, "In comparing the original product with the redesigned version, the cost of the redesigned product was 5% more, and the production time and labour was the same, while productivity in the newer version was better. Further, while the increase in the market share has to be ascertained, there has been a 100% increase in the profit margin and a remarkable and commendable enhancement in the brand image."

Air Pollution Check System

A critical environment barometer

The MSME

M/s Instrumex,
Mumbai, Maharastra
Website: www.instrumex.net
Contact Person: Rishab Kumawat

The Design House

Universal Designovation Lab LLP.
Rajkot, Gujarat
Website: www.udlab.in
Contact Person: Bhagvanji Sonagra, Bhavin Dabhi

"Air quality checking is becoming important to ensure the quality of air in various environments like pollution boards, city roads, sports complexes, mines, etc. It is essentially the right time for Indian manufacturers of such instruments to improve and compete with international products in various markets.

Left - Improved and appealing air analyser

Right - Old air analyser from MSME unit

Introduction :

In an era of the world, where almost every activity of significance takes its cue from saving the environment and in that ourselves and future generations, the importance of controlling air pollution cannot be underestimated. To ensure this, it is imperative that the air be periodically monitored to determine the extent of pollution and identify the source of emission. Consultants, industries and environment engineers find good use of an effective air pollution checking system, for studying the air quality in their area.

Says Bhagvanji Sonagra (Co-founder - Universal Designovation Lab), "In order to control pollution, it is necessary to periodically monitor the air to determine the extent of pollution and identify the source of emission. A fine dust sampler gives the measurement of ambient air pollutants. Designed to meet the Federal Reference Method of U. S. EPA as described in 40 CFR Part 50 Appendix L for the determination of (PM2.5), it also conforms with the CPCB guidelines for the purpose."

Elaborates Rishab Kumawat (Managing Director / Product Engineer - Instrumex), "The original product presented an average design, had issues that did not offer proper utilisation of space for arranging components and meet present user expectations."

Instrumex, set up in 1990, manufactures and exports Pollution Measuring and Analytical Instruments. Universal Designovation Lab LLP offers customised design consultancy in the sphere of medical, machine, furniture, interior and automotive spaces. Design Research Training brings together international award winning industrial designers, researchers, strategists and engineers to help achieve business objectives.

Design Objectives :

Says Rishab Kumawat, “The existing model had issues like lack of aesthetics, poor ergonomics, difficulty in use, heavy weight and absence of an ‘international’ feel compounded the negatives. Moreover, it was not easy to operate during heavy rains and needed to be more rugged for ease in transportation along with its fixtures. We realised that re-designing held the potential of enhancing the efficiency and marketability of the existing pollution check system.”

Bhagvanji Sonagra further emphasise, “There was a need for improvement in the existing product, due to its outdated looks and need for change in overall product from user and manufacturing points of view. Along with other larger objectives, there were many small and simple changes required to make products more efficient and manufacturing friendly. As an illustration, we proposed to offer front side fan protection, an ergonomic handle, dent protection and making the icebox more compact.”

Below - Variants of air analyser

Design Journey :

Recalls Bhagvanji Sonagra, “Our travel through the process of redesigning began with product research and photography, analysis, research presentation, synthesis and further analysis. The products manufactured by the MSME unit were designed long ago and does not match with the existing, competitive products in the market. The existing product had issues related to productivity, commonality of parts and fabrication. The design process entailed design conceptualisation, industrial design presentation, mock-up photographs and multi concepts presentation. We further went into a detailed engineering presentation, product dimensions and drawings, photo-realistic design, besides, manufacturing detailed presentation, product and assembly drawings, final product design and rendering of alfa prototyping.”

Way Forward :

Summarises Rishab Kumawat, “The overall outcome of design activity is encouraging. We are expecting a very positive response for the new product. The design registration of the pollution check system has been done at the Controller General of Patents, Design & Trade Marks, India.The product has been introduced in Hyderabad Lab Expo 2013 and is now in production. We have also applied for the CII Design Award and exhibited our product there.”

Says Bhagvanji Sonagra, “The product was presented in CII-NID design excellence award and we received a very positive feedback. The Design Clinic Scheme was a very co-operative experience throughout. We have been associated with the Design Clinic Scheme on other projects and hope to enjoy fruitful co-operation in the future as well.”

The Advantages :

Observes Rishab Kumawat, “There are some distinct features, that give the redesigned version specific advantages including its compact size, that optimises on spaces and reduces cost. Besides, it has a contemporary aesthete with an inbuilt stand design. Moreover, the packaging is appealing and there is IP protection in the base design. Besides, the improved look and good functional parameters give an edge over competitors. With the enhanced look, the product is capable of holding its own in a competitive, international market.”

Further, says Bhagvanji Sonagra, “The logo has been in built with the product, which helps to improve the brand image and has created a saving on labour, besides enhancing productivity.”

Custard Apple Deseeding Machine

A hygienic, effective system

As per the report, eighteen per cent of India's fruit and vegetable production - valued at Rs 13,300 crore - is wasted annually. A processed fruit/vegetable not only adds value and shelf life to the raw material, but also reduces the wastage at the source. Design helps to improve the scenario, when it is crucial to the contextual issues of processing them.

The MSME

Ensemble Systems
Pune, Maharashtra
Website: www.ensemblesystems.net
Contact Person: Milind Kulkarni

The Design House

Cluster One Creative Solutions Pvt. Ltd.
Pune, Maharashtra
Website: www.cluster-one.net
Contact Persons: Parag Sen, Parag Ainchwar

Left - New and unique design of custard apple deseeding machine

Right - Old machine and initial proof of concept

Introduction :

The food processing industry is one of the fastest growing sectors, which adds value to the raw material and reduces wastage during transportation, storage and consumption. Besides increasing the shelf life, it creates a noticeable reduction of wastage at source, calls for creating a well designed machine that minimises it.

Custard apples, while being a popular and much consumed fruit, have been the bane of many in the challenge they present in the necessary deseeding, before they can be relished and eaten. Indeed, it was evident that a system to facilitate deseeding, leaves consumption of the fruit as a prospect of unadulterated pleasure, geared to enlist instant acceptance.

Says Milind Kulkarni (Proprietor - Ensemble Systems), "The process of de-seeding custard apples was originally done manually, in poor hygiene conditions and the pulp sold locally. The market potential of de-seeded custard apple urged me to develop a technology to separate the seed from the custard apple pallet (pulp)."

Say Parag Sen and Parag Anchiwar (Co-founders - Cluster One Creative Solutions Pvt. Ltd.), "There was no big player in the custard apple processing segment for processing pallets to prepare new products like juices, jams, tinned pulp etc. In the farm sector, the custard apple produce ripens fast in the harvest season and since it is essentially a perishable and difficult to transport produce, a substantial part of the harvest ends up being over ripe and unsuitable for transport and is dumped as waste."

Cluster One Creative Solutions Pvt. Ltd. is a 10 years old design consultancy based in Pune, India. The services offered include product / industrial design, built environment – architecture / interior design and open spaces to include landscape architecture.

Ensemble Systems established in 1991, specialises in modifying machines, where for any product redesign, options are presented to the client. These are based on better processing and technology in existing systems, besides innovation via their own design and technology repertoire.

Design Objectives :

Says Parag Sen, “The brief was to design a usable machine for the purpose of de-seeding, based on the prototype machine developed by Ensemble Systems, to produce the pallet output in undamaged natural shape, original colour and taste, primarily for use in the farm sector and food processing industry in semi-urban and rural conditions, via a process that was hygienic and efficient for production at various scales.”

Adds Milind Kulkarni, “The designing focused on creating a product that ensures automated separation of the pallets, meeting the demand volume offering consistency in delivering quality and ensuring cleanliness and hygiene. The separated custard apple pallets was to be stored or transported in cold storage, to ensure longevity, freshness and minimal waste, where the pallet separated custard apple were to be consumed in large volumes. It was proposed that with this an additional income stream for the farm / rural sector would open.

Design Journey :

Recalls Parag Anchiwar, “We evaluated the project and suggested a forward path involving capacity optimisation, validation of human factor aspects and safety issues, design of interface, look and feel of the machine and also a brand development and communication exercise.”

Adds Parag Sen, “There were a few factors, that were critical to the development of a viable product. These included the fact, that the machine ran on a heavy 1HP 3 phase motor, which could be optimised to run on smaller motors and consume less power; the two sets of rollers were not geared to optimising productivity, as a single set of rollers could suffice; the full length of the hopper feed and roller set were not utilised and feed was often localised. The roller length and hopper feed opening length we realised required reduction. The increase in diameter of the roller needed to be explored and the roller RPM required alteration. The metallic blades were prone to damage and required suitable material specification. Cleaning of the machine was difficult and opening covers and poor accessibility hindered the cleaning process. The replacement of blades was difficult and relatively frequent activity led to wear and tear. Accordingly, productivity and machine size needed to be optimised. The NVH (noise, vibration and heart) level were identified as major issues. Given the nature of demand in the rural sector, the machine had to be available for easy transportation.”

Above - New visual identity to the machine and MSME

Left - New machine

On the semantics Parag Anchiwar elaborates, “The demonstration machine was built on basic tubular frames and sheet metal covers. For usability, product identity and brand visibility, suitable product semantics were required. The custard apple deseeding machine needed to be designed for acceptability in semi urban and rural market segments, where hazards related to hygiene needed to be visible and apparent.”

Says Parag Sen, “In the custard apple deseeding machine, the capacity was optimised as per productivity targets. The seed removal and collection system was completely redesigned and material specifications altered. Testing was undertaken with special grade imported steel for blade design and final plastic specifications for the blade were arrived at. Blade failure and fractures in Ensemble System’s version were highlighted during fatigue testing and the blade design changed for endurance and efficiency. Machine aesthetics were designed as per the market segments requirement and the need for identity and branding were highlighted and delivered.”

Explains Milind Kulkarni, “We proposed to create a capacity of 100kg raw material / hour, power consumption of 400 watts and auto filling arrangement with a conveyer, fully hygienic, with all contact parts made up of stainless steel and food grade polymers. We believed that if the machine was to be used on the farm, all wasted custard apples could be converted into pallets, preserved in deep fridges and easily transferred.”

Recalls Parag Anchiwar, “Other suggestions for modification in design included elimination of the conveyor belt for collecting pulp and separate collection bins for seeds and pulp, the use of a smaller motor running on single phase connection, incorporating modified toothed blades, developed by Ensemble Systems, easier maintenance and cleaning.”

Sums up Milind Kulkarni, “The design research identified the state of innovation and market study, where user profile covered human factors, standards and codes, identified machine capacity and brief under design concepts, redefined concept finalisation, part and assembly designs, final model mock-ups and prototypes. Specifications, branding strategy, visual branding and kits for brand communication, with final drawings and prototypes were worked upon. The total process took 26 weeks.”

Way Forward :

Says Parag Sen, “The patent granted to the machine concept did not validate fatigue and endurance criteria. The basic technology failed in basic endurance tests and the technology also had to be modified by the designers, which exceeded the brief.”

Says Milind Kulkarni, “This machine will be traded under the trademark “SAFAL.” The first round of trial using the fresh custard apple during the season has been done with one of the food processors and results have been very encouraging. The process of deseeding is very fast, simple and efficient in terms of quality of output. We have been able to maintain the level of hygiene required for the processing. Now we are planning to produce minimum10-15 machines going to be sold in the market in the next financial year.”

The Advantages :

Enumerates Milind Kulkarni, “The most significant aspect that emerged from the re-designing was the possibility of controlling hygiene, solving labor problems, speeding the processing and enhancing efficiency, whereas a full pallet was drawn from the machine and quality of material was enhanced, also skilled labor was not required in this. The machine processed custard apple is likely to enjoy a enhanced export market potential, primarily owing to the high hygiene standard.”

Portable Vaccine Cooler

Enhancing critical medical reach

The Design Student
Ashutosh Biltharia
Product Design
National Institute of Design,
Ahmedabad, Gujarat

Nearly 70 per cent 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. Its a challenge to make sure that the last mile of the journey in rural India should be equally protected and safe.

Left - Vaccine cooler for last mile protection and conveyance, entirely a new product concept

Introduction :

India is a country, where the larger population living in the rural areas, remains frequently 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 undoubtedly 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. Undoubtedly, a very significant step for maintaining the country's health and well being. The need in this background 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.

Says Gourab Kar (Faculty, Faculty of Product Design) "The original vaccine carriers were heavy, very large and cumbersome and did not adhere to the principles of ergonomics. Moreover, it failed to address the elements of optimal design material, usability, handling, vaccine management and technicalities of the lid, strap and various other aspects. The need for change was imperative. The issue which compounded the situation was related to the cost factor, which is detrimental to the ready availability of some critical care medicines in all localities."

Opines Ashutosh Biltharia (Student - Product Design, National Institute of Design), "Student projects provide ample space, time and opportunity to develop devices which are essential for our day to day life and also need to break out of the traditional approach of product usage. We realised the need for a vaccine carrier which can be easy to handle, safe to carry medicines and is less expensive for the end users like rural hospitals and primary health centres."

Design Objectives :

Says Ashutosh Biltharia, “The objective in the redesigning exercise was to study critical issues, which occur during the storage and transportation of vaccines and propose a solution, which would address all such problems, without affecting the optimal potency of vaccines and other critical, health saving drugs. We realised that the design opportunity 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 project also had scope to enhance the features of the product, so that it could accommodate the accessories and little personal belongings of the health workers.”

Design Journey :

Adds Ashutosh Biltharia, “ As a product designer I believed this diploma project was a perfect opportunity to see the amalgamation of design development in the context of social relevance. Through all the mock-ups, proof of concepts, form explorations and models I made, I could see myself pursuing all those small steps to intervene at a grass root level and simultaneously come up with design solutions, that did not compromise on form, aesthetics or e`mpathy based understanding of the hundreds of nurses, ASHA workers and health workers who may eventually use the product. Based on the observations during research and survey, various insights were obtained and specific categories of focus namely handling, packaging, management, ergonomics, material identification and cooling were proposed to be addressed.”

Recalls Ashutosh Biltharia, “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. 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.”

Enumerates Prof. Gourab Kar, “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 optimum solution, where overall size may be reduced without affecting best possible cooling inside the cooler. Detailing and prototyping were done before creating the final design.”

Says Ashutosh Biltharia, “One challenge was to identify the optimum thickness of the PU insulation in the container and quantity of water used for ice packs. The thickness of insulation, quantity of water 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, offering ergonomic advantage and incorporating certain amendments in the form, so that the weight and size of the product were reduced, without affecting the overall internal cooling.”

Way Forward :

The product has been successfully tested in various user environments. the resposne from the users is encouraging. There may be certain changes like, improvement in structure to meet the production, sizes to meet the user requirements and possibility of addition of features which may be improved during the production. I wish to express my sincere thanks to MSME’s Design Clinic Scheme for their continuous support.

Left - Vaccine cooler prototype, preparation and initial testing.

Right - Field testing of finished prototype

The Advantages :

Enumerates Ashutosh Biltharia, “The redesigned portable vaccine cooler 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 of ice, can provide required cooling for the duration.”

Ceramic Niceties

Creating magic

The MSME

Ochre Ceramics & Pottery
Hadgud, Gujarat
Contact Person: Kavita Pandya Ganguly

The Design Student

Diya Kalia,
National Institute of Design,
Ahmedabad

"Design helps in making common elements different and interesting. This is how, from a common "ceramic animal figure", MSME unit starts making ceramic jewellery for youth, carrying it to high end luxury shops. In the whole process, it started providing employment to 60 odd house wives."

Left - Ceramic jewellary, a new look to a fired clay

Right - Existing product, ceramic toys

Introduction :

Beautifying the living space with charming elements, is the simplest way of enhancing happy energies in a significant way. Traditionally, ceramic in creative hands have confirmed to give wings to imagination, with almost no parameters. These could be in the form of endearing products that transform into elegant utility somethings like fridge magnets, garden products, stationary and even jewellery.

Says Kavita Pandya Ganguly (Proprietor - Ochre Ceramics & Pottery), "We wanted a young designer to train our women's group and identify the trends and requirement of jewellery, to create a sustainable income for our newly launched brand 'Ochre Beads'. This became increasingly significant as we recognised that marketing is the key factor. If there is nobody to buy a great design, it is of no commercial use and there is ample competition in the market. Once a delivery schedule and profile of the target buyer is identified and established, there is nothing to stop its success."

Ochre Ceramics & Pottery and Ochre Beads produce a range of handmade ceramics with a combination of different materials like metal, wood and a major segment in textiles. Both the lines explore various surfaces of materials and their properties. Spontaneity of expression in the animal range, freshness of materials and combination of various skills make Ochre Beads jewellery creations unique.

The Designer Diya Kalia, is a student of the Post Graduate - Ceramic and Glass Design stream. Her studio specialises in the handmade process involved in making a product, transformation of complex things into simple forms like animals and unique combinations of clay and glaze. Hand made ceramic jewellery for women of various age groups is Diya Kalia's forte.

Design Objectives :

Recalls Diya Kalia, “We planned to focus on redesigning the entire range that could be categorised into two or three styles, keeping contemporary needs in mind. Branding of the design collection included tags, the product *per se*, supported by brand literature, packaging and a portfolio, an extended area, that was proposed included the training of a relevant group at Ochre Ceramics and Pottery. The project brief was created with an objective to make hand made ceramic jewellery to target women of various age groups.”

Design Journey :

Recalls Diya Kalia, “The design process for Ochre Beads was a little unique, as it entailed understanding the strength of the workers and existing design products with a marketing focus and up gradation of the skill level of workers. This was supported by a feedback from the market through participation in exhibitions and application of feedback in further improving this process 2-3 times, before designing the final range.”

She further elaborates, “We studied the use of various techniques specific to ceramic and tried to understand the perception of our existing customers about our products, attempting to identify the emerging demands through the research process. ”

The design process identified, used various techniques special to ceramics like noicome, engraving, embossing etc. Says Kavita Pandya, “They tried to create a combination of clay and glaze to manifest attractive looks. In the process, we also thought of using coloured clay, so that the finished product enjoys a rich and unique look. Some of the products were also made in a combination of ceramic, textiles and metal wires in assembly of final products, deriving different techniques for assembly of small parts.”

Adds Kavita Pandya Ganguly, “According to me the major challenge was to create a bridge between local women with basic skills and meeting the urban requirement of the market. The designer’s work 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.”

Way Forward :

Says Kavita Pandya Ganguly, “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 has 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 lakh and could sell approximately Rs. 2.0 lakh 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.”

Left - Different form and designs.

Right - Designer explaining the product and process

A finished ceramic necklace

The Advantages :

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/-.”

Standardisation of Automotive Welding Fixtures

Holistic improvement

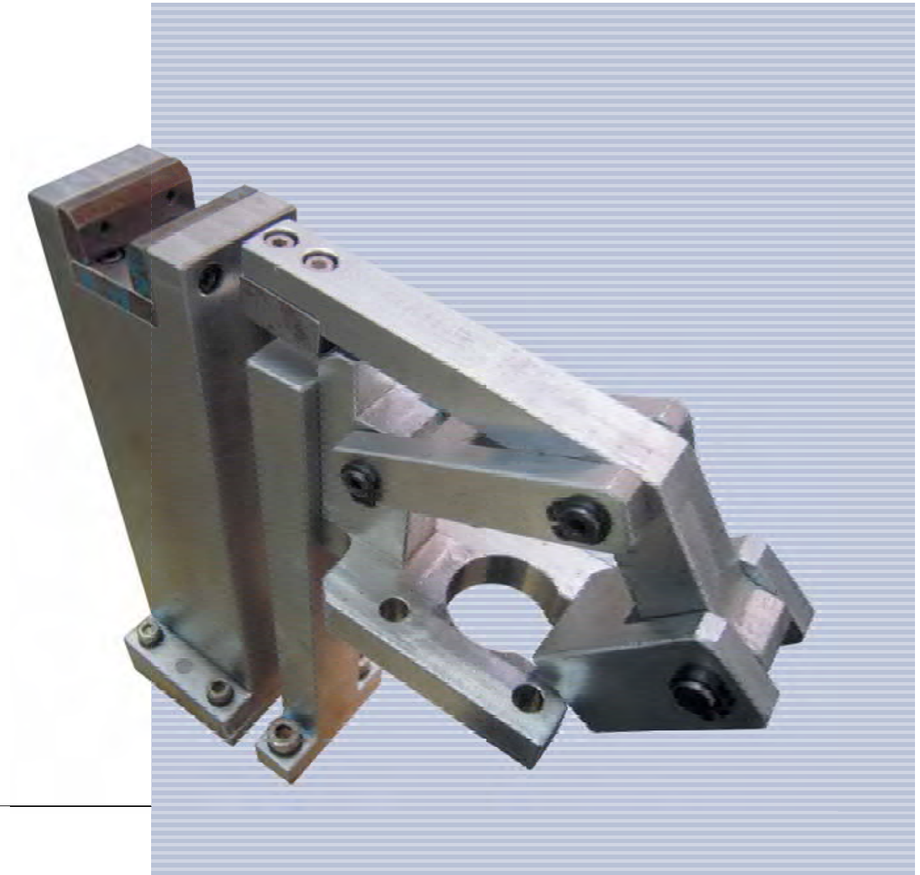
In the auto part manufacturing scenario, the market is very competitive with lesser margins to meet the bulk orders with tight delivery schedules and quality standards. Customisation and optimisation in the manufacturing process could be additional, keys to create differentiation.

The MSME

Incite Cam Centre
Bangaluru, Karnataka
Website: www.incitecamcentre.com
Contact Person: Hema Malini K R

The Design Consultant

Gopal N
Bengaluru, Karnataka



Left - Seating fixture, designed for flexibility.

Right - CAD model of existing product

Introduction :

Standardisation in the realm of automotive welding fixtures will lead to similar types of elements, which can be used in various car seating weld fixtures. Different OEs have a variety of car bodies and body seat frames. Generally, tube / wire sections / overall headrest design welding fixtures can be generalised and fixtures built in similar types with standardised design elements. Based on the specific features, it will be customised to OE specifications eg in the Renault, Ford, Toyota and others. Standardisation and Build Libraries can be used in several projects for different OEs - where the part is placed in the fixture, clamping is done via manual / pneumatics and welding by manual /robot modes.

Recalls Hema Malini K R (COO - Incite Cam Centre), "There were too many elements, that required identifying and raising to a standard library for the company, to save design and drafting time effort, shorten lead times, and create an inventory of common elements, that would reduce manufacturing lead time and create an architecture of a global standard."

Says Gopal N., Designer with expertise in body in white (BIW) fixture design, "The requirement for welding and checking fixtures is huge in India. Due to a lack of good suppliers in India to produce critical plastic stamping parts, they were sourced from Korea, Japan, Indonesia etc. Good quality, on time delivery costs and competitive design are the key factors, which drive this market."

"Moreover," says Hema Malini K R, "Many automotive OEs are establishing their setups in Chennai, Sanand and Noida and are looking out for sourcing parts and fixtures in the local Indian market. Indian suppliers need to capture this fast growing market."

Incite Cam Centre, a technology firm, designs and manufactures world class checking and welding fixtures and weld line automation, enjoying a technology tie-up with a Japanese company for global design practices.

Gopal N., a freelancer with over 15 years experience in the field of machine manufacturing and design of BIW fixtures has worked in similar areas of fixture design and automation for OEs and onsite Projects Overseas.

Design Objectives :

Says Gopal N., “The objective was to generate improvement and standardisation in the design and manufacture of existing welding fixtures. The challenge to the Indian supplier is mainly delivery and steps towards better processes and automation in design, which can result in a quick turnover of fixtures, that are key to capturing the market.”

Design Journey :

Says Gopal N., “The project started with identifying the elements which can be standardised. The issue with existing fixtures was that they could not be customised extensively for different products, due to the traditional approach of design. The project aimed at designing fixtures is such a way that they can be customised as per requirements, with ease and accuracy. In the process welding fixtures for various seating projects were studied, as well as several wire clamping designs, headrest mounting and tube locations etc were identified. “

Way Forward :

Hema Malini K R says, “We have been invited by the US counterparts of our existing clients namely Magna and the Ford Marketing team. We exported one sample fixture to TODA, Japan and have received positive feedback, in that our fixture is good and meets their requirement.”

Elaborates Hema Malini K R, “Design standardisation has helped us to create an INCITE library, where we have made a prototype of functional units in welding fixtures. This, followed by an idea to bring about change in the manufacturing process from direct machining to casting of the sub assembly elements. The steps reduced the cost of each part by almost 30%. We have developed machining fixtures to further refine these elements, which has led to a 40% saving on CNC time.”

Below and Right - Fixtures for different operations of seating system assembly

The Advantages :

Says Hema Malini K R, “The cost of the original product, per fixture was Rs.2 lakhs, whereas in the redesigned version, the cost per fixture is Rs.1.5 lakhs. The saving on production time and labour is about 15%, efficiency and productivity has gone up by 35%, the market share has increased by 15 – 20%, profit margin by 3 – 5% and the brand image cannot be quantified, but is commendable.”

Summarising Gopal N. elaborates, “There has been a positive consolidation in staff requirement in the overall reduction from 10 to 8 members and drafting from 5 to 3 persons. Effort and manpower reduction can largely be attributed due to standardisation. Besides, the CNC manufacturing team has recorded 30 – 40% reduction in time investment. Since the items are standardised, machine fixtures used for multiple setups and the operator completes the machining process in a matter of 20-30 minutes, which would otherwise take 3-4 hours.” Says Gopal N., “Design users have largely benefitted and additional effort in the same category is being invented.”

Says Hema Malini K R, “The establishment of new age design with the use of standardisation techniques has increased manufacturing competitiveness and enhanced the brand image within the automotive industry.”

Adds Gopal, “The redesigned Incite Cam Centre’s fixtures are most globally standardised and are better than the Korean ones : e.g. Daechang in terms of Design a Final Product, helped to increase their manufacturing competitiveness.”

Summarises Hema Malini K R, “We are extremely happy that the Design Clinic Scheme has helped us in the areas of design improvement by 30%, reduction in procurement efforts by 25% and CNC processing time by 40% through utilisation of standard castings, improving lead time by 2 weeks, enhancing customer satisfaction in terms of quality improvement by 10%, reduction in human effort by 35%, improvement in aesthetics of the fixtures by 10% and increasing overall productivity by 30 – 40%.”

Textile Looms

Indigenous expertise

The MSME

Nota Industries,
Ludhiana, Punjab
Website: www.notatex.com
Contact Person: Simarjit Singh

The Design Consultant

Narinder Singh Gora,
Ludhiana, Punjab

Left - New reaper loom

Right - Old product from MSME unit

According to ITMA, textile machinery parts and accessories are growing at a CAGR of 25% over the last few years. In this scenario, exports are very low as compared to imports, but encouraging to see it in an increasing trend at a CAGR of 36%.

Introduction :

India is the country that has been a rich source of design inspiration to the world's textile icons and in that undoubtedly, the quality and efficiency of the looms cannot be underplayed. This has allowed domestic markets as well, to enjoy the richness and quality that the country's treasure troves house, for local consumption as well as export.

Recalls Simarjit Singh Nota (Plant Head – Nota Industries), "We considered design intervention, as there were short falls in the existing looms that required upgradation, owing to low productivity and fatigue factor for the operator. The design was very old and had never been revamped, and we needed to move with the current requirements of the industry. Chinese looms emerged as a serious competitor, which successfully managed to entice our clients and we realised that change had to be incorporated immediately, if we were to retain our customer base. We also observed that the contemporary looms were far more productive and versatile, offering diversity in fabric textures and designs. Also, they required low maintenance and being operator friendly, one operator could handle several machines at a time."

"Further," Simarjit Singh Nota continues, "We realised, that with design intervention, the scope for competition from indigenous models would be nil, as most customers were importing machines from China."

Ludhiana based Nota Industries, established in 1950 is the oldest textile machinery manufacturer in northern India and a pioneer in weaving machinery manufacturing and supplying high quality textile machinery including power, underpick and overpick looms, reeling machine, hank winding, bailing press, bunding press, cone winder, pirn winding machine, fabric inspection machine, rapier and other spare parts etc.

Narinder Singh Gora is a Design Consultant, specialising in the field of research and development in Mechanical Engineering, with relation to new product design and process technology, process improvement and low cost automation.

Design Objectives :

Says Narinder Singh Gora (Design Consultant), “We decided that the new rapier loom should be able to manufacture different types of fabrics like cotton, acrylic, wool etc. And, that the loom should maximise the inclusion of the standard parts, easily available in the redesigning of the rapier loom, besides having the capability of adjusting to different fabric design requirements with high productivity. Being user friendly, with improved aesthetics were other objectives.”

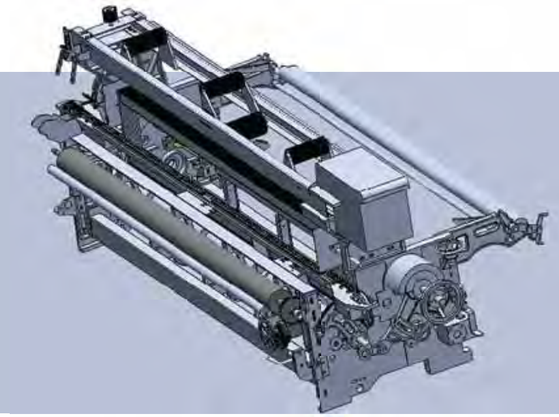
Recalls Simarjit Singh Nota, “In the original rapier loom, the old design was a basic one for fabric weaving, that had been used for years. It was thus proposed, that the new design be made to suit contemporary design and technology and add PLC control, for quick change in design. Moreover, the original rapier loom was not user friendly and there were frequent breakdowns and excessive wear and tear of parts. All these aspects were identified as areas of redesigning, to endow the existing rapier loom with a competitive edge.”

Design Journey :

Recalls Narinder Singh Gora, “We commenced our redesigning activity with sketching ideas for the prototype, before moving on to proposing a specific design for the prototype and creating a final design, with details for manufacturing and finally into testing and improved design details.”

He continues, “One of the challenges, we had to face was recently related to doing extensive search for standard parts and assemblies, to suit our requirement and keep the manufacturing cost in control.”

“Besides,” says Simarjit Singh Nota, “The loom was designed to replace the Chinese loom being sold in India, a fact that inspired us to make a totally new design, to suit the Indian worker, minimise production time and improve loom productivity manifold.”



Way Forward :

Says Narinder Singh Gora, “When compared, the older version of the textile machinery has benefited Nota Industries in terms of volume capacity and has already produced 5 pieces of the redesigned version, as compared to a total of 20 pieces of the original design. Nota Industries has a projection of approximately 10 machines and they expect to produce over 20. The new design has helped to augment profits in the last financial year by 40%. M/S Jawahar Sons and M/S C.S.I. products have started using the redesigned machine and there is a very promising possibility of it being used by several other companies in the near future.”

Summarising, Simarjit Singh Nota says, “The Design Clinic Scheme has given a major boost to MSMEs, that are unable to adopt new technology owing to heavy investment. Financial support is a major relief and an encouraging factor for upliftment of the MSME units and we are certainly proposing to increase the product line with the support of the Design Clinic Scheme.”

Adds Mrs. Hoshiar Singh (Assembly Incharge – Nota Industries), “After redesigning, the assembly of the machine has become much easier, to put together different parts without much rework, tampering and matching.”

Adds Narinder Singh Gora, “The in-house loom manufacturing staff and workers (are now) trained to work as per the drawings, which essentially supported ease in manufacturing accurate parts in lesser time.”

Left - CAD model and machine details

The Advantages :

Recalls Simarjit Singh Nota, “The redesigned looms offer higher production potential with less labour, and the fabric coming out of this machine is of impeccable quality. Moreover, the redesigning process is dependent on updated technology and this has helped to stabilise and enhance our market share, which had taken a beating with competition from Chinese models.”

Continues Simarjit Singh Nota, “There are some marked commendable changes with design intervention despite the original machine costing Rs.1.5 lakh in comparision to the new redesigned one at Rs.14 lakhs. The saving on production time and labour has been quantified to 20% in manufacturing, and one operator can handle 4 to 5 machines at a time, while the efficiency has gone up by 25%. In a word, the new redesigned loom has generated a total transformation in the technology related to the fabric industry.”

Adds Narinder Singh Gora, “In the new, redesigned version, there is an easy setting of fabric design through PLC control, and there is easier assembling of different parts, besides minimising maintenance.”

Childrens' Toy and Play Accessories

A stimulating window

The Design Student
Parag Sarma
National Institute of Design,
Gandhinagar, Gujarat

Indian craft clusters are unique in its creation due to their context (users and usefulness). In the same changing context, Design can certainly help artisans create value and at the same time retain the craft and culture.

Introduction :

Toys for children offer an intrinsic educational instrument in satiating their boundless energy through meaningful activity on one hand and opening their windows of curiosity and learning on the other, and in that translating into a valuable learning tool for children.

Parag Sarma (Toy and Game Design student- NID) did his project for Baktawng Wooden Carpentry Craft Clusters, Mizoram. Baktawng wood carpentry cluster is located in the south of Mizoram. Baktawng has became one of the most well known villages in Mizoram primarily because of its fine carpentry work. Baktawng Pu Sawihnuna started the carpentry cluster, way back in the early 1970s. He was a man with a great vision and knew that carpentry could emerge as a mainstay for the people of Baktawng. Initially, he took training from Aizawl and passed on his knowledge to the younger generation and in this way at present the Baktawng cluster is a comprehensive cluster with a sound management body as far as production, marketing and financial management are concerned.

Left and Right - Different forms of wooden toys

Design Objectives :

Summarises Parag Sarma, “Our final design brief was to design wooden toys to be made by Baktawng wooden carpentry craft clusters, suitable for urban children in the age group 3-5 years with the specific idea of launching 8 to 10 product ranges of toys and childrens play accessories, keeping in mind the craft person’s skills and infrastructure. It also aimed to highlight the widely unknown craft techniques as well as, to innovate and improve the conditions of the craftsmen and give craft a strong identity, by creating a value for customers.”

Adds Gayatri Menon (Faculty Guide – NID), “Besides, the aim was to design viable products for the urban market, at a cost, that sustains the livelihood of the craftsmen in the cluster, while creating a sense of curiosity in the customers, for the products made with this technique.”

Adds Parag Sarma, “It was also decided, that the material properties be exploited in an economical way, and be easy to produce with the existing skill levels and infrastructure, enjoying a contemporary style with hints of traditional roots.”

Left - Wooden toy, a robot as well as a car

Design Journey :

Says Parag Sarma, “We realised, that the opportunity lay in further developing the existing models with design intervention, creating showroom and display spaces for the products made by artisans and product promotion activities. Moreover, the cluster has a good machinery based product portfolio, which reduces the time spent during production.”

Recalls Gayatri Menon, “A SWOT analysis was done on the existing scenario and has conducted with a view to assess the strength, weakness, opportunities and threats of the cluster. This analysis helped in understanding the capabilities and short comings of the cluster and facing the challenges ahead. Further, we continued the strengths to be ready availability of raw material, traditional skills of the workers and existence of sufficient production capacity. The weakness on the other hand, lay in the design and quality of the toys and play accessories not meeting suitable export quality. Besides, the infrastructure facility was not well developed and marketing process not suitably organised.”

Says Parag Sarma, “We realised that carpentry entails both hard physical labour as well as precision. As a result, artisans employ all kinds of postures through the day from 7.30am in the morning to 5pm in the evening, making workspace ergonomics a very important aspect of the design of the space, where they work.”

Observes Prof. Gayatri Menon, “The craftsmen working under the unit were skillful, but did not have the technical know how required to start carpentry on their own. In the Baktawng Carpentry Industrial Co-operative Society, the total number of persons working there was 335, of whom 90% were male and 10% female, and of the total ,90% were skilled craftsmen.”

Way Forward :

Observes Prof. Gayatri Menon, “Marketing is the big problem for finished products. The entire product range is primarily sold in the local market itself and are mostly order based products. There are 80 local shops, spread across Mizoram, mostly in Aizawl, that directly buy the items from these carpentry units. Some orders come in from Shillong, Silchar and Hailakandi district of Assam. Besides, the carpentry units do not have any showroom of their own to display the products produced by them.“

Says Prof. Gayatri Menon, “Tough competition from other cluster units outside the region, especially on the criteria of design and well polished finish pose a threat to the cluster products, that require appropriate addressing.”

The Advantages :

Summarises Gayatri Menon, “Design intervention in clusters has provided ample opportunity for learning the inherited knowledge shared through generations. The clusters develop and trust these key learnings to generate and sustain the livelihood of its people. The design intervention process brings out these key factors and tries to generate solutions which do not affect the fragile connections of craft and its unique relation with people. The solutions generated through the design projects have been able to create a value out of the core element offered by the cluster. It has not affected the existing practices and processes, but has been able to draw a new chapter with the new range of toys, so that craftsmen can understand the importance of the creation of new products, keeping the exclusivity of the skill of Baktawng Wooden Carpentry Craft Clusters intact.”

LED Street Light

Cost effective

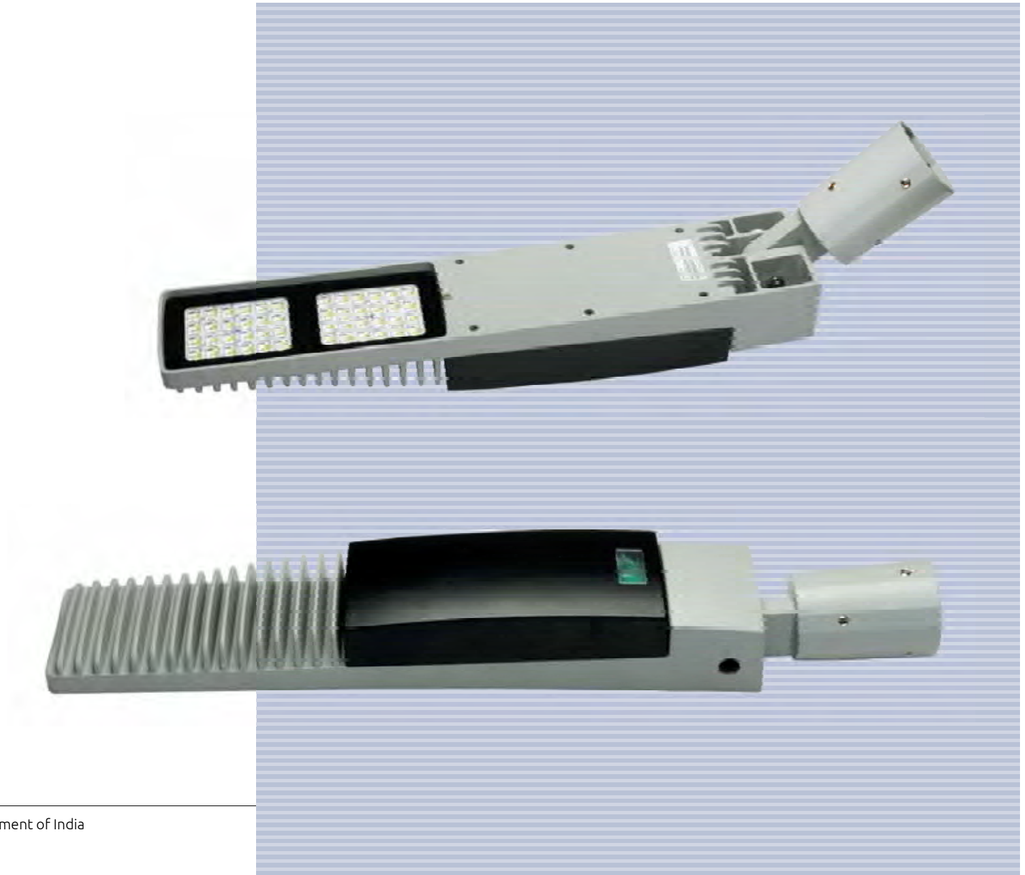
The Indian market for LED lighting is expected to grow to $400 million by 2015 (@ 53% per annum), making it one of the fastest growing sectors. Here rests the opportunity for the MSME sector to prove their mettle.

The MSME

Sahasra Electronics Private Limited
Noida, (UP)
Website: www.sahasraelectronics.com
Contact Person: Dr. Abhey Kumar

The Design Consultant

Prof. Lalit Kumar Das,
Gurgaon, Haryana



Left - New design of LED light, smart, flexible and adjustable

Right - Old product

Introduction :

The surge in demand of LED street lights in outdoor public spaces like streets in towns, cities and community housing cannot be underestimated. Their offering cost effective solutions through inexpensive, skilled labour offers a large contribution to their growing popularity and has increased manifold in recent years, owing to the numerous advantages it offers over other conventional light systems. Several imported, sub standard and low quality products have made an entry into the LED lighting space through international markets. Theses products are making their way in the highly promising Indian market and has subsequently been challenged by the Indinan MSMEs as well as top manufacturers like Philips, Osram, Wipro etc.

Says Dr. Abhey Kumar (General Manager, R&D - Sahasra Electronics Private Limited), “Sahasra Electronics Private Limited was in the business of supplying power and surface mount high quality PCB for LED street lights. We realised that if we developed complete street light solutions, then we would be looking at a cost effective, and therefore preferable option. We wanted this indigenous development to eliminate dependence on Chinese imports. Also, the original LED street light design was very bulky and heavy taking more time to manufacture, with so many parts to assemble.”

Says Lalit Kumar Das (Professor, Design, Ex – IIT Delhi), “Lighting on the roads and highways require long lasting, energy saving solutions. The need is an ongoing one. Designing a low cost, short life solution is detrimental to development. There is a need for ‘fit and forget’ solutions. Street light fixtures should be capable of functioning in all weather conditions, year after year and should offer an aesthetic value add to the skyline. Besides, they should provide, even and adequate light without overuse, fitting into the existing infrastructure, where the design solution should be capable of accommodating variants and supporting additional needs like monitoring traffic flow, security etc.”

Sahasra Electronics Private Limited group's LED lighting products, assemblies and services comprise 25% of the group's total turnover and will be a major contributor to its future growth as well. They have been working with several OEMs, LED and luminary manufacturers to make LED lighting technology more acceptable and affordable.

Prof. Lalit Kumar Das is a design consultant, whose design interventions include design of operational control centre and electro-mechanical products for home, office and industry. Design for the differently enabled and elderly is also his forte, as is specialising in design research.

Design Objectives :

Recalls Prof. Lalit Kumar Das, "The street lights market was characterised with low cost solutions driven by China and high end long lasting, durable solutions adopted in Europe and USA. We decided to adopt the USA /Europe market solution that was unique and efficient and met the highest recommended IP standards, that were open to variants. A solution was required, that would be competitive in the advanced, quality discriminating market. Besides, we wanted the redesigned LED light to require a minimal import of components. Moreover, we intended to focus on the aesthetics, durability and high quality standard - one that adhered to standards, was efficient, adaptable, indigenous and in essence, capable of competing with the best the world offers."

"Further," Dr. Abhey Kumar elaborates, "It was proposed to develop a design, that equaled to presenting a higher quality, with a competitive price and features advantage."

Extreme left - Specially designed lenses for light distribution

Left - Adjustable arm to controled light distribution

Design Journey :

Lalit Kumar Das elaborates, "The process required in-depth analysis of the existing scenario, related to the product, user, manufacturing process, installation and component analysis. Computer aided design was an area we looked at very closely.

Our journey took us through concept and prototype development, followed by designing for manufacturing and operational efficiency, production and tooling support."

Dr. Abhey Kumar reflects, "The challenge lay not only in utilising the in-house capability of developing electronic parts, but, also enhancing the quality of light in terms of its spread, intensity, life and appeal.'

Recalls Prof. Lalit Kumar Das, 'In this context, a detailed study and design exploration was done in the lens design, to control the spread of light. The head dissipation was the biggest concern in terms of structural design and was achieved through CAE analysis and prototyping. Mounting and tilt adjustability was another feature we realised , that made the product acceptable in the large market range."

Way Forward :

Says Lalit Kumar Das, "Sahasra Electronics Private Limited is now more confident of integrating mechanical engineering with their export quality, electronic expertise. A design intervention of the nature that they have gone through will lead to an increase in the market share in the Indian market and justify design intervention costs in the first year itself."

"Moreover," says Dr. Abhey Kumar, "The Indian market for LED lighting is expected to grow to $400 million by 2015 (@ 53 %, per annum), making it one of the fastest growing sectors."

The Advantages :

Dr. Abhey Kumar outlines, "The new redesigned version offers a visually aesthetic design that offers good ergonomics in assembly, installation and maintenance. It is a modular product offering, that allows for a variety of product specifications and an engineering design, that is robust and sensitive to use of material and tooling. It offers better thermal dissipation of heat through an aluminum die-cast enclosure and metal core PCB with thermal pads, besides offering better optics management with the use of polycarbonate lenses and otherwise, through indigenous development. The new design model emanates reduced light pollution and in that makes it a more eco-friendly product, besides elimination of hazardous substances like mercury, sodium etc."

Adds Lalit Kumar Das, "The cost of the original LED light was Rs.21,000/-, whereas the cost of the redesigned one is Rs.15,000/- and there is a 60% saving on production time and labour. It is difficult to demarcate a change in market share, as the earlier product was mainly targeted for the US market, where this product is developed for supply in the Indian market."

"However," says Dr. Abhey Kumar, "The new design is mainly exported to Rwanda and its presentation has helped us acquire a couple of tenders, where one was competing with a Chinese supplier." Concludes Dr. Abhey Kumar, "Besides, the LED street light has one automatic ambient light sensing to eliminate manual switching (On /Off) of lights, that allow for efficiency and convenience."

Pre School Learning

Through story telling tools

Stories backed by the physical objects, toys and tools add to the experience and of a child's imagination and works, as a funfilled, interesting and engrossing learning medium for preschool kids.

The MSME

Satpura Integrated Rural
Development Institution (SIRDI)
Bhopal, Madhya Pradesh
Contact Person: Dr. (Mrs.) UpmaDiwan

The Design Student

Contact Person: Surabhi Khanna
New Delhi, India
www.surabhikhanna.com

Left - Khel manthan products as new designs of soft toys

Introduction :

In days of yore, the art of storytelling was a much refined one, that was integral to a little one's early life- at bed time, feeding time, pacifying time or rather any time, for learning or entertainment. As with most age old customs and beliefs, the wisdom of investing in time and resources in the narration of favourite stories, in childrens'early days was given requisite importance, as an extension of this wider understanding.

Says Dr. (Mrs.) Upma Diwan (Executive Chairman - SIRDI), "The existing product range such as quilts and woven towels at SIRDI was very limited and not very unique, a contributing factor for the lack of optimising success in the market. Also, there was a need to upgrade the skills of the self help group, to introduce new products. We wanted to use the design services of a designer from NID to create new products using existing skills. Their experience in educational activities and Surabhi Khanna's expertise in playful design development, presented the most perfect synergy."

SIRDI is located in Bahiram, a village in Betul district in Madhya Pradesh at the border of Maharashtra. SIRDI had initiated training and product development for providing dignified, productive work to local people.

Surabhi Khanna is an architect, with a Masters in Toy and Game Design, from National Institute of Design (NID).

SIRDI, a small scale industry, works with rural people, particularly women to develop skills and talent for the local and national market. Economic development of the local communities is the key focus.

Design Objectives :

Says Surabhi Khanna, “The main objective was to design new products, for the early education sector, and to use existing local skills. It was proposed to especially design and enhance early education value, in terms of meaningful exposure for children aged 3 years and above. The idea of multiple story telling through the play product was the intention.”

Dr. Upma Diwan elaborates further, “Another objective was to have local skilled women make the playful kits for early education development and the main function of the new design was to create story telling into a playful resource.” This was one of the initiatives of creating a design direction related to play, design and education through handcrafted play products. Surabhi’s point of reviving the hand skills of the women of the self help groups by utilising them in making such products were found suitable in the overall context.

Design Journey :

Says Surabhi Khanna, “The pre-designing research involved an intense primary study of the existing curriculum of pre-schools and *anganwadis*, along with the study of self help groups through a quick hands-on activity to familarise ourselves with necessary skills, which established the need for creating playful kits, to encourage collaborative play between teachers and children. Design concepts evolved and were tested with the pre-schoolers. Development of concepts in terms of characterisation, story formation, material and technique was the next step. With the final prototypes, a final user testing established the success of these products for early education.”

Enumerates Surabhi Khanna, “It was found that teachers were involved in telling stories, drawing things, showing kits etc, in the traditional form of education, but there was no active, stimulating interaction between teachers and students. It was observed through research that the play should be child centric, hence the need for interactive play kits was recognised in schools. “

Recalls Dr. Upma Diwan, “The emphasis was on concepts related in the first person through themes, that focused on familiar perceptions such as My Home, My Food, My Family and My Friends.Teacher –child interaction was noticed to be less active in terms of play and hence a focus was maintained on making an interactive play kit.”

Says Surabhi Khanna, “The most important challenge was to utilise local skills, to design a product for the urban market. This required critical selection of stories, characters and techniques, which would be accepted and valued in the city scenario.”

During user testing of the final prototypes, it was found that children and teachers made and shared multiple stories and sang poems through the given handcrafted characters. Such an interaction had a profound impact on the outcome of the product and handcrafted play products. This also boosted sustainable income generation for the beneficiary by making the play products for early education.

Way Forward :

Says Surabhi Khanna, “The SIRDI members, found the potential of indulging in the urban market with playful education designs, interesting and promising, a factor highlighted during the final user study.”

Says Surabhi Khanna, “The exclusive concept of multiple story telling gave rise to innumerable interpretations through tales and poems created by children and adults for early education. The kits are made in small numbers for batch production. Selected skilled women of the self help group from SIRDI were trained to produce the play product kit. These batches produced play products found to especially have importance in early education organisations and individuals. Till now around 50 play products have been sold.”

Summarises Dr. Upma Diwan, “We received very useful support from all concerned under the Design Clinic Scheme without which, we would not have been able to undertake this initiative.”

Left - Variety in the soft toy segment

Right - Woman at work, new design being realised

The Advantages :

Says Surabhi Khanna, “The introduction of the new play products upgraded market receptivity for SIRDI. Also, in establishing their popularity the handcrafted play products elevated the perception, in view of relevant stakeholders and associates who provided an inroad into the urban market. This is a new approach of connecting local craft skills and local materials to the playful products related to education. The kit designed facilitates clear communication for its use and packaging of the elements. Such a kit is unique in its function and overall design as a system developed for early education.”

Summarises Dr. Upma Diwan, “The new products have many features which meet the requirements of both play and learning. It’s like an educational toy kit. Overall, the new product design has all the necessary elements of meeting users’ needs and successful marketing considerations.”

Rontholi Handcrafted Jewellery

Elevating clusters to brands

Design helps in creating context, newness, variety and interest to explore more and beyond. The same philosophy follows with crafts-men and craft-clusters.

The MSME Cluster

Rontholi Jewellery Cluster,
Indian Institute of Entrepreneurship (IIE)
Guwahati, Assam
Contact Person: Sriparna B Baruah

The Design Consultant

Arpit Agarwal
Guwahati, Assam

Left - New designs of jewellery

Right - Old jewellery made by cluster members

Introduction :

Jewellery, particularly tribal has endeared not only in villages and local areas, but also amongst fashion conscious youngsters in cities and overseas, because the designs emerge from earthy resources and enjoy an astonishing flexibility. Craftsmanship of gold jewellery in Rontholi is an ancient tradition passed on through generations. Initially, there were about 20 units in the cluster who took to the jewellery making profession. Over the years, the trade of jewellery proved to be a profitable business and an increasing number of households in the Rontholi village undertook the jewellery making profession, thus creating the cluster.

Says Sriparna B. Baruah (Head Indian Institute of Enterprenureship), “The existing products at Rontholi jewellery cluster catered only to a certain category of consumers, with a limited product range consisting of traditional designs only. There has been no, or very little product diversification in their designs and forms, over time.”

Says Arpit Agarwal, (Independent Lifestyle Product and Accessory Designer), “The Rontholi jewellery cluster is the hub of traditional Assamese jewellery, with fabulous variations in gold and silver. The tradition of making jewellery in Rontholi goes back centuries. The art of traditional jewellery had been dying slowly and the product range had been stagnant for several years. We realised that together we could help revive this art by diversifying into a newer product range and branding, which would undoubtedly create a larger audience base.”

Recalls Sriparna B Baruah, “The biggest challenge lay in building trust with the artisans. It also took a tremendous effort to establish a synergy amongst the artisans, who were reluctant to accept new concepts and suggested changes, which made our task really difficult.” IIE (Indian Institute of Entrepreneurship), established in the year 1993 in Guwahati by Ministry of Micro, Small and Medium Enterprises, representing various clusters to facilitate the design intervention process.

Arpit Agarwal has a post graduate diploma from National Institute of Design, Ahmedabad in Lifestyle Accessory Design. His expertise lies in lifestyle products, rejuvenating crafts, research and graphic design. He encapsulates “products for personal adornment” and “products for spaces” as important and meaningful to the conceptualisation, designing and development of new products.

Design Objectives :

Says Arpit Agarwal, “The project aimed at creating new and smaller products such as cufflinks, tie-pins, brooches in new, contemporary designs, which would help to reach a larger audience and market. We also believed, that the branding, catalogue and logo design for the cluster would help them create a positive visual impact on consumers.”

Says Sriparna B. Baruah, “The main focus area of Design Intervention was to enhance product diversification, packaging and branding.”

Design Journey :

Says Arpit Agarwal, “We carried out a Design Assessment survey at Rontholi cluster and after research and participation with the idea of helping the product reach a larger audience, not just in Assam but in the rest of the country and world.”

Recalls Sriparna B. Baruah, “In phase one, the artisans from Rontholi received extended exposure during our visit to Jaipur. The introduction of new tools and new techniques to artisans in the cluster expanded the horizon. In phase two, there was conceptulisation of new jewellery, accessories design and prototyping, followed by phase three, which focused on conceptualising the branding, identity development and packaging design for the Rontholi jewellery cluster and training on branding and packaging design. Phase four saw us fine tuning the effort.”

Says Arpit Agarwal, “Besides, product diversification, which included simpler and lighter jewellery pieces, the packaging included Assamese textiles to give a local essence to the products, with branding to create a visual impact on the consumers, where better finish and ‘meenakari’, formed the main focus of the project.”

Left and Right - Different designs of jewellery from Rontholi cluster

Way Forward :

Design intervention has given a spring to the step of the local artisans. New designs, techniques, product catalogue, branding and packaging ideas have opened a new door of opportunities for these skillful craftsmen. Efforts have been made by IIE to make the products crafted by the artisans of Rontholi reach a larger audience. Participation in trade fairs and exhibitions have been the main focus, to increase awareness about the beautifully handcrafted traditional jewellery heritage of Assam.

The Advantages :

Enumerates Sriparna B. Baruah, “Besides, the new jewellery product having a contemporary look and being lighter, the overall finish of the product is of a higher quality than before. The application of ‘meenakari’ is far superior and the new range of products, that have been created will help the artisans reach newer customers and markets. These products are suitable for gifting and as souvenir items. Moreover, previously the artisans didn’t have any proper product catalogue and there was no branding /logo used by them.”

Adds Arpit Agarwal, “The design project has helped in the creation of a product catalogue with an identity along with visiting cards and product ranges. This will facilitate and enhance their quality and communication with customers and potential markets, all factors which tantamount to giving a more professional outlook and approach to the cluster. Besides, the new packaging using traditional textiles will add value in terms of visual appearance, and enhancing local crafts and traditions.”

Post Forming Machine

High on aesthetics and efficiency

The Indian furniture Industry is estimated to be worth more than Rs. 75,000 cr, and is largely dominated by the unorganised sector, which constitutes 90% of the total Indian market. An immense design opportunity lies with increasing the number of new houses, coupled with an urge for a better standard of living.

The MSME

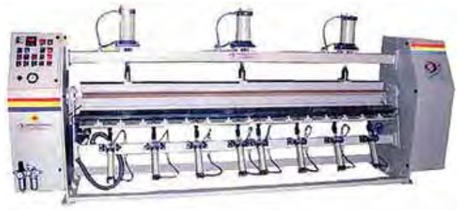
Dreamworld Enterprises
Pune, Maharastra
Contact Person: Sachin Nalawade

The Design House

SMC Design
Pune, Maharastra
Website: www.smcdesign.co.in
Contact Person: Shrikant Chandane

Left - New design of post forming machine

Right - Old machine from MSME



Introduction :

The organised furniture market is growing at about 35% CAGR. Besides, with a robust and growing economy, the graph of the overall standard of living in every respect has been seamlessly rising, enhancing accordingly the interior decoration segment as well. This appropriately, gives a fillip and beautiful finish, to ordinary wooden surfaces even for instance in the case of kitchen trolleys. Manufacturers and interior designers of standing require a finish for wood in household and office interiors, to enhance a certain style quotient and in that, laminated plywood's long lasting quality not only on flat surfaces but also, on the edges gives the curvatures a fine finish, making it increasingly popular, especially in the lamination of the profiled panels in kitchens, desk and table tops, shutters, cabinets, cupboards and office furniture.

Says Sachin Nalawade (Proprietor - Dreamworld Enterprises), "Our Dreamworld Enterprises, product range namely particle boards, MDF, plywood and blackboards were facing competition from foreign brands and we realised that the shape of the existing form needs to be changed. Moreover, we realised it was necessary to lend itself to design usability and be easy to work with – all these considerations urged us to consider design intervention. In this respect we thought it was a good idea to go with a design firm, that could work wholeheartedly on studying existing products."

Says Shrikant Chandane (Director - SMC Design), "With an increasing demand for furniture, there was a surge that drove an increase in the import of furniture from Italy, Germany, Spain, China, Korea, Malaysia, Indonesia and Philippines. Machines manufactured in India one observed were operationally very good but, locked in design aesthetics and needed to alienate and come at par with their international counterparts."

Dreamworld Enterprises is a manufacturing SME in post form laminates, on particle boards, MDF plywood and blackboard to increase productivity and save time. It also manufactures edge bending machines.

SMC Design specialises in industrial and product design with a team of professionals, providing solutions in CAD, CAM, CAE and product development support.

Design Objectives :

Says Shrikant Chandane, “Besides extending the usability option on the existing product, the objective of the project was to enhance aesthetics, reduce weight and save material and changing cost, other than simplifying the operational, maintenance and usage process as well.”

Design Journey :

Says Shrikant Chandane, “The process entailed study of the market and design aspects in existing inclusions. It involved designing of the machine’s control panels as per need, therein making it ergonomically useful for operation and providing for easy maintenance. Electric circuit design as per ergonomic study and operator ease, avoidance of unnecessary wiring and complications, safety from dust and foreign particles, the cabinets and their fittings for opening and closing the panels, were the other considerations. Besides, due attention to the study of colour schemes, logo design and new suggestions for material use, also an assessment of ease in manufacturing design. It also entailed outsourcing suitability study, receiving and collecting appropriate suggestions.”

Says Sachin Nalawade, “In the first phase, the individual creation of a strategy for design extended to over two weeks, the second phase focused on virtual design, the third phase of 3D CAD models and the final phase on the prototype development extended to two weeks.”

Elaborating, Shrikant Chandane says, “We redesigned the main supporting plates of 25mm thickness and the sheet metal was bent as per the shape.”

Way Forward :

Says Sachin Nalawade, “We were very impressed with the manner in which the Design Clinic Scheme, a government initiative was conducted – quite unbelievably so! And our workers concluded that the design intervention exercise was a much desired one. The initiative helped us to take up design practice for improvement in machine and we feel that we will continue do so for our other products.”

Adds Shrikant Chandane, “ Jaihind Industries who has started using the redesigned product. The response to the new machine is encouraging and its a learning process for both designer and MSMEs to work on the design project. We certainly do see ourselves participating in future Design Clinic Scheme projects.”

Left - Rendered image

Right - First prototype in making

The Advantages :

Says Sachin Nalawade, “After redesigning, the machine has undoubtedly attracted more attention in exhibitions, with increased enquiries. I have to admit that the cost of the original product was Rs.3,20,000/- and the redesigned one Rs.4,00,000/-. Maintaining the production time and labour involved equivalent to the old machine, a marginal increase in the market share has been reflected due to simplified product layout. The profit margin has increased by 20% and there has been a significant enhancement of the brand image. Moreover,” he continues, “We have received enquiries from abroad primarily South East Asia and South Africa.”

Sums up Shrikant Chandane, “When compared to the older version of the product the MSME unit has benefited in terms of volume and produced 8-9 pieces of the redesigned version. The MSME unit has a projection of approximately 75 machines. The new design has helped them in improving the sale / turnover / market share by 10% and augmented profits in the last financial year by 5%.”

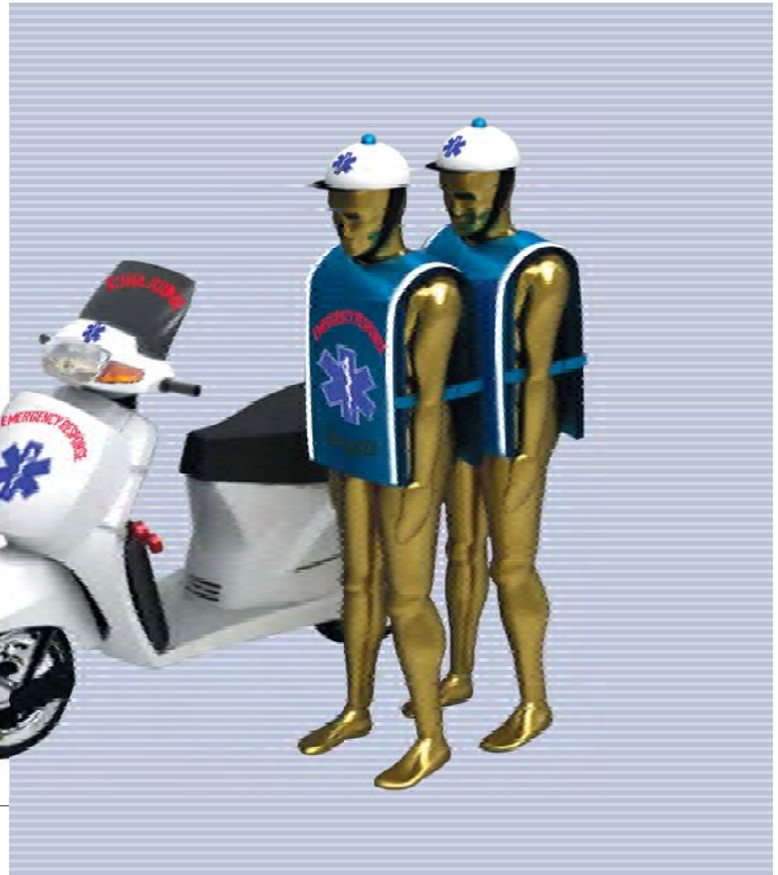
First Aid Vehicle

A compact, efficient solution

Every year thousands of people die in India due to lack of timely and effective first aid facility. One of the serious problems in reaching the first aid facility is the inappropriate design of vehicle and its accessibility. Two wheeler ambulances will bring a change in the scenario by reaching slums, narrow lanes in the cities and remote villages.

The Design Student

V Shaktivel,
M.Sc, Product Design
MS Ramaiah School of Advanced Studies
Dharmapuri, Tamilnadu



Left - CAD model of Mobile First Aid

Introduction :

The significance of accessible to the basic first aid cannot be underestimated. Whether it is a minor situation or something more serious, the capacity to deliver immediately gives the assurance of receiving without delay, much required assistance, that creates the critical difference between life and death.

Due to the exponential increase in the total number of vehicles on the roads in recent times and resultant road traffic overload, the frequency of accidents has risen drastically. Moreover, for people living in cities and remote areas suffering from health disorders, the importance of access to speedy basic first aid assistance cannot be underestimated. At present, compact vehicle systems in the current scenario, four wheelers like tempo travellers are used for providing ambulance services and it is observed that there is a significant challenge posed by the traffic to first reach the accident victims or patients and then to get them to the hospital for timely assistance, because of the traffic and road conditions. Many lose their lives due to such delays.

In this background, motor cycle ambulances are emergency vehicles equipped with first aid facilities, to carry a solo paramedic or doctor to a patient. It facilitates the ability to respond to a medical emergency more speedily than a car, or van in heavy traffic, leading to an increase in the survival rates for patients suffering from heart and other problems.

Says Prof. C. Gopinath, (Department of Design, MS Ramaiah School of Advanced Studies), “We fathomed it was necessary to carry out a study on the prospect of two wheeler ambulances, understand latest trends, present practices and collect relevant data. Also, we realised it was important to collect data of existing designs, conduct a market study, create QFD (Quality Function Deployment) on the basis of customer voice and arrive at PDS (Product Design Specifications) to meet customer requirements. Seeking professional design intervention, we believed would offer us the correct solution.”

V. Sakthivel is a final semester product design student in M.S. Ramaiah School of Advanced Studies, Bengaluru. He did the current post graduation final project as part of his M.Sc. Engineering Course in Product Design, is experienced in tool making, engineering and product development.

M. S. Ramaiah Institute of Technology was started in 1962. MSRIT has grown over the years with significant contributions from various professionals in different capacities. The department of design comes under the school of advanced studies providing training and education in the field of design.

Design Objectives :

Says Gopinath, Professor, Department of Design, "It was decided that the project would focus on victims of accidents in the 'golden hour' and save their lives. In order to accomplish this, it was decided, that a two wheeler ambulance be designed, equipped with all the apparatus and medicines required to treat victims at the accident spot itself. Also, it was decided that the ergonomics and safety for riders and usability in urban and rural areas be considerations, for implementation at a national level."

Says V. Sakthivel (Student - MS Ramaiah School of Advanced Studies), "It was decided that the target group would therefore be many private organisations, NGO groups and individuals in the business of private ambulance services."

Design Journey :

Recalls V. Sakthivel, "The 'phases' of design development began with overall planning, concept generation, product configuration, human factor considerations, design appearance, including renderings such as photo realistic CAD presentation, high quality non functional appearance models and mechanical design details."

The need for the two wheeler ambulance was identified in the market, by conducting surveys with medical personnel and general public. This followed by a detailed research, which involved the study of different types of ambulances available throughout the world, was carried out. Data collection entailed reviewing literature and studying relevant products, users and the product environment. Quality Function Deployment and Product Design Specifications charts were generated based on the market, user and product study. Concepts were created thereafter with respect to the derived PDS and finalised by weighted ranking method. A 1:1 mock-up model was made to validate the final concept and feedback, collected from users."

Says V. Sakthivel, "In the prototype creation, the dump and waste box was first tied with aluminium wires after, which it was made with sun board material. The ambulance kit was first attempted to be made with rough cloth and finally water proof bag material. Barring, the ambulance kit, all parts were applied with putty, cleaned with emery paper and allowed to dry and were then painted white and assembled on the active scooter."

Way Forward :

Says V. Sakthivel, "An existing two wheeler was selected to offer the base for adapting, to develop the design for the two wheeler ambulances, keeping in mind vehicle regulations, load bearing capacity and driving safety."

Sums up Prof. C Gopinath (Professor, Department of Design, MS Ramaiah School of Advanced Studies), "While the first prototype has offered several advantages, it is suggested that sponge and beaded material be used where the body touches the vehicle. "

Left - Wearable first aid kit for two wheeler driver

Right - Different variants of two wheel first aid kit

The Advantages :

Says Prof. C. Gopinath, "Storage space to carry the required medical accessories was designed and developed to mount on the proposed vehicle. Moreover, the motor cycle, ambulance by virtue of its ease of maneuverability through traffic gnarls has the capacity to tackle the issue."

Enumerates Prof C. Gopinath, "Accessability to kit contents is an advantage and the foldable kit is very comfortable to carry, it is weightless and selection of the basic vehicle material and utilisation of space is good."

Electrical Systems

Efficient Running

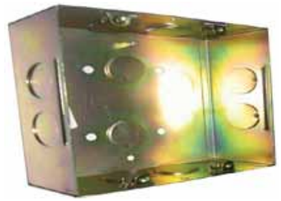
The Government of India has set a target of adding a power capacity of about 88,536 MW (Mega Watt) during the 12th year plan, leading to circuit breakers and component market, dominated by low voltage product segment where revenues are forecasted to grow at the CAGR of around 15% during 2013-18.

The MSME Unit

Pace Control System
Panipat, Haryana
Contact Person: Mr. Rajesh Gulia

The Design House

M/S Veera Engineering
Delhi, Uttar Pradesh
Contact Person: Mr. Satnarayan



Left - New design of MCB box
Right - Old product from MSME unit

Introduction :

Efficiency and safety in electrical distribution systems in homes, factories, offices, public and other spaces cannot be underestimated. The complete electrical system is made up of several stand alone elements, that significantly complete the entire electrical circuit, with a range of MS (mild steel) distribution boxes, batten holders, MCBs (miniature circuit breaker) etc. These products are segments of the entire electrical distribution arrangement, where safety of household products like the fan, air conditioner, refrigerator etc. are taken into account.

Says Rajesh Gulia (Manager – Pace Control System), "When we reviewed the existing product, we realised the market needed a better product and process improvement, where the cost of production needed to be regulated and there was an overall a sense of urgency in acquiring a new, efficient electrical products system, with a redesigning and rejuvenation of the existing one. Moreover," he says, "We as a firm wanted to remove some redundant processes like welding, plating etc, as well as improve the process efficiency and product quality with optimum cost."

Says Satnarayan (Partner - - M/S Veera Engineering)), "At the beginning of discussion, it was clear that the market required a product which reflected an improvement in process, cost of production and overall efficiency. "

Adds Umesh Kumar (Partner - M/S Veera Engineering), "The manufacturing of MS box and batten holders, which presented us with its biggest challenge was primarily part of the unorganised sector in India, with conventional methods and very poor quality and productivity."

Pace Control System established in 2009, envisioned an electrical product manufacturing and marketing unit, which enjoys established presence in Haryana, Rajasthan, Uttrakhand and Chandigarh.

M/s Veera Engineering design studio started in 1996, with expertise in designing new products, their prototypes, development of new products and supporting manufacturing tools.

Design Objectives :

Says Umesh Kumar, “The main objective of the proposed project was to design new products and their manufacturing tools, with a better surface finish and also redesign existing products and manufacturing tools, so that Pace Control System became more competitive in the market, by providing improved products at a lesser cost, with on time delivery assurance. Besides, we proposed to remove unwanted production processes e.g. welding of boxes, so that Pace Control System could establish itself as a more environment friendly product, as well as consume less electricity to manufacture the products, which would ultimately benefit the manufacturing cost.”

Design Journey :

Recalls Satnarayan, “We began with collecting end user feedback and requirements, the MSME unit’s need of process improvement, comparison of the product with other manufacturers and determination of cost of production.”

Continuing Umesh Kumar says, “In phase one we conducted a market survey and coordinated a products comparison and feasibility report. In phase two, we worked on the primary and prototype designs of the products, followed by phase three, where we focused on final drawings and material procurement reference (mould base steel die, pillar sets etc) for the manufacturing tools.”

Adds Satnarayan, “In phase four, we did machining and assembling of tool parts, followed by the final phase, when we did tool trials, their commissioning and standardisation of processes offering an overview.”

He says, “We got involved with the manufacturing of progressive tools instead of open tools and replaced injection moulds with hand moulds. We used pneumatics for joining two parts, instead of welding. Besides, the power press and injection moulding machine were replaced by hand operated press and moulds. Undoubtedly, the biggest challenges, that we faced were related to the market survey, where it became very difficult to collect data and feedback. The other factor was related to generating finance for redesigning.”

Below -Complete assembly of MCB box and switches

Bulb holder for domestic installation

Way Forward :

Summarises Rajesh Gulia, “We are enthusiastic about taking up new challenges and making our products more efficient. The Design Clinic Scheme has helped us to understand the process of design and facilitated the conducting of this ‘experiment’ in a smoother way.”

The Advantages :

Says Rajesh Gulia, “There are several advantages, that accrued as a result of the redesigning process. For one, the aesthetics improved by using G I sheets instead of CRCA, by removing the plating and welding. It made the working condition better, because the new process is free from all types of pollution. With the removal of the plating and welding, the productivity of the MSME improved. It eliminated two stages. Production efficiency enhanced by 50% in the box and DBS. Through redesigning of two tools from the original single cavity hand moulds to four cavity injection moulds, the production increased 4 to 5 times. Besides, the new design helped reduction of cycle time from 45 sec / stroke to 30 sec /stroke. The operation cost from Rs.20/- kg to Rs.12/- kg and the operation cost of moulding reduced from Rs.1.0 to 0.25p per piece. Moreover, the redesigning minimised unwanted human intervention, the quality of the product improved and there was no rust formation in the products, besides lower power computation was ensured.”

Says Satnarayan, “There are a few distinct advantages, that have accrued as a result of the redesigning, perhaps best illustrated with a comparison of the before and after story. In the original design, the welded joints broke during installation, due to rusting or weak welding, whereas in the redesigned version no welded joints existed, so the breakage problem was eliminated permanently. Moreover, the electroplating process was not adequate for the environment nor was it eco friendly. In the case of the new version, the GP sheets are galvanised, so there is no need for electroplating as they are eco friendly and RoHS approved sheets.”

Continues Umesh Kumar, “In the original product there was excess process energy wastage, because of spot welding and electroplating, where the running load was 12.3 kwh, however after redesigning, the process became energy efficient, conserving energy and the running load was reduced to 6.7 kwh. Besides, in the original version, the operation cost was high because of multi stage operation and transportation of the goods from one process to another, whereas, in the redesigned version, the process cost is moderate because of single stage operation and zero transportation of the goods, where six manpower and two operations were eliminated. Moreover in the original process, the din rail is spot welded with the box, which reduced the flexibility of MCB installation, making adjustments impossible, whereas in the new one, the process din rail is fixed with screws, which gives the flexibility for adjustment during MCB installation.”

Continues Rajesh Gulia, “In the old design the plastic side strip was used, which tended to break during transportation, leading to customer dissatisfaction, however in the new design no plastic side strip was used and the box was covered in a single piece. Finally, in the old design the MCB was not visible after the cover closed, so every time when the fault occurred, it was required to open the cover and check the MCBs. Whereas, in the new design a transparent acrylic cover has been given, so there is no requirement to open the cover, to check the MCBs. Morevover,” he continues, “In the old design, only one side vent was provided for arc quenching, whereas in the new design both side vents have improved the arc quenching.”

Enumerates Satnarayan, “When compared to the older version of the electrical system, the MSME unit has benefited in terms of volume having produced 2K /day of MS Box, 2K of batten holders and 1000 sets of MCBs under the redesigned version, as compared to the original design, where the figures were 1K of MS Boxes, 500 nos of batten holders and no MCBs.”

Water Purifier

A mobile option

Increasing cost of bottled water, sustainability issues with disposable, ease of access, cost of filtration devices, dependency on import for such devices, etc are growing concerns for consumption of safe drinking water while on the move or in the case of an emergency.

The MSME

Planin Innovations
and Consultancy Services Pvt. Ltd.
New Delhi
Website: www.planin.co.in
Contact Person: Girija Metta

The Design Student

Contact Person: Gulmohar khan
M. Des. - Product design
I.I.T. Delhi

Left - New design of mobile water purifier, a different approach to potable drinking water

Introduction :

More than half the human body's significant component is water, critical for living at a base line and equally important, its role in maintaining hygiene to keep water borne diseases at bay which cause fatal or gradual health depleting diseases. Clearly, the significance of pure water cannot be underestimated. The problem compounds for individuals 'on the go' and largely travelling, for instance defence personnel, students and people living or travelling in areas, where drinking water can only be easily procured from direct natural sources, that essentially require treatment before consumption.

Says Fani Bhushan (Director, Planin Innovations and Consultancy Services Pvt. Ltd.), "Similar products are available in UK, but the cost is high and does not entirely cater to the Indian consumer's need, mind-set and cultural ethos. Moreover, the original water purifier design involved drinking water through suction by mouth, which is an unacceptable mode for the Indian mindset. Successful commercialisation was largely dependent on removal of some of there key negatives, in the original product. UK based Life Straw is the international competitor in this segment, that offers a benchmark of sorts."

Planin Innovations and Consultancy Services Pvt. Ltd. is an innovations based company, with a demonstrated capability of creating commercial successes within uncompleted fields.

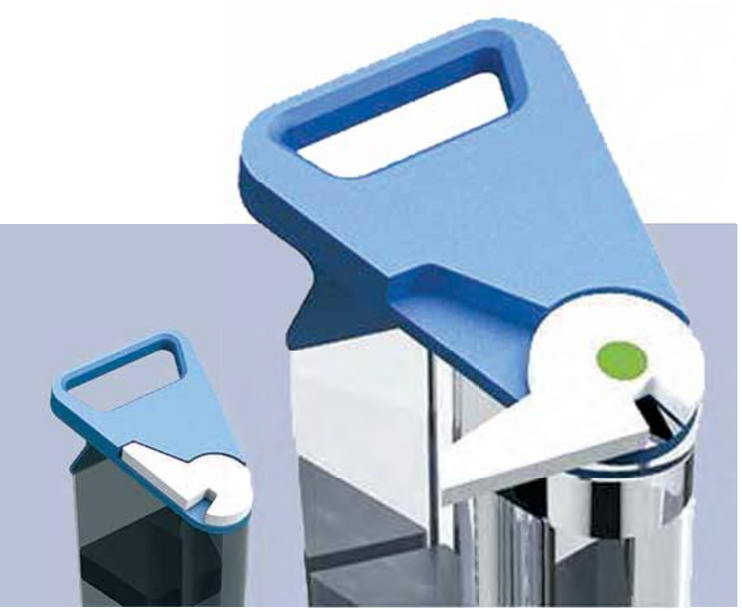
Gulmohar Khan (Student of Masters in Design Programme in Product design, I.I.T. Delhi), had contacted Planin innovation to work on design projects under Design Clinic Scheme for student projects. The project has been taken up as a final semester project to demonstrate the outcome of design training in the form of products manufactured by the MSME unit.

Design Objectives :

Says Fani Bhushan, “We wanted to make a product for users, that will enable them to drink water and generate their own drinkable water, even in remote jungle areas and revolutionise the restart time situation, where they could carry their own water and use it till it lasted and then refill and purify locally. We intended, that the new re-design should release them from the restriction of distance and access to clean, drinking water.”

The objective was to look into the bigger picture that lies within the system, associated with water and various other factors which indirectly affect the consumption of safe water and perception of people about it.

Says Gulmohar Khan, “Looking for opportunities in some of the problems associated with water in various contexts, this project proposes a water storage cum filtration kit for a temporary stay scenario in India. The term “Temporary stay scenario” here represents the scenario consisting of the life style of students, hostellers, frequent travellers, etc. who do not stay in environments that have permanent water filtration facility and are often very prone to using water unfit for drinking purposes. The project proposes an equipment that assures the user group safe drinking water and also takes into account the ease with which one can achieve that.”



Design Journey :

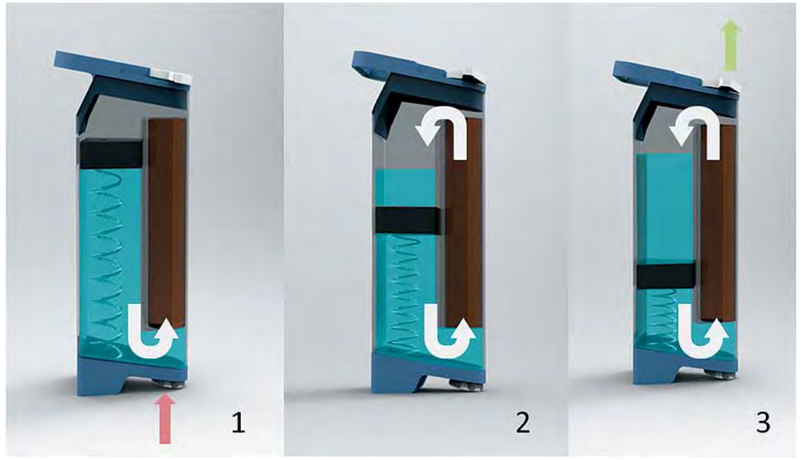
Says Gulmohar Khan, “After the problem area was fixed and available products were studied online, I interacted with users. During this study, I moved to railway stations for general observation of usage of public taps by people, and plastic bottles by them. Several of my observations, were related to the problems faced by them in using public taps and water available at stations and concerns related to it. The other part of the observation gave a key idea about what promotes the use of plastic bottles or packaged drinking water in the Indian context.“

Says Girija Mehta, a team member, “Several other factors considered during the design process were ease of use, cost effectiveness, use of available products and technology, handling and consumer behavior. The design process starts with a wide search for problems and then narrows down to specific domains for which the kit is proposed.”

Says Fani Bhushan “The size of the product has been kept similar to the presently available 1 litre water bottles. This is because if the product becomes significantly bigger than the present packaged water bottles, then the consumers will not switch from such bottles to the redesigned one. Also, this will hinder the portability of the product. The filtration unit is basically a membrane based filter that is capable of removing small particulates and pathogens- upto 99.9%.. The design of the outlet reveals a simple and beautiful design for single handed use. The rubberised gasket seals when closed and the snap fit rotation clicks it to lock in a secured position. The motorised versions and leg operated versions that were discarded in the initial stages of the conceptualisation and prototyping , have become more relevant now, after a wider audience was exposed to the idea and the prototype was placed under review of experts.

Way Forward :

Summarises Fani Bhushan, “The Design Clinic Scheme is an effective one, where talented and budding designers can harness their services. The Student Project has helped us understand the process of design along with the project activity. This also helped organisation to acquire design thinking in the process of ideation, concepts, prototyping and finally product execution, which helped in changing the mind set of people involved in the project at various stages, to incorporate these methodologies in their activities and made them able to adapt to arising needs.”



Left - Opening and closing sequence of water outlet

Right - Water flow diagram during the purification process

The Advantages :

Says Gulmohar Khan, “The cost of the original water purifier was USD 150 or Rs.9,000/-, whereas the cost of the redesigned product is Rs.600/-. The new redesigned product is now usable by a large majority of the target population. Besides, there has been a decided improvement in the aesthetics and brand appeal.”

The organisation has been able to prove their capability to present such an innovative and competitive product in the market. The organisation is now more enthusiastic to take up projects and products which are otherwise considered to be USPs of the western world in terms of technology and design.

Stainless Steel Hospital Accessories

For optimal hygiene and maintenance

Per capita healthcare expenditure in India is estimated to grow at a CAGR of 15.4 per cent during 2008-15 to reach US$ 88.7 according to IBEF. This trend is directly coupled with the growth of the heathcare infrastructure, keeping in mind emerging trends and preferences, where hospital furniture has an important role to play.

The MSME

Batliwala Process Engineering
Ahmedabad, Gujarat
Contact Person: Kaizer A Batliwala

The Design House

Khidki
Ahmedabad, Gujarat
Website: www.khidki.co.in
Contact Person: Abhijeet Paul

Left - Flexible partition and food trolley, a new product range, post design process.

Right - Hopper, an existing product manufacture by the MSME unit

Introduction :

Stainless Steel, by virtue of its intrinsic characteristics, lends itself to easy maintenance, and on an essential daily basis to good hygiene and cleanliness, while maintaining a basic structure and functionality, so necessary for ICUs and other hospital areas including over the bed tables, bedside partitions, bowl stands etc., all with a significant use, critical for an efficient hospital functioning.

Says Kaizer A Batliwala (Batliwala Process Engineering – Proprietor), “We have good engineering expertise and an established healthy network with labs and a belief, that re-designing and developing stainless steel accessories for hospitals, will help us build our core expertise and to diversify and expand our business interest, which could in turn lead to the development of accessories for a chain of hospitals, that will help them develop their core strength and reach out to new markets, offering better profit margins.”

Adds Abhijeet Paul (Founder - Khidki), “Since the product range at hand was new and therefore the specific market to which it was targeted, the challenge lay therein itself.”

Khidki is a design studio dedicated to providing innovative design solutions and services through a wide range of activities, in the area of industrial design, packaging, accessory design, design for children etc. at both product and systems levels.

Established in the year 1970, at Ahmedabad, Gujarat, India, Batliwala Process Engineering, Ahmedabad, is one of the eminent manufacturers and suppliers of a superior quality range of Stainless Steel Products and Equipment. As part of a further expansion of existing capability of the MSME unit the idea of getting in to the hospital furniture got conceived in the early stage, which is expected to lead to a further diversified market in the coming future.

Design Objectives :

Recalls Abhijeet Paul, “Since hospital chains are becoming more popular day by day, it was logical that the strategy for redesigning be focused on diversifying business by designing products for hospitals, where hygiene would remain a priority and where therefore, stainless steel hospital products and accessories could have significant potential.”

Design Journey :

Says Abhijeet Paul, “We began with studying an overview of healthcare trends, to get an understanding of the market and potential, for introducing stainless steel, hospital accessories. This included a study of different accessories and their trends in hospital rooms. It was supported by a review of stainless steel and its various surface finish possibilities, as well as their properties with specific relevance to hospitals and related hygiene concerns.”

Adds Kaizer A Batliwala, “The Khidki team visited hospitals to observe and study the on ground problems. This was followed by a user study and inferences through unstructured interviews with user groups, to understand their perception and experience of staying in hospital rooms.”

Says Abhijeet Paul, “In the first phase, the focus was to understand the existing scenario at the MSME end, which could help in understanding the broader product possibility. The research also helped in identifying the new range of furniture, unique features for existing products and possible market places where these products could be sold. In phase two, conceptualisation and selection of specific concepts, were presented and discussed. Also, digital models of the concepts were made, product features explained and three concepts finalised. In the third phase, the designs were detailed and prototyped namely, the partition, bed top table and mural. The fourth and final, phase focused on documenting the project along with exploring the development process for commercialisation of the product.”

Recalls Kaizer A Batliwala, “The main challenge lay in understanding the primary and secondary user, as well as various user segments, which helped in deciding the design approach and giving design direction. Our staff members were wholeheartedly involved in the engineering and prototype detailing phase and enjoyed the entire process of product development. The aesthetic and other considerations to equip themselves with the competitive edge through product features was new to them.”

Way Forward :

Says Abhijeet Paul, “With this new range of stainless steel hospital accessories, Batliwala Process Engineering , will be able to diversify their products and enter into a new market.”

Says Kaizer A Batliwala, “The new range has been displayed in various international exhibitions. The response is encouraging.”

Summarises Abhijit Paul, “At present the product is being tested. Based on market feedback received and a tie up with the interior design firms in Dubai, the MSME unit is able to plan the development of a new range. The product has received a very good response and has also opened up for additional products in the same category for Batliwala Process Engineering.”

Left - New products, side rack, food table

Right - partition

The Advantages :

Says Kaizer A Batliwala, “The unique aspect of the new product range is, that it creates a homely feel in the hospital. Moreover, it has recorded an additional functional improvement, including the use of organic textiles, which breathe and easily translate into a foldable partition. The foldable bed top table is easy to fold, stack, clean and has a multi-purpose use. The product range has commonality in terms of design language and adds to the positive atmosphere of the hospital room, making the patient feel good. The cost of the product is reasonable and can be easily afforded by hospitals. The obvious advantages of easy maintenance and hygiene, make this a preferred option.”

Board Game

Enhancing knowledge and skills through play

The Design Student

Gunjan Verma

School of Planning & Architecture,
New Delhi
Prof. Manoj Mathur, Faculty Guide

Only 20 per cent of the Indian market is served by Indian manufacturers, with the rest being accounted for by imports mainly from China and Italy. Board games have a huge potential to incorporate Indian contexts in the games designer, played by kids for not only fun but for education and knowledge enhancement.

Left - New design of board game

Right - Existing board games in the markets

Introduction :

Learning that takes place in a natural atmosphere, rather than a forced one, has its own special place in establishing long term, meaningful learning for anyone and more so in the case of young children. Therefore, games created with sensitivity and clarity on one hand, with the objective of imparting to the participants learning and skills, can indeed be an incredibly effective substitute for formal learning.

Says Manoj Mathur (Head of Department - School of Planning & Architecture, New Delhi), “In the board game space we can identify hundreds of designs, but if we view a condensed list of popular and effective board games, we will short list the traditional chess, ludo, snakes and ladders, monopoly and a few such others, which can be played by all age groups. So the challenge lay in categorising a game, that could be as universally popular. In the section of board games. We viewed Kogworks as our international competitor.”

The School of Planning & Architecture is a specialised, one of its kinds University, which exclusively provides training at various levels, in different aspects of human habitat and environment. The school has taken a lead in introducing academic programmes in specialised fields at the Bachelor and Master levels, striving for excellence and enjoying a sustained lead in extending meaningful education and research.

Design Objectives :

Says Gunjan Verma (Student - School of Planning & Architecture), "The key objective behind redesigning the Ramble Route board game, was to make the table top board more interactive. In the present scenario, children are moving towards computer and video games, which do not exercise the childrens' imagination adequately. The objective, that naturally emerged was to enhance interaction levels between children and parents and offer an opportunity to allow for a quality, healthy, time spend. Increasing the extent from a single to five levels."

Adds Manoj Mathur, "Besides offering an opportunity for fun, we were clear that Ramble Route should also educate children through a medium that can easily find place and time for interactions in the current, busy lifestyle. For achieving this effectively, it became important to understand and differentiate the special needs, that could be addressed. In the final design prototype, care had to be taken in terms of assuring quality interaction with the users."

Design Journey :

Says Manoj Mathur, "The Ramble Route board game, designed for 6-12 age group involves counters or pieces moved, or placed on a pre-marked surface or "board", according to a set of rules. The games can be based on strategy, chance (with a rolling dice), or comfort of the two with a goal, that a player aims to achieve."

Adds Gunjan Verma, "The Ramble Route is designed to bring excitement while playing. This game contains five levels, representing an essence of India. Each level gives a player's brain a real workout. The element on the dice and cards prompt to create one's own strategy to move faster and score higher. This game gives children well rounded entertainment with some basic knowledge about our culture, to enable them to educate themselves, on knowledge of the different national states and their unique characteristics. The game is designed to cover five levels, where up to five players can participate in play. Players follow a fixed route marked on a game board. They have to move the number of squares shown on the dice. Players can create their own strategy and choose their own track to collect all the star points which are placed on the board. The online version of Ramble Route is attractive and designed to enhance the entertainment quotient substantially."

Below - New range of board game

Elaborates Gunjan Verma, "According to my market survey, I noticed that the packaging of the game gained direction from the projected brand image, as also the manufacturing and sale price. Packaging emerged as the single most factor that determined a prospective buyer's counter purchase of an unfamiliar product. Size of the packaging is an important consideration as well, in this context. So, I kept all there elements in mind while designing Ramble Route."

Enumerates Manoj Mathur, "I realised, no matter what side of the debate you are on, the effect of video games on children is noticeable. Children in the 6 to 12 years age group are most affected by video games because of their inexperience in the real world. Gunjan conducted a comprehensive study of the online games and their good/bad affects identifing the features that should be absorbed by the board games. She compared board and online games to studying the affect on the behavior of children, while playing."

Recalls Gunjan Verma, "I focused on combining the features and started developing the game. Subjectivity was perhaps the biggest challenge that we faced in the designing process, as game design is a wide area and difficult to finalise, basis weightage to making more interesting, or interactive, as preferences vary with age. The design discussion was a challenging experience and it was difficult to finalise one concept. So, I employed the method of designing a simplified game sketch and started playing with random people, preferred observing of their behavior and gauging those aspect, which helped me refine the design at each level, right through the process. I enjoyed myself, as the game was my product!"

Way Forward :

Says Manoj Mathur, "The Design Clinic Scheme for design expertise to MSMEs, was instrumental in allowing us to create a platform, where participants were able to generate a holistic perspective with the help of design experts' guidance. The experience was such, that in future I see ourselves associating with them for other projects."

The Advantages :

Says Manoj Mathur, "Gunjan concentrated on developing the design with a focus on a little older age group, when they start developing mental, emotional and social growth. In the game module, she introduced different levels to include the online version for increasing the extent of engagement, where children can find different types of challenges in a single board game."

Moreover continues Gunjan Verma, "The Ramble Route aims at engaging children through play and in the process provides the essence of cultural richness of our country. The game also enables children to derive strategies, subconsciously and makes them think and plan during the course of play. Through different levels, the game keeps the players engaged and retains the interest to play repetitively. This makes the game more popular amongst the children benefiting the game seller."

Ceramic Toys

Offering play and utility

Ceramic toys in india have a long history and role to play. They have been found in Harrapan civilization and produced over the years till the modern ceramic era. Competition now demands the manufacturers to bring some newness in the products.

The MSME

Ashok Pottery Works
Thangadh, Gujarat
Contact Person: Praveen Prajapati

The Design House

Dirty Hands
Ahmedabad, Gujarat
Contact Person: Mamta Gautam

Left - Ceramic toy as well as utility product as new options

Right - Existing toys manufactured by MSME unit

Introduction :

Toys traditionally were made from the clay layer of the soil, to present play opportunities, offering tactile and motor development prospects, with an introduction to familiar and other objects in the living environment.

Recalls Praveen Bhai Muliya (Director - Ashok Pottery Works), “Ceramic toys have been associated with the history and evolution of the cluster for over 35 years. These were developed from the recycled left over materials like clay and glaze from local manufacturing units. The toys were bought by local villagers and small town residents, but competition from Chinese and plastic toys and lack of innovation in design, diminished the ceramic toys demand drastically, leading to their disappearance from the markets.”

Says Mamta Gautam (Co-founder- Dirty Hands), “We understood that Ashok Pottery Works had been producing small toys like parrots, peacocks, ducks, sparrows, elephants and tigers as artefacts or even Ganesha idols and laughing Buddhas for over 35 years. These products mostly found their way to the rural/ town markets of Karnataka, Madhya Pradesh, Chennai and nearby villages of Gujarat.The challenge lay in designing ceramic toy products which could be more than mere showpieces, and which children across market segments could play with, as well as utilise.”

Ashok Pottery Works is one of the leading ceramic toy manufacturers. Their units are primarily cottage industries, that offer an extended variety of products including crockery, flower pots, ceramic pillars, grills, toys and fancy crockery across north and south India.

The company Dirty Hands was founded five years ago by Rajiv Subba and Mamta Gautam, both graduates of National Institute of Design (NID), and specialists in ceramic and glass design.

Design Objectives :

Enumerates Mamta Gautam, “We wanted the manufacturing from mould to colouring process to be a relatively easy process and in that wanted to enhance efficiency in production and packaging with lesser chances of breakage during production, transportation and playability for the end user. The macro objective of this project was to revive micro enterprises in the ceramic toys manufacturing space by incorporating products, forms, shapes and techniques.”

“Besides”, says Praveen Bhai Muliya, “We wanted to keep a focus on forms and colour with an eye on contemporary and emerging market trends. It had to be easy for unskilled labour to execute and adapt to production techniques. All this, keeping in mind our limitations of labour shortage, raw material, production processes and competition from other industry eg sanitary ware units.”

Design Journey :

Recalls Mamta Gautam, “We visited several industries in Thangarh and realised that amongst the 300 industries, only 3-4 of them produce toys, Ashok Pottery Works being one of them.

Says Mamta Gautam, “We presented different concepts to Ashok Pottery Works, to select from, for design detailing. We kept in mind the production limitations and the concept was detailed with feasible specifications for prototyping and production. The prototypes were supervised to ensure quality and accurate specifications, until desired results were achieved.”

Adds Mamta Gautam, “The redesigned ceramic toys enhanced their utility value and aesthetics and showcased three different learnings. For instance in the mother and child series, the interaction between a mother and child bear were highlighted. During our research, we observed that children were fond of automobiles and vehicles, this led us to create a stationary train, consisting of an engine, a buggy and rear of the train. The idea was that children connect a large number of buggies to make it into a long one, to develop motor skills and also serve as utilitarian products eg pen-pencil stand, piggy bank and a stationary holder. In the third one, we incorporated a whistle in the bird.”

“Further”, elaborates Praveen Bhai Muliya, “The taxi piggy bank, was in the shape of a classic red car, the form allowing for easy packaging due to the flat surface. The toy plane doubled up and could be used as a card holder, pen and pencil stand, or even a napkin holder.”

Says Mamta Gautam, “We redesigned in order to keep the production cost low, as units do not give adequate time to their skilled artisans to finish the products well.

Left and Right - Other range of toys and utility products like pen stand, napkin holder etc.

Way Forward :

Summarises Praveen Bhai Muliya, “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. We have gone on to associate with the designer for quality improvement and upgradation of the product for our unit on a long term basis. Further”, he continues, “Our interaction with the designers helped us learn more about materials, processes and about design at an international level. We do not have marketing experience and know now, that will support to create a similar scheme for marketing graduates. Also, I see that the redesigning of running products of the Thangarh cluster will value add to the features, production efficiency and lead to less water consumption while flushing. Ashok Pottery Works is ready for participating in another Design Clinic Scheme project.”

Mamta Gautam concludes, “The Design Clinic Scheme experience helped us understand the limitations, problems and concerns faced on a day to day basis, for example – issues of unskilled labour, labour migration, absence of marketing infrastructure and awareness of technical aspects of ceramics as well as recent developments at a national and international level.”

The Advantages :

Says Praveen Bhai Muliya, “The products are not merely showpieces, but enjoy added value, where children can play and engage for a longer duration, through multi-use possibilities. The products manufactured in a small town can be sold in the extended market, in big cities or rural India. The forms are easy to produce, being compact, easy to handle and in that enjoy a decrease in breakage in transportation. Since the train, aeroplane, taxi and bird are flat on both sides, greater numbers can be packed together. Moreover, the colour scheme and designs are unique and therefore attract attention at first glance, and enhance our brand image and value.”

Enumerates Mamta Gautam, “Earlier, a minimum number of three colour sprays were used. In the redesigned version, one colour is used with the incorporation of a stencil.” Says Praveen Bhai Muliya, “Our increase in market share is estimated to be 4 times, after they upgraded their setup to produce the estimated numbers and increase in the profit margin, is estimated to be 3 times. Moreover, the brand has experienced positive enhancement in image.”

Tractor Bonnet Assembly

An aesthetic cost effective option

The auto component industry grew approximate 4-6 per cent in the fiscal year 2014-15, posing challenges to manufacturers largely MSMEs. Initiatives of in-house component design by MSMEs may create a way for more opportunities to be created, in collaboration with OEMs.

The MSME

Bhurjee Machine Tools
Ludhiana, Punjab
Website: www.bhurjee.com
Contact Person: Amandeep Singh

The Design Consultant

Narinder Singh Gora
Lusdhiana, Punjab

Left - Tractor bonnet designed as new option to OEMs and as assemble in the tractor

Right - Old product

Introduction :

The complete tractor bonnet assembly used to cover the engine and gear box unit of the tractor, is the part that impacts the aesthetics of the tractor and every tractor manufacturer uses this assembly as their own design to attract the market. Indeed, this is a significant part of the tractor as protector and image builder, as also price commander in the market. There are several tractor manufacturers in the Indian market. Even though the tractor market is increasing every year, there is still a lot of competition amongst the companies, where every company is after the farmers to sell their product with better quality, aesthetics at a lower cost. To meet the challenge, all companies have a desire to make their product look attractive, rigid and at the same time engaging a competitive cost.

Says Amandeep Singh (Manager Exports - Bhurjee Machine Tools), "We developed the tractor bonnet assembly for Indo Farm Tractors Ltd. previously. They were manufacturing this in-house and the sale of their tractor was slow. Since, we are manufacturing tractor bonnet assembles for all major tractor manufacturers, they approached us for further development of their model. Moreover, our customers were demanding a totally new look bonnet design, to attract more customers from the local, as well as the international market. We completely re-designed the assembly, giving a new look to the tractor and it helped the manufacturer to get more orders in the market."

He adds, "We were manufacturing the bonnet assembly in three pieces for our existing customers. It had a fixed front and openable side for access to the engine, clearly an outdated design."

Bhurjee Machine Tools is a 35 years old sheet metal manufacturing group, supplying sheet metal assemblies to major tractor manufacturers, LCV truck and MUV manufacturers, with designing expertise in developing tools and in-house production.

Narinder Singh Gora has 43 years experience in press tool design, plastic mould design, aluminum die casting, die design, rubber mould design jigs, fixtures, gauges, CAD training and new product design with pneumatic, hydraulic, electrical, PLC and mechanical controls, special purpose machines and low cost automation in press working and machining.

Design Objectives :

Says Narinder Singh Gora, “The customer today is demanding a single piece bonnet assembly with aesthetics, in synergy with international trends in shape and profile. Namely, one that is rigid, sleek and also vibration and noise free, with a front opening and locking arrangement, as also an oil tank under the bonnet, with a lid on top to facilitate fuel filling.”

Design Journey :

Recalls Narinder Singh Gora, “To start with the design activity, we zeroed down on three different shapes for prototype creation. In phase two, we created 3D models of different designs. In the next, we finalised one design for further improvement. In the final phase we developed a prototype, and also tested and froze the design with 3D and 2D drawings.” He concludes, “Our major challenge was to convince the client on better aesthetics and its affect on marketing.”

Way Forward :

Says Amandeep Singh, “There is a perceptible impact on the redesigned bonnet which has had a minimal effect on the import of the tractor.” Adds Mr. Mishra (In-charge - Bhurjee Machine Tools), “Ease in assembly techniques has saved 25% of the time in assembling different parts.”

Below - Tractor bonnet ready for final assembly

Says Narinder Singh Gora, “Customers who have indicated interest or have already finalised the purchasing of the redesigned version include Preet Tractors, Standard Tractors, ACE Tractors, Mahindra Gujrat Tractors Ltd., International Tractor Ltd. and others.”

Enumerates Amandeep Singh, “The Design Clinic Scheme has given a major boost to us, and there is a unanimous request for working on the Design Clinic Scheme project for a second range of products.”

The Advantages :

Says Amandeep Singh, “The new tractor bonnet assembly is cost effective, as it is manufactured with proper dies and fixtures, resulting in reduction of manual labour for tooling. The components are of very good quality, maintained because of elimination of the manual element. Moreover, the aesthetics are completely new, basis the re-designing and this, besides the reduced cost helps the company to attract more customers. There is a reduction in the manufacturing time, which has led do saving on costs, resulting in increasing the customers’ market share and improving brand image as well.”

Narinder Singh Gora enumerates further, “There has been a saving of more than 30% on production time and labour. The buyer gets complete assembly as B/O, directly paints it and sends it to the assembly line. Earlier there were falls in the supply and there were assembly line hold ups.”

He continues, “The original, three piece design meant consumption of more raw material, whereas, with the single bonnet there is a saving on material cost. Moreover, with the new design, there is a saving on manufacturing cost and fewer operations. There is a noticeable improvement in productivity, as the old assembly consumed more time. Also, there is a saving on labour cost on the single bonnet assembly. Besides, the improved aesthetics has attracted more customers for OEM and MSME, design and manufacture. The single piece bonnet design reduced the designing time as there were lesser number of parts to assemble. Hence there were a fewer number of tools, jigs and fixtures for manufacturing the product and fewer problems overall.”

Concludes Amandeep Singh, “When compared to the older version of the bonnet assembly, the MSME unit has benefited in terms of volume, having produced 30 numbers of the redesigned version, as compared to 20 of the original design. The MSME unit has a projection of approximately 25 machines and they expect to produce over 35. The new design has helped them in improving the sale, turnover and market share by 15% and has augmented profits in the last financial year by 18%. The cost of the original bonnet assembly was Rs.2,600/- per set and that of the redesigned one is Rs.2,800/- per set. The saving on production time and labour is 25% and efficiency has enhanced by 30%. There is a definite increase and enhancement of the brand image.”

Design of Defibrillator

Indigenous critical care

The MSME

Sahyadri Electromechanicals Pvt. Ltd.
Pune, Maharashtra
Website: www.nasanmedical.com
Contact Person: Mr. Shashikumar Akiwate

The Design House

Neodes
Pune, Maharashtra
Website: www.neodes.in
Contact Person: Mr. Abhijit Takale

The advantage of design in medical devices is not only in the areas of product technology and functions, but also in the areas of product usage, handling in day to day operations, maintenance, replacement of parts and its service, ease of communication, safety and its price, which makes a difference for the end user.

Left - Aesthetically and functionally improved defibrillator

Right - Existing product from MSME unit

Introduction :

A defibrillator is an electrical device that provides shock to the heart in life-threatening arrhythmia, namely ventricular fibrillation. This is a very rapid, irregular and erratic beating of the heart due to which the heart can't contract rhythmically. It provides a shock, which depolarises a critical mass of the heart muscle, terminates the arrhythmia, and allows normal sinus rhythm to be re-established by the body's natural pacemaker.

Professionals who find use for defibrillators are cardiologists, surgeons, anaesthetists, nurses, medical students and bio medical para medics, in intensive care units, operation theatres, emergency rooms and ambulances. Clearly, the significance of a defibrillator cannot be underestimated in critical health care.

Says Shashikumar Akiwate (Managing Director - Sahyadri Electromechanicals Pvt. Ltd.), "Most players in the medical space today source their machines from Chinese manufacturers and sell them in local markets. The big companies with larger orders manage to style their products to their liking, thus creating and sustaining their brand image. But the absence of quality, service and inventory related issues with machines sourced from China is no secret. This is where we felt confident of providing help! More so, as there is no competition in the Indian market as Sahyadri Electromechanicals Pvt. Ltd., division of Nasan is the first and only Indian manufacturer of biphasic defibrillators. "

Sahyadri Electromechanicals Pvt. Ltd., is a division of Nasan Medical, a Pune-based company involved in the development, manufacturing and trading of medical electronic equipment. NASAN has been a consistent player in cardiology centric medical electronic devices for almost two decades and is recognised by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India.

Neodes, a design firm established in March 2007, is an award winning design firm, helping various businesses and non-profit organisations to create integrated value for various stakeholders. Services that Neodes offers are industrial design, interaction design, usability review, user research, engineering and batch production.

Design Objectives :

Says Shashikumar Akiwate, “Our key considerations were related to enhancing the ergonomics and overall aesthetics of the defibrillator and also the overall size, dimension and its cost effectiveness. Besides, it was installed to develop the back connector, capacitor holding and front connector in sheet metal. It included mounting the battery on the main chassis and different PCB mounting as well. We proposed to give the front and back significant attention as well.”

Summarises Abhijit Takale, “We were clear that the aesthetics of component casing and product branding as OEM needed overhauling. Over time, Sahyadri Electromechanicals Pvt. Ltd. proved its core competency in technological development and support marketing strategies, research and solutions. We looked forward to promoting them as an Original Equipment Manufacturer by highlighting their best features, and in that elevating Sahyadri Electromechanicals Pvt. Ltd . from tier II to tier III.”

Elaborating further, he says, “This entailed developing a unique aesthetics in the visual language, overall product architecture and creating a design for manufacturing and assembly, to reduce investment of capital and improve overall productivity in the current manufacturing context.”

Design Journey :

Recalls Abhijit Takale, “Our user research raised questions related to the existing defibrillator’s ease in operation, and identifying if special training was necessary for operating it. We attempted to evaluate problems in the most commonly used and also the lesser used features, the necessity of adding any features, durability of the defibrillator, frequency of purchase, manual checks and similar. We conducted this across various medical centres in Pune, Ahmedabad and Mumbai. The learning was very useful and offered specific and general insights.

Says Shashikumar Akiwate, “Placement of paddles in the front was quite cumbersome, un-intuitive and not aesthetically appealing. The extra button for a manual check seemed unnecessary and Neodes incorporated necessary changes accordingly in the defibrillator mode, where the paddles were attached. Besides, some of the controls were not very apparent. Also, overall, the device was not aesthetically appealing and seemed outdated and connector placements were not convenient in the old design to plug in during an emergency. The battery and adapter placement were redesigned.”

Says Shashikumar Akiwate, “In the second design concept development phase, the concept of overall architecture of the product, which demonstrated its structure, detailed study of interface options and opportunity areas, design concepts presentation and rendering of images of formal concepts became necessary.”

Abhijit Takale recalls, “In the third, product detailing and design engineering phase, the internal component mounting, final split logic considering maintenance logic, detailing of selected concept for alpha prototype and release of drawings for alpha prototype, which included pattern drawing for plastic parts was included. In the following fourth phase, the final manufacturing release with the prototype was addressed.”

Elaborating further he says, “The challenges faced during the process, included internal component mounting, battery mounting on the main chassis, screen battery cover, front connector mounting and printer mounting provision were not easily achieved.”

Below - Final product being sold in the market

Way Forward :

Says Shashikumar Akiwate, “All spares are available in Pune, as our products are indigenous and manufactured. Thus, we avoid unnecessary and unpleasant logistics associated with importing parts from China or any other country. Also, we are therefore in a position to offer better prices and quality as well, when compared to Chinese products through constant redevelopment. We are quite sure about participating in another Design Clinic Scheme project in the near future.”

The Advantages :

Says Shashikumar Akiwate, “In the original defibrillator the connectors were on the side where it was not convenient to plug in during an emergency situation. In the new design, they are in the front and help the user save critical time in an emergency situation. Besides, the handle in the new design is a part of the front panel itself, which makes it more sturdy and helps the user grip it more firmly than the hinged version, which was quite flimsy in the old design. Also, the printer is tucked away on the side, since it is only used to print results. Moreover, in the new one, front graphics and all the commands have been categorised according to their importance and this also helps the user to pin point the action in an effective manner.”

Adds Abhijit Takale, “The paddles in the redesigned version are placed on the top, unlike in the old design and hence are easily accessible, also, they do not protrude out when the defibrillator is carried by the user. Besides, the paddle size is bigger than in the original design, which is advisable and eases positioning of electrodes. Moreover,” he continues, “With the battery and adaptor compartment on the rear, the ergonomics get enhanced, unlike in the old design, where it is on the sides and cumbersome. The redesigning of parts has helped to make it crevice free, easy to clean, besides being compact in terms of dimension and weight.”

Adds Shashikumar Akiwate, “Power fluctuations that our electronic goods have to endure on a daily basis necessitated the connection of a power supply (adaptor) that bears a power spike as high as 280V. If the input power crosses 280V, the supply shifts to Sleep Mode and the machine will run on power generated from its inbuilt battery. Even if the input power crosses 320V, the adaptor might get irreversibly damaged, still the machine will remain intact. Imported machines are not always designed to adapt to this unique Indian specific problem.”

Adds Abhijit Takale, “Since it will be the defibrillator manufactured in India, there will be a time saving on imports and other related areas.”

Sanitary Napkins

Affordable health hygiene for women

The Design Student
Surbhit Arora
Insitute of technology
and Managment (ITM),
Website: www.itmindia.edu
Ashwini Sharma, Faculty Guide

Left - Sanitary napkin making machine, providing hygiene at affordable cost

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 5 days of attandence in the school and 2.2 days of work at an average.

Introduction :

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 fulfillment 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.

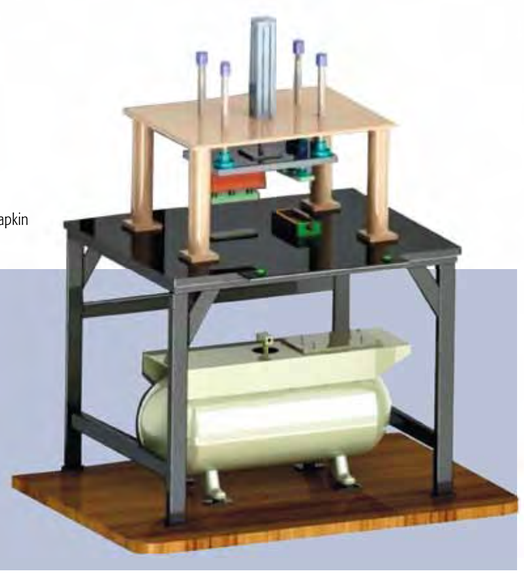
Says Ashwini Sharma (Assistant Professor - ITM), "We found that many women in rural areas still use rough, highly unhygienic cloth during their menstrual periods. Also, the cost at which the multi-nationals sell their napkins in India, is isolating rural women from their benefits and it was necessary to find a solution to this."

Adds Surbhit Arora, (Student – final year, Mechanical Engineering), "The biggest barrier to using a sanitary napkin, we discovered is affordability. Around 70% of women in India say their families can't afford to buy them, we felt as citizens and designers, a moral responsibility to provide a solution for these kind of issues and free India from this impediment to a woman's right to basic health hygiene."

Says Surbhit Arora, "When I became conscious about this issue, my faculty advisor, Ashwini Sharma and I decided to resolve it and finally it all began with the designing of the low cost sanitary napkin making machine, with the idea of revolutionising the process of making the sanitary napkin feasible for sale in rural and remote areas, at a much lower price than available in the market."

Design Objectives :

Recalls Ashwini Sharma, “The main concern of the project was to make sanitary napkins available to the rural Indian woman, at a low cost and provide employment to rural people, by installing an appropriately designed sanitary napkins manufacturing machine in their area.”



Below - Concept of sanitary napkin making machine

Design Journey :

Says Surbhit Arora, “The basic procedure of machine design consists of a step by step approach from given specifications about the functional requirements of a product, to complete description in the form of drawings of the final product. We 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.”

Elaborates Ashwini Sharma, “The working of the conventional machines was analysed and various other parameters discussed, in order to reduce the cost of the process and product substantially, without compromising on quality. Next, various design explorations were made, 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.”

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

Enumerates Surbhit Arora, “This 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.”

Says Surbhit Arora, “After analysing the problems and flaws in the earlier design, a new type of low cost sanitary napkin making machine was designed. It’s a revolutionary concept among the high cost, complicated machines already existing and will be of immense benefit to women and upcoming rural entrepreneurs. In this machine, wood pulp will be used as raw material. A pad of wood pulp will be made, sealed with soft touch, sensitive heat control, giving final shape to the napkins. 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.”

Recalls Ashwini Sharma, “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. There were several problems faced while designing and fabricating the machine. Selection of materials for making dies was the first challenge faced during fabrication. Wire drawing, a very costly method was implemented, where material often cracks during operation, if the material is contaminated. Determination of the appropriate voltage required for sealing and controlling this voltage was a very difficult task. Controlling the time while current is applied to the sealing circuit was also challenging. A weight was added on the top plate, to counter balance the weight of the cutting die. Hence, the original objective was to ensure faster production and negligible effort by creation of design of the machine from lab to land.”

Way Forward :

Recapitulates Ashwini Sharma, “Since the inception of this project, the teams at NID and MSME gave valuable support at every step. Timely release of funds by MSME translated into performance enablers and motivators. Completion of the design and prototype of this machine would not have been possible without their cooperation and support. I would like to be associated with the Design Clinic Scheme in future too, and want to contribute as designer.”

The sanitary napkin redesigning project was awarded “Most Innovative Project” at the National Rural Entrepreneurship Seminar held at JK Lakshmipat University, Jaipur.

The Advantages :

Says Ashwini Sharma, “There are a few intrinsic advantages, that exist in the redesigned product e.g. the material used for making sanitary napkins is wood pulp and biodegradable. The napkin is produced in a 3 step process of pressing, sealing and cutting and the machine has the ability to operate the 3 steps in a single cycle, with a capacity to produce 4 napkins in a minute. It is semi automatic in nature and consumes very small amounts of power.”

Adds Surbhit Arora, “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. 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, installation, running and maintenance cost of the machine is low and provides employment to women in rural areas.”

Cycle Rickshaw

Convenience for passenger and puller

An estimated 2 million cycle rickshaws ply the roads in India. Human centric approach is requied to deal with the issues of the pullers, not only in the areas of efficiency and wedges but also to generate extra income and create personal associations.

The Design Student
Akhil Raveendran
School of Planning and Architecture
New Delhi

Left - New design of rikshaw for ease and comfort

Right - Existing rikshwas

Introduction :

The cycle rickshaw forms an integral part of Indian society as they provide a cheap, non-polluting mode of transportation for short distance commutes. The use of cycle rickshaws is observed to be primarily an interchange between the modes of transport, or for the 'last mile' commute purposes. It is this diversity that allows the puller to make that little extra, but vital income from within his limited means. The cycle rickshaw forms an integral part of Indian society and has been the focus of people's interest from different fields, to make this indispensable vehicle more resourceful.

The cycle rickshaw has been the focus of people's interest from different fields, to make this indispensable vehicle more resourceful. Most of these attempts were focused on the comfort of the passenger. However, the average time spent by a passenger in a rickshaw is 10-15 minutes, as opposed to the four to eight working hours spent by the rickshaw puller, in pulling the vehicle. So this design exercise was oriented towards the actual user the rickshaw puller along with the passenger.

Design Objectives :

Recalls Akhil Raveendran, “The basic idea was to look at the rickshaw puller as a primary user of the vehicle and to ease his usability, with which he could transform the rickshaw to carry out different tasks and empower him to earn more in a single day.”

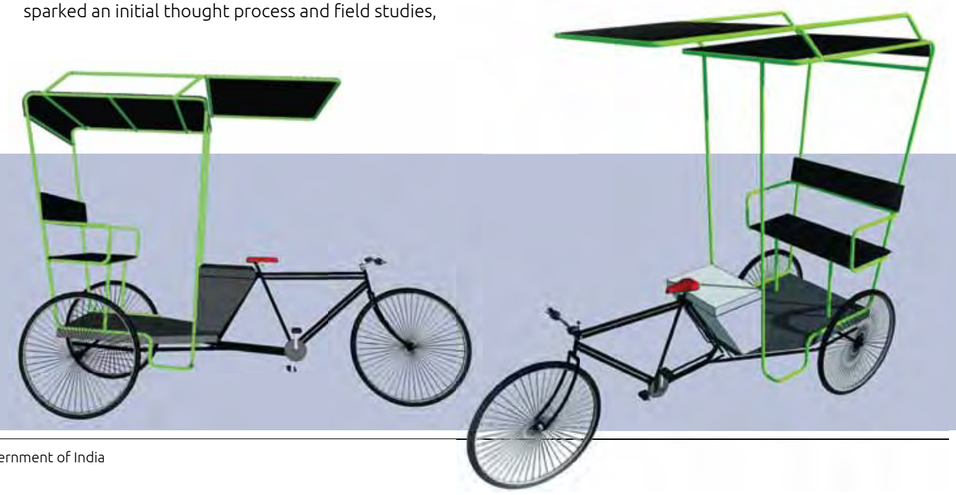
Adds Manoj Mathur, “The basic focus of redesign was to add features, that enhanced the earning capacity of the rickshaw puller. It was decided to incorporate these discreetly, so that there was no compromise on the functioning and use of the existing components and workmanship were maximised, which in turn we believed would provide an easy to maintain, good service scenario. The cost of the redesigned product, it was decided should remain as competitive as the original one, owing to component sharing.”

Design Journey :

Says Manoj Mathur, “Rickshaws around the world have evolved over time and their design has transformed as per the culture and local needs. Akhil started with an effort to understanding the design difference, in terms of time, place and the role it plays. The difference in the design not only gave specific product design insights, but also an understanding about the purpose rickshaw pullers fulfill in society. This began with our delving into the complete history of the rickshaw (*jinrikisha* from Japan), to the latest battery powered rickshaws and the future human powered rickshaw. The overview then sparked an initial thought process and field studies, highlighting multiple factors like the “*juggad*” it needs to satisfy the practical needs.

Field studies conducted were carried across different cities like Amritsar, Jaipur and Chandigarh, just to observe the diversity in the usage of the rickshaw. The differences in design observed, were easier to understand and interpret, by having conversations with the pullers, the passengers and experts on the subject. The theoretical knowledge and first hand experience of interacting and using a rickshaw in various roles, gave direction to determining the final objectives of the process.”

Below - Rendered model



Says Akhil Raveendran, “A part of it comprised of conversations with the pullers and passengers, where we gained useful insights regarding the advantages and disadvantages of the different rickshaws. The primary research helped in formulating the needs of the pullers and passengers in the modern day scenario.”

Continues Prof. Manoj Mathur, “In the next stage various materials that can be used in the manufacture of rickshaws were studied and analysed.”

Elaborates Akhil Raveendran, “Thereafter, possibilities of various configurations applicable to the Indian scenario, in terms of seating and puller position were explored. The finer details like joinery and efficiency of elements of design were also studied through small scale models and mannequins. The prototype finally was made basis learnings from the initial mock up and almost all the issues were rectified in the prototype, where the footboard and ground clearance issues were corrected.

In retrospect, the cycle rickshaw project made me realise the great hardship rickshaw pullers endure to make their ends meet. A majority of them from Bihar and U.P come to the city for fulfilling their aspirations, which range from building a new home in the village, to marrying their daughters. They value each and every rupee that comes to them. Health and safety are not their concerns they only want money. As a rickshaw puller said to me, ‘I may not be able to walk one day, but by then hopefully, I will have a home to stay in my village.’”

Recounts Prof. Manoj Mathur, “The basic challenge lay in finding a balance, wherein all concerned beneficiaries, namely the passengers and rickshaw pullers remained equally satisfied as far as possible.”

Way Forward :

The new design will bringing positive change in the day to day life of the rickshaw puller. The features incorporated are not only going to benefit the rickshaw pullers in terms of money they could earn, but also to add comfort and space for their personal requirements within the rickshaw.

Says Akhil Raveendran, “On overview, the cost of the original cycle rickshaw was between Rs.7,000/- to Rs.10,000/- and the cost of the redesigned cycle rickshaw Rs.9,000/- which could be an advantage over the existing in the broader picture.”

The Advantages :

Summarises Prof. Manoj Mathur, “The solution derived from design intervention, was the creation of accommodation for an extra passenger, means for extra income by providing a business opportunity to the rickshaw puller, possibility of selling cool drinks or water bottles during the summer months, and using the same box to keep his warm clothes in winter safe.”

Adds Akhil Raveendran, “The provision of the load carrier on top can be used to carry school bags for children and also bulk goods. Besides, the bent rod facilitates the passenger to clamber on and off the rickshaw, without disturbing the original infrastructure. The increase in profit margin can range between 20% - 30% per day for the puller with an extra “*sawari*”, and also the income from the cold drinks or water bottles sold. This has helped in increasing the profit margin for the pullers and simultaneously boosting the sales of the drinks in the Delhi summer.”

Hydraulic Slotting Machine

Efficient systems

According to Automotive Component Manufacturers Association of India (ACMA) and Indian Machine Tool Manufacturers Association (IMTMA), over the next 5 years, the growth in the automotive sector will propel the machine tool consumption in India, to grow from $1.3 billion in FY2014 to $3 billion by FY2020 at 14% CAGR.

The MSME

Super Tools (India),
Ludhiana, Punjab
Website: www.millingmachines.co.in
Contact Person: Surinder Singh

The Design Consultant

Narinder Singh Gora,
Ludhiana, Punjab

Left - New design of slotting machine

Introduction :

The basic use of a hydraulic slotting machine is to make a spline, key-way cutting in heavy jobs, helical cutting etc. and is therefore critical in its use to the component industry associated with automotive parts, machine tools and heavy engineering. The machines manufactured by the MSME unit did not have the hydraulic mechanism, a significant feature of the giant machine. These machines make precise and heavy job production with more cutting capacity at low maintenance which was missing in the existing products.

Recalls Surinder Singh (Partner - Super Tools India), "The market scenario was in distress, which had forced several manufacturers to close down their works, owing to their inability to meet demands of the market.in This led to a major rise in the cost of raw material, a situation which was further aggravated by a labour crunch. A lack of subsidies for the manufacturers and unawareness were the likely contributing reasons. Moreover, rising electricity rates in the face of inadequacy made production suffer. Experience has proved that addressing the challenges presented by the market ensures success."

Adds Narinder Singh Gora, "Unfortunately competition does not matter, today the main focus is in copying the design or technology of another. The practice of plagiarism has ruined the potential of manufacturers to achieve excellence in their production. We have always believed in achieving new goals and producing new innovations and in that, encouraged a feeling of competitiveness. We believed that with this approach we would be able to create a cutting edge design for the hydraulic slotting machine."

Established in 1967, Super Tools (India) manufactures horizontal, universal, vertical and ram-turret milling machines according to ISI standards, with grade I castings more so in the small and medium enterprises sector.

Designer Narinder Singh Gora, is an engineering and tool designer with thirty five years experience in the area of machine design. He has worked with many industries in the region and provided expert support to improve their products.

Design Objectives :

Says Surinder Singh, "The main purpose behind considering design intervention, was to value add to the existing product with the addition of advanced technology to the existing hydraulic slotting machine, to meet the enhanced requirement for a more sophisticated product.

Design Journey :

Says Surinder Singh, "Our existing slotting machine did not have the hydraulic mechanism, the main feature of this giant machine, required for making precise heavy jobs and enhancing cutting capacity, with low maintenance, which our existing products lacked. We have done the needful to make them active and sealed a new version of unplugged pinholes. We tried to work closely with the MSME unit and were able to generate contextual solutions accordingly."

Says Narinder Singh Gora, "I believe no shortfall on a quality product will ever exist if you assign a correct and competitive price for your product. Super Tools (India), has always tried to garner customer support by giving them innovative high speed machines, or adding to the manufacturing process, by performing various tests and giving unbeatable accuracy."

Way Forward :

Adds Jaswinder Singh (Partner - Super Tools (India), "The competition is cut throat, where a design edge gives the product a head start for achieving a lead position with its new elements and enhanced capacity for multitasking jobs, increased production, consecutive use of the operator, intelligent technology etc. The cost of the original product was Rs.23,00,000/- for the manual machine, whereas the cost of the redesigned hydraulic slotting machine with advanced design and CNC is now Rs.60,00,000/-."

Continues Jaswinder Singh, "As of now we have produced first lot of the redesigned version, as compared to the 25 – 30 nos of the original design. We have a projection of approximately 18-20 machines and expect to produce over 25-30. Steel Authority of India has started using the redesigned version of the hydraulic slotting machine and the future potential of use of the redesigned version is for use in large scale industries, in various sectors like the automobile industry, railway workshops, paper mills, ordnance factories and machine tools."

Left - Bigger bed size and redesigned control panel

Right - Machine hydraulic system

The Advantages :

Says Surinder Singh, "The newly designed Hydraulic Slotting Machine is an overall operator-friendly one, as it makes use of a speed control valve, operating on the hydraulic system by adjusting and easily controlling the speed of a cutting tool mounted on ram."

"Moreover," says Narinder Singh Gora, "It has drastically reduced operation time and immensely saved on labour. The electrical pendant has a displaying touch-screen for various selections and the feed mechanism is easily adjustable. The machine has enhanced overall efficiency of production and it is a justified investment for buyers, in comparison to the rate of production, saving through operations."

Bamboo Shelter

Green Design and Sustainability

The Design Student
Dhruv Nawani
Srishti School of Art,
Design & Technology
Bengaluru, Karnataka

Forest area with bamboos in India is about 9.57 million hectare which is nearly 12.8 % of the total forest area of 75 million hectare. Bamboo provides a strong alternative in terms of durability, strength and looks, to not only wood but also products made up of metal and plastics.

Left - Sustainable bamboo shelter, a modern approach to the tradition

Right - Existing bamboo shelters

Introduction :

With the contemporary market trends leaning towards Green Design and Sustainability, bamboo is clearly the identified preferred material for focusing design innovations on – at macro and micro levels, in creating an alternate building environment.

Says Dhruv Nawani (Designer Student- Srishti School of Art, Design & Technology, Bengaluru), "I took this opportunity as a designer, to incorporate a sense of ecological thinking into urban and semi urban spaces, to make people aware of the tremendous strength and wonders of bamboo. I decided to build a bamboo canopy which could be constructed in almost all outdoor spaces, terrains and scenarios. Accordingly, I chose to explore and experiment with the scalability, joinery and most importantly, adaptability."

Elaborates Binu Bhaskaran (Faculty guide), "A lack of design, considering the unique properties of bamboo, an inability to access clients, who can afford a slightly more expensive product, durability of existing structures and requirement for constant care and maintenance were some of the factors, that urged us to view the possibilities."

Srishti School of Art, Design and Technology was founded in 1996 by the Ujwal Trust, with the objective of providing art and design education in an environment of creativity to maximise the individual's potential.

Dhruv Nawani graduated from Srishti School, as a Product and Interface Designer in 2012. An interdisciplinary designer, with a penchant for creating products and concepts by gathering, experimenting and bridging eclectic materials with technology.

Design Objectives :

Says Dharma Kannan (Administrative Head - Srishti School of Art Design & Technology), “Bamboo is an under appreciated, legitimate building material and generally viewed as a sub-standard product. This is owed to no fault of the material, but is rather an unfortunate outcome of the industrial paradigm that pushes out other legitimate material streams, exercises aesthetic marginilisation against communities that have traditionally cultivated and crafted bamboo and similar mediums. With this baseline, we wanted to firm up an appropriate set of techniques, with an informed approach that utilises a modular design methodology, to create a highly adaptable, durable and aesthetically appealing outcome.”

Elaborates Dhruv Nawani, “For me, the primary objective of this project was to make the bamboo structures adaptable, cost effective, easier to manipulate and more popular. My principle objective involved making the structure completely modular, flexible and customised to suit client requirements. Keeping in mind that I was designing an outdoor structure, it was necessary to develop appropriate joinery, techniques and finishes which complemented the form well. While trying to utilise natural material for the majority of the building process, I explored in-depth, the concept of ecological thinking, integrating it with new technology and traditional methods to reduce costs and ensure stability. I strived to fashion a structure which could be manufactured in a workshop and then assembled outdoors easily, thus reducing costs, time and labor appreciably. A great challenge posed to be amalgamating traditional methods in a modern light, while making it appealing, competitive and inexpensive. The flexibility of the foundation of the structure allowed for versatility in the form, composition and facilitated various arrangements, versions and iterations using the same components.”

Below - Structure of bamboo house

Design Journey :

Says Binu Bhaskaran, “Utilising bamboo as our core material, we undertook the design challenge of creating a range of techniques and construction approaches that would allow for a variety of structures to be built, depending upon the client context and functional requirements. ”

Recalls Dhruv Nawani, “Since I collaborated with Green Chakra, the initial phase of my project involved familiarising myself with the techniques already explored. During this project, techniques and strategies to include a wider audience were formulated, with simplified designs, altered to cater to schools, colleges, corporates and even private residences.”

Adds Dhruv Nawani, “The next step was to adopt inclusive and participatory methods to experiment with techniques and ideas with the Green Chakra team. The participatory methods included communicating with the potential end users, for initial exploration and gathering their perception and understanding about this craft. Engaging with them periodically during the prototyping stage to evaluate designs and acquire feedback was important to improve, improvise and implement.

Post research, the first step was to generate a bank of ideas, and create a range of small scale prototypes and 3-D models. The continuous process of reflecting on the created products to improvise designs and refining them according to appropriate feedback from potential end users, as well as professionals in the bamboo industry was helpful in determining the outcome.”

Says Binu Bhaskaran, “The intervention that lay ahead was to redesign the foundation of the structure, to make it work harmoniously with bamboo. The foundation was initially built using a metal shoe which had two primary components - a cylindrical metal cup welded to a base plate perpendicular, or at a particular angle, basis the design of the structure.”

Says Binu Bhaskaran, “There seemed to be a need to create a joinery which complemented the characteristics of bamboo. The proposed solution countered all the above mention pain points by introducing a pivot between the metal plate and cylindrical cup, thereby facilitating a movement of 180 degrees, which could be mass produced and arranged in a versatile manner, and in that reducing costs incredibly.”

Way Forward :

Says Binu Bhaskaran, “Thanks to the design support provided by this scheme, along with the inspired efforts of Mr. Nawani, we have managed to make significant in-roads to the local construction market and are now working on full scale residential projects.”

Analyses Dhruv Nawani, “Since the cost varies according to the level of customisation, depending on the client’s requirements, it becomes difficult to work out a precise costing. The scale and complexity of the design, as well as the location of the structure determines the cost, but to give a ballpark figure, the development of the prototype would be priced anywhere between INR 40,000 and INR 90,000, depending on scale.”

The Advantages :

Concludes Binu Bhaskaran, “For MSME units, this could be an invaluable process in professionalising our approach to working with bamboo.”

Sums up Dhruv Nawani, “We showcased the potential of natural materials in an urban scenario by demonstrating its merit over other conventional materials. To support that, we had to focus on designing solutions and concepts that will allow *Green Chakra* to reduce costs, use the labour efficiently and save time. Saving on construction time was extremely important, as the major cost of the project is the labourers’ salary. Bringing in the concept of modularity while working with bamboo, allowed us to do that. It was also possible to train new labour through this model, which minimised the errors and made the craft proficient. The prototype that we built at the end of this project was a proof concept, which validated the findings and concepts.”

Neonate Cooler

Critical body asphyxia care

The MSME

Pluss Polymers Pvt. Ltd.
Gurgaon, Haryana
Website: www.pluss.co.in
Contact Person: Samit Jain

The Design House

Design Directions Pvt. Ltd.
Pune, Maharashtra
Website: www.designdirections.net
Contact Person: Satish Gokhale

Left - Body asphyxia care unit, a simple and effective life saving design

According to the WHO data, the number of deaths at birth in 2012 was approximately 6,83,000 globally and in India 1,40,000. These deaths account for 10% of the total children dying under the age of 5.

Introduction :

The miraculous, wonderful occasion of child birth is a life changing situation, where often owing to the lack of timely or appropriate extension of facilities, a precious infant's life can be lost. By in large hospitals did not offer a reasonable priced facility for treating newborns suffering from birth asphyxia. Some hospitals even today, use ice packs to cool the baby, which is risky as it tends to overcool the baby, leading to adverse side effects in a process, which is highly labor intensive.

Established in 1994, Pluss Polymers Pvt. Ltd. is a materials research innovation and manufacturing company, involved in the field of speciality polymeric additives and phase change materials for thermal energy storage.

Design Directions Pvt. Ltd. is an award winning design company and innovation studio headed by Satish Gokhale, that helps clients create captivating and engaging products, brands and experiences.

Design Objectives :

Says Satish Gokhale (Director - Design Directions Pvt. Ltd.), "Our objective was to design a low cost, light weight, easy to use, safe and ergonomic cradle, using Phase Change Material (PCM) to facilitate the cooling of a newborn baby suffering from birth asphyxia."

Says Samit Jain (Managing Director, Pluss Polymers Pvt. Ltd.), "At the beginning we realised, that the market did not have an affordable solution for cooling babies and it was our endeavour to complete the lacuna. The existing devices are mostly imported and costing between Rs.7-15 lakh. Such machines are used in special cases of birth asphyxia, which is not very common and higher in number to make full utilisation of such machines in small hospitals. Therefore the machine, even though critical in terms of saving a new born life, is less preferred due to the associated cost. The objective was to make it further usable along with its being cost effective."

Recalls Samit Jain, "Our basic requirement was to develop an affordable device for cooling neonates suffering from birth asphyxia. The product had to reach the bottom of the pyramid and we at Pluss Polymers Pvt. Ltd. felt that a professional was needed to develop the right design, with the use of appropriate material, easy to use and at the same time affordable. Apart from being technically correct, it was essential that the product be aesthetically appealing. Moreover, because the product is supposed to be used in hospitals and the treatment involved is critical, it was essential that it needs to be designed from the infants, operator (nurses) and service providers (hospital) point of view."

Design Journey :

Says Satish Gokhale, “Also the product idea appealed to us, as it could solve the major problem of birth asphyxia in India and other developing countries. In design development of the neonate cooler, we followed our vision of creating products which help in creating a better world.”

Summarises Samit Jain “In the first phase we understood the exact requirement, followed by developing an initial concept. In phase three, prototyping and development of CAD and 3D models took place and in the last phase, the focus was on the final refinement of the design, based on feedback of trials from CMC Vellore.”

Recalls Satish Gokhale, “We did extensive research with Pluss Polymers Pvt. Ltd. and CMC Vellore. Visits to CMC Vellore were made to understand the critical aspects of the treatment and the safety issues to be taken care of because it’s a medical product. Extensive literature study was done to understand Phase Change Materials manufactured by Pluss Polymers Pvt. Ltd. and the kind of support the material required to function efficiently. The design was developed keeping in mind rigidity, light weight, ease of use, safety in handling non-toxicity, insularity, ease in cleaning ease of fit in all the bassinets of open care systems available in the market. Also the size of the PCM mattresses, thickness of all the layers to be placed in the cradle, provision of side slots to place the PCM. Besides making the MiraCradle – Neonate Cooler scratch resistant, glossy with a smooth surface and open care system.”

Adds Satish Gokhale, “This has a multi-cellular mattress made out of nylon multilayer film, which contains a mixture of water and antiseptics and serves the purpose of comfort as well as better heat transfer between the infant and the PCM mattress. Also, the PCMs are ready for use after it is charged for 6-8 hours in the refrigerator. The combination of PCMs and insulated cradle help in cooling the baby and maintaining the temperature between 33ºC and 34ºC. Finally a LDPE based hollow cradle was designed where four layers of PU foam was filled inside the hollow cradle to provide enough insulation to the PCM kept inside. The insulation facilitated the use of PCM for the desired period of 72 hours. The major challenge was to keep the product low cost as well as of high quality.”

Way Forward :

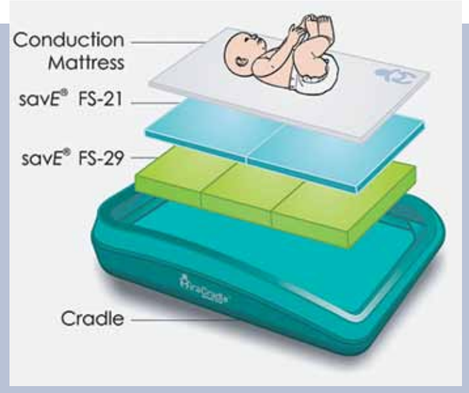
Emphasises Satish Gokhale, “The MiraCradle – Neonate Cooler has been launched in the market and in use at five hospitals in India – namely Christian Medical College, Vellore, SRMC, Chennai, St. John’s Bengaluru, JIPMER, Puducherry and Apollo Cradle, Gurgaon and another nine hospitals. The MiraCradle – Neonate Cooler has moved really well. Many hospitals have shown interest in using the product. It has got rave reviews from across the country and has high potential for successful acceptance in the market.”

According to Ankit Jhawar (manager-Planning, Pluss Polymers Pvt. Ltd.), the machine is expected to touch the 100 mark in the financial year 2014-15, and expected to reach 1500 number by the end of next financial year. We are hopeful that the figures may cross 3000 by the end of financial year 2016-17.

Says Ankit Jhanwar, “The major challenge lay in bringing about acceptability of MiraCradle™ in the market. It is a new technology and because it is related to a serious matter of life and death for a newborn baby, it will take some time before the technology is adopted by the hospitals. CMC Vellore has used it to treat 41 babies and the data for the same is being published and presented at various medical conferences, forums and journals. Further,” he says, “The experience with Design Clinic Scheme has been great for us. The whole process of approval and getting the reimbursements has been very smooth. Moreover, the officials have been very helpful in providing guidance on how to do the necessary documentation.”

MiraCradle Neonate Cooler has won Plasticon Award 2015, Kirloskar Technologies Award 2015 in Chandigarh, Healthcare Excellence Awards at Indo Global Healthcare Summit & Expo 2014, CII Industrial Innovation Award 2014 and many other reorganisations.

Below - The product in use and product details of *MiraCradle*



The Advantages :

Says Satish Gokhale, “MiraCradle™ is a first of its kind product worldwide. At present, only electronic servo control instruments, which cost approximately Rs.10-15 lacs are available in the market. Most in India and other developing countries cannot afford it at the price. MiraCradle priced at Rs.45,000/- to Rs.50,000/- provides a low cost, effective alternative to the hospitals for treating newborns suffering from birth asphyxia. The cradle has been rotomolded and enjoys a low cost, has light weight and is easy to use with no sharp corners. It is engineered with right amounts of insulation in such a manner that the infant lying in the cradle is cooled to 33°c and maintained between 33°c and 34°c, for as long as 72 hours, with a phase change temperature of 29°c. It gives the precise temperature control required and at the same time utilise minimal manual supervision. The cascade system of combination of two PCMs serves as a quasi automated system for cooling.”

Elaborates Samit Jain, “The roto-molded structure with PU foam provides a tough, heavy duty, light weight and insulated body to place the PCMs and other components inside the cradle. FS-29 in solid state passively extracts heat from the neonate’s body at 37°C, thereby inducing and sustaining hypothermia. Moreover the MiraCradle – Neonate Cooler has a phase change temperature of 21°C. FS-21 is used in conjunction with FS - 29 to quickly bring the temperature of the neonate down to 33°c. It is subsequently removed and FS – 29 takes over to sustain the temperature for longer hours.”

Wood Router Machine

Fine tuning wooden grooves and shapes

The MSME

M/s Joginder Electric Works
Ludhiana, Punjab
Contact Person: Harjit Singh Aulakh, Proprietor

The Design Consultant

Jagseer Singh Grewal
Ludhiana, Punjab

Left - New wood router machine, a safer, robust and appealing new product

Right - Existing product

As 85% of the manufacturing units belonging to the unorganised sector, furniture industry in India depends largely on traditional design and hand tools. Quality, finish, productivity, safety issues etc could be resolved with simple and efficient tools.

Introduction :

Perfection is the underlying *mantra* of any successful venture or enterprise. With increasing demand for elegant furniture, suited to various means and requirements ,customers have become increasingly quality conscious. The finish of final product, the labour cost associated and reduced delivery time has started pushing small manufacturers to look for automation and machine based jobs work. Healthy productivity and ease of manufacturing has become very crucial in deciding the profit margin for furniture manufacturers, generating a huge demand for wood processing machines.

In the wood industry the “wood router machine”, used for making grooves and shapes on wooden pieces, becomes a significant element. The end users of a wood router machine are primarily carpenters and skilled persons in the wood work industry, located mostly in Ludhiana, Punjab and spread across the country. There are possibilities of export for this product, provided the quality conforms to the stipulated standards.”

M/s Joginder Electric Works is in the business of manufacturing a wide range of drill machines, cutting tools, angle grinder, marble cutting machines, demolition hammers, high pressure cleaners, rotary hammer, vacuum cleaner, cut off machine and wood working cutters.

Jagseer Singh Grewal is a Ludhiana based design consultant, whose area of expertise is designing auto and tractor parts, manufacturing machine tools like drilling machine, power hacksaws, wood cutting machines, dedicated forging and also die design and tool designing.

Design Objectives :

Says Harjit Singh Aulakh (Proprietor - M/S Joginder Electric Works), “Our existing machine was facing tough competition in the market not only from international products but domestic players are also presenting challenges. We realised that it is high time to think about our product from a very different perspective and revamp the presentation. Our purpose of getting into design intervention was to improve the aesthetics, because it makes people believe that a machine which is good looking and appealing, must offer a fairly good performance. The machine is also required to be user friendly in terms of its operations and maintenance as well. We also thought of improving the safety features of the machine, which is very essential to ensure that the end user feels safe while using our machine. As the market is becoming more competitive, we also kept our focus on keeping the manufacturing cost low and making the machine more competitive.”

Design Journey :

Recalls Jagseer Singh Grewal, “M/s Joginder Electric Works was using polypropylene material for the wood router machine originally, we suggested they develop the same in nylon, to enable a rigid structure and offer a better finish. Moreover, nylon has better electrical insulation properties, making it safe for the user. However, we tried to reduce the weight of the part, by improving thickness in some sections, wherever required.” He continues, “We made the initial sketch of the part, to improve the aesthetics of the machine, as its main external part finalised the 2D form and developed the plastic prototype of this component, with a firm from Noida in order to validate the product design of the component and check the aesthetics of the machine, at the early stage of development.”

Way Forward :

Adds Jagseer Singh Grewal, “We hope to establish the new product in the market in the near future basis the enhanced brand image that has emerged, from its good aesthetic features.”

Left - Variants of new wood router machine

Right - Machine at work

The Advantages :

Summarises Harjit Singh Aulakh, “As a result of design intervention, aesthetic features have undergone a radical change because of the altered body profile.”

Says Jagseer Singh Grewal, “The redesigned wood router machine is user friendly and safer compared to the original one. It is a more balanced product, which increases the safety aspect. On the other hand, reduction in components reduces costs.”

Says Harjit Singh Aulakh, “The significant features that benefit us are the communisation and reduction of parts and volume of products, besides reduction in material, etc. The production related benefits include reduced processes, assembly time, labor, etc, where the reduction of product cost leads to an 8% increase in profit margin and other related benefits.”

Opines Jagseer Singh Grewal, “The cost of the original product was Rs.2,450/- and that of the new redesigned version Rs.2,100/-. Efficiency and productivity stand suitably enhanced. Moreover, with the help of the new design of the wood router machine, M/s Joginder Electric Works is able to develop moulds with multiple cavities which have helped in increasing productivity by 100%. The brand image stands greatly enhanced.”

Microwave Safe Terracotta Ware

Ethnic chic

The word 'terracotta', a mix of Latin and Italian words, 'Terra', which is Latin for 'earth' or soil, and 'Cotta', which is Italian for 'statue' is deep rooted in Indian culture, tracing back to the Indus Valley civilisation. Emerging scenario in the sector is to design not only art and craft based products but create utilitarian products for day to day consumption.

The Design Student
Rajish K Ravindran
NIFT, New Delhi

Left - Terracotta products

Introduction :

Since early times, traditionally, earthenware and terracotta ware were the most favored, not only because they are easy to make, but, also because they are relatively healthy, food safe options. In fact increasingly, they have focused and started enjoying a status of a bench mark in lifestyle, in the domestic as well as commercial arenas. Currently people enjoy cooking food in terracotta pottery ware, with an ethnic touch, besides using them as artefacts for home décor decoration.

Says Rajish K. Ravindran (Student - National Institute of Fashion Technology, New Delhi), 'The traditional terracotta vessels are not made for use in the microwave oven. The clay bodies used for making normal terracotta ware contains iron and other magnetic impurities, silica stones and sand which make it unsafe in the microwave oven, especially for long term use. The height, width and ergonomics of grip are required to be different, while using terracotta ware in microwave ovens."

Recalls Varsha Gupta (Faculty Mentor - NIFT, New Delhi), "There was a noticeable trend in cooking methods in suburban and small towns, where there was a shift from wood fired cooking to microwave and other contemporary modes of cooking. Microwave friendly cooking wares are especially benchmarked, based on material used and quality test. Terracotta ware is generally not tested and there are no benchmarked quality criteria, for use in the microwave, without causing damage to the microwave device. We realised that upgrading the terracotta ware to be suitable for microwave cooking would help in up-lifting the sector and making it available in a niche and extended market."

National Institute of Fashion Technology, New Delhi was set up by the Ministry of Textiles, Government of India, in technical collaboration with FIT, New York. The regular, full-time programmes at NIFT are run at two levels, namely the graduate level and the post graduate level, however, NIFT has also recently launched its PhD programme.

Design Objectives :

Says Rajish K. Ravindran, "One of the objectives was to understand the scope of further product development, to study traditional pottery practices and microwave safe utensil characteristics, as also to make congruent clay bodies for microwave use and to create a visual identity for them. Through design, it was proposed that it have the capacity for long term use, without losing its functionality."

Adds Varsha Gupta, "The design intervention was to suitably upgrade the normal terracotta ware, for use in microwave cooking. The final product was envisaged as a vessel with an appropriate width and height, made with specially prepared clay body and methodology developed for baking the pots. This developed terracotta was proposed to be more apt for using in the microwave oven, without damaging even in the long term, across all groups."

Design Journey :

Says Varsha Gupta, "Rajish employed a qualitative and quantitative method of research, by working with the terracotta artisans in the field to develop microwave friendly terracotta ware. His team worked towards developing a proper clay body, where the metal impurities were brought down below the level of normal red clay, in balance with the permissible amount of metal inside a microwave oven."

Recalls Rajish K. Ravindran, "A background study on related aspects using books, other project reports, articles, journals and research papers was coordinated, as well as ethnography study of the pottery making process and practices in a potter's colony in Kerala. Ethnography was conducted to understand the location, community, socio-economic status of a potter's life style. This helped to assess the complete supply chain, revenue model and an assumption of a deteriorating future status. The project commencement was based on the background study conducted on pottery and terracotta ware making practice, culture and sector in India."

Continues Rajish K. Ravindran, "We used the froth flotation method for selectively separating hydrophobic materials from hydrophilic density separation method. This entailed segregating elements in a solution based on the differences in density, using a powerful magnet to separate magnetic content mainly iron and magnetic impurities. We purified clay from the impurities of sand and stones, using standard sieves. We test cooked diverse ingredients such as vegetables, milk, caramel, rice etc and observed comparative test cooking under standard parameters, keeping the standard of time, type of ingredient and cooking vessel the same, namely a microwave friendly terracotta container, with a microwave safe glass container of a good, quality brand."

Says Varsha Gupta, "The redesigned product looks almost the same in shape and colour and enjoys a unique visual identity, distinguishable from other products."

Observes Rajish K. Ravindran, "In a survey of 50 urban households in Delhi and Mumbai, it was found that 48 of them used the microwave oven frequently (minimum once in three days), 38 of them cooked in earthen ware pots, where the food was tastier then in other utensils, 37 family members would have liked to use microwave safe terracotta ware and 35 of them were ready to replace the other microwave safe vessels with the microwave safe terracotta ware. Moreover, 40% of them are ready to buy the cooking containers in the price range of Rs.200/- to Rs.250/- for the microwave friendly terracotta ware and only 35% people are ready to accept the price range of Rs.250/- to Rs.300/-."

Further, recalls Rajish K. Ravindran, "Plasticity with the amount of water mixed became inappropriate for shaping in the potter's wheel. So it was required to keep it for drying and removing the extra water content, to get the desired, optimum plasticity."

Way Forward :

Sums up Varsha Gupta, "This product enjoys a niche market and there is a growing trend of consumers, who buy only organic food products, organic cotton and apparel and enjoy a preference for indigenous elements in their lifestyle. The new 'microwave friendly ware' has a significant place in this market segment."

Says Rajish K. Ravindran, "The technologically upgraded cooking system requires suitable utensils, so a niche market and product segment has been created through design intervention. The cost of the redesigned version is double that of the normal terracotta ware, however as per a survey conducted on some families in Delhi and Mumbai, many people have indicated interest in buying the redesigned terracotta at 3 to 4 times the price of the regular terracotta ware price."

Left and below - new range of microwave safe products

The Advantages :

Says Rajish K. Ravindran, "The cost of the original microwave proof container was Rs.60/- to Rs.100/- and cost of the redesigned terracotta was Rs.180/- to Rs.230/-. Besides, it saves on production time and labour. Moreover, users of the microwave safe terracotta ware can look forward to enjoying a good margin of profit as it carries the USPs of stylish living and in that, vessels cater to premium consumers.The brand image has definitely received a fillip because of its adaptability to rapidly changing cooking styles. Also, the product comes with a new visual identity, where the creative use of black pottery is utilised to give it interesting indigenous textures, where every product has its own unique texture style."

Volumetric Infusion Pump

Efficiency in medication dispensing

The MSME

Plenum Tech Pvt. Ltd.,
Nagpur, Maharashtra
Website: www.plenumtech.com
Contact Person: Mr. Sujeet Mahajan

The Design House

Neodes
Pune, Maharashtra
Website: www.neodes.in;
Contact Person: Abhijit R Takale

The Indian infusion pumps market is growing at a much faster rate as compared to the global one, market mainly because of the expansion of healthcare systems and awareness about the increasing sophistication of facilities in larger and smaller cities across the country.

Left - An intuitive, simpler and safer volumetric infusion pump

Right - Existing product, a table top unit

Introduction :

Essentially, a volumetric pump is designed to infuse prescribed drugs into the human vascular system. Each machine is accomplished with a microprocessor control to regulate the flow, volume and timing that activates the alarm automatically - if the infusion rate cannot be maintained, or the solution provided by a motor driven peristaltic mechanism, runs out. Volumetric Infusion Pumps are used by doctors, attendants and nurses in small hospital ICUs, NICUs, PICUs, CCUs and also ambulances. Unauthorised tampering is not possible in these environments, hence considering that 'door open' activity is done only by authorised personnel and intentionally done, where the door clamp will be easy to operate.

Infusion therapy devices are widely used in various medical institutions like hospitals, nursing homes and outpatient surgical centers, where it is critical to healthcare, to achieve the highest standards in medication administration and manufacturing quality in the Intravenous Therapy Devices segment, that do not compromise on performance and are competitively priced.

Says Sujeet Mahajan (Managing Director - Plenum Tech Pvt. Ltd.), "There were a few issues in the existing model, that urged us to consider design intervention. For instance, there was an occlusion problem owing to the horizontal position. The market was at the time, dominated by established multinational and Chinese players including BBruan, JMS, Terrumo and others."

Says Abhijit R Takale (Head Design and Managing Director - Neodes), "The uninterrupted infusion of fluids, drugs, blood and blood product is very essential for stabilising the health of a patient, be it an adult or child. Infusions not only help to stabilise a medical state, but also support faster healing."

In 2003, Plenum Tech Pvt. Ltd. started business operations as a manufacturer, exporter and supplier of Infusion Therapy Devices. These included an extended range of Syringe Pumps and Volumetric Infusion Pumps, manufactured under stringent quality norms using advanced techniques of production.

Design Objectives :

Recounts Abhijit R Takale, “Besides rectifying the shortfalls identified by the MSME, the purge and bolus required separation by repositioning as well. Rate and volume are the most common and easy to understand units and it was required to redesign the digit size on display, which was to be 8mm, to be visible from a distance of 6 feet. The keypad for data entry and special operation was to be segregated to simplify the interface and it was identified that special operations should have variation in form and colour to easily identify the critical alarm lighting.”

Elaborating further Abhijit R Takale says, “It was realised that the sensor should remain perpendicular, to avoid unnecessary alarms and sensor errors and that spillage should not enter the device. The blocking compatibility for IV pole and bed pole mounting needed attention in promoting optimum uitlisation of space. Grip to balance the device while docking and transportation where IV tubing and the device has to be in line with the tubing. It was further identified that peristaltic mechanism should be protected from spillage due to internal bursting of tube and easy installation of the tubing and door open mechanism should be easy to operate. Quick start – ups and pre setting of IV sets with volume and rate mode should also be configurable, besides the display being antiglare and visible at night. Prioritised positioning of buttons on the display in the older version were identified as significant areas of redesigning. The grip used during transportation, as well as for balancing weight of the device during docking, was recognised as an area requiring design intervention as well.”

Design Journey :

Enumerates Abhijit R Takale, “We began with the process of designing with understanding the target group, the expectations of patients and caretakers, attendants, the system around the product, task analysis and requirement of attendants during emergencies. We further went on to identification of players in the Indian Infusion Pumps market, by spending time in the hospital to identify different tasks, interacting with doctors and nurses for two consecutive days, to understand the system and requirement of video documentation and observations to identify problems in detail and study the JMS volumetric infusion pump in detail.”

Below - Images of infusion pump

Adds Sujeet Mahajan, “A usability study and task analysis was done to understand ergonomic and other contextual issues and the synthesis stage helped us to decide the final concept, which carried forward the design concepts phase.”

Continues Abhijit R Takale, “In the second phase, the standard clamping method was used to optimise cost and envisage a leak proof design. The interface was designed for eye level to 15 deg from normal (eye level) operation and hence the screen was antiglare. In phase three, the IGES files of parts and assemblies with major dimensions and critical dimensions were created doing with a 3D model for prototype (ACAD) and a formal concept was rendered. In the fourth phase the Alpha Prototype was created.”

Enumerates Sujeet Mahajan, “Due to the horizontal structure, bubbles tended to accumulate near the bubble sensor, causing false ‘air in line’ alarm, where anti free flow should be at the extreme end and verification of proper infusion tube installation feature was proposed as a value add. There was no indication of how to install the tube and no assurance and verification of proper installation, besides the clamp being too cumbersome to open. The drop sensor had moving parts in the original, which encouraged spillage, jamming the sensor. Neodes developed a concept for a drop sensor holder to address the problems.”

Adds Abhijit R Takale, “The Silicon cover introduced an internal mechanism regarding spillage jam and developed a new interface by finalising the LED display. So a new drop sensor holder was developed and a new interface and interaction to solve the problem, where the LED display was finalised. The overall product was aesthetically appealing and enhanced by reliability, look and feel of the product. A detachable power supply was designed by external replacing without the use of tools, and spillage jams with internal mechanisms and a silicon cover was introduced.”

Way Forward :

Says Abhijit R Takale, “The cost of the original product was Rs.25,000/- without the IV stand. The redesigned Volumetric Infusion Pump matches the international price barrier is US$ 450 to 500 and is expected to be kept at the range of Rs. 25,000 to Rs. 30,000 Rs. meeting the international price band. Due to standardisation of some of the electronic parts and ongoing development activity, the MSME unit is expected to enter the market in the next eight to ten months.”

The Advantages :

Recounts Sujeet Mahajan, “The redesigned version of the volumetric infusion pump presents an effective user interface, which clearly distinguishes the passive and active areas of operation. The high bright 7 segment LED displays can be easily pointed out from a distance and the run indicator can be visualised in 270 degrees. The addition of safety features like free flow locking mechanism, which directly relate to the patient’s life, easy change with the orientation of the pump, addressing many problems like tube sagging, which were prominent in the previous design have added up to give immense advantage to the redesigned version.”

“Furthermore,” says Abhijit R Takale, “In the manufacturing process, the assembly time has been reduced substantially and scope for human error decreased. With new design, the MSME unit is expecting to sell approximately 1000 to 1200 units in a year.”

Furnishings for Young Ones

Happy sleep ‘n’ play

Creating a positive learning environment enhances opportunities for young children. Furnishing in various forms makes a unique tool to explore, learn and enjoy, besides creating a great experience and association.

The MSME

Eulex India Pvt. Ltd.
Noida, Uttar Pradesh
Contact Person: Atul Gupta

The Design Student

Vikas Gupta
National Institute of Design,
Ahmedabad, Gujarat

Left - Kid’s furnishing, a new look and a new approach

Introduction :

Children are the future of a country and the nurturing of this cauldron of resource is undoubtedly a priority across the globe. Early exposure to healthy concepts in the environment, where the quality of sleep is critical and quality of play invaluable and imperative, for life’s learnings to enjoy a meaningful foundation.

Says Atul Gupta (Director - Eulex India Pvt. Ltd.), “We at Eulex India Pvt. Ltd. developed soft toys as a focused area, with a plan in the future to develop a range of children’s furnishing products. The scope of the product in India, we believed was tremendous, because there was no competitor in the market and very few companies developed products of this profile, where children’s sleep time could evolve into a meaningful, fun and relaxing experience. A furnishing kit for children in the age group 2 to 6 years undoubtedly carried significance. ”

Design Objectives :

Says Vikas Gupta, “The initial design brief was to create a soft toys range, using Indian traditional techniques for an exhibition to begin with, which later enlarged into a creative rendering of childrens’ furnishings. The MSME unit wanted to develop a new range of soft toys, different from the ones available in the market. It was reallised that there is a huge scope for childrens’ furnishings in the growing metros. The nuclear families in metros generally have a separate childrens’ room and thus require specific furnishing, well designed and innovative as per their furnishing preferences. The idea was also to create a connect with traditional games like ‘ghar-ghar’, ‘raja-rani’, ‘mummy-papa’ being played by the kids. “

Design Journey :

Says Vikas Gupta, “For this project, it was important to create value for the product. I pursed a routine design process beginning with a market study, to understand the existing scope of childrens’ furnishings in India, followed by a User Research of the selected age group of children and a study of the international and domestic trends in this segment. The product outcome was amazing and heartening because, when I showed the product to the children, they were very happy and continuously played with the kit.”

Elaborates Vikas Gupta, “Their embroidery machine for instance offered immense possibilities for creating any furnishing or related products I therefore maintained focus on some techniques like appliqué and embroidery, which I included in the final production. Since it was Eulex India Pvt. Ltd.’s first foray into the furnishing segment, there was no redesigning as such involved. But when I explored and surveyed the market, I observed there was a huge scope to work in the “children’s furnishing” area. Parents appreciated and encouraged our concept and that gave us good direction.”

Below - Kids furnishing in display

Right - Packaging of newly designed products

Opines Atul Gupta, “The furnishing product was new, so the designers developed two sets of furnishings namely, the Aquatic (Luka Chhipi) theme, which cost Rs.1,443/60 per set (in 2010) and Train (*Chhuk Chhuk Gadi*) theme, which cost Rs.1,419/- per set (in 2010).”

Way Forward :

Says Atul Gupta, “The product is new, and there is a good potential in terms of future demand and market requirement. All the production could be done within the company’s existing setup, so, for the initial level of production, the existing infrastructure was adequate. There were extra overheads and expenses. But for further development and success, machinery production plays a significant part and investment in developing infrastructure will play an important, progressive role. With the support of this implementation, the company can look forward to handsome profits through this.”

Adds Vikas Gupta, “This was a challenging exposure for me, because the product segment was new and there was no familiar benchmark that, I could study or compare with.”

The Advantages :

Enumerates Vikas Gupta, “The playful furnishing kit for children in the age group 2 – 6 years offers successful usability and capacity to provide both functions of play and utility, which together enhance the product’s real value.”

Says Atul Gupta, “Basis the design perspective on the furnishing kit, Eulex India Pvt. Ltd. can generate good revenue, because the product is new and there is no competitor in the market. For the business perspective, when this goes in to mass production, the cost will reduce further.”

Says Vikas Gupta, “Since the product is new, with both national and international potential, it will receive greater impetus and support because it has the attributes, which can augment the brand image of the company.”

Adds Atu Gupta, “The not so apparent USP of the playful kids furnishing kit for children is the potential offered for an interaction between the bedcover and cushion pillow, where the 2 – 6 years age group can play and create their own story telling through this medium.”

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