CII INDUSTRIAL INNOVATION AWARDS 2014

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INDUSTRIAL INNOVATION AWARDS 2014

TOP 26 INNOVATIVE COMPANIES

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FOREWORD

Mr. Chandrajit Banerjee
Director General, CII

Innovation today is not only a buzzword but an accepted tool to weather the competitive market forces confronted by all firms in a local or in a global business environment. This is to imply that having a corporate mindset receptive to innovation principles has become a necessity to sustain business interests. In western countries, most of the industry players have embraced innovation in their day to day operations and are leveraging the strength of innovation to remain competitive in the market. World's leading companies like Apple, Google, Microsoft, P&G and many others have oriented their business philosophies around innovation and this shows how great an influence innovation can exhort on today's businesses worldwide.

In India, the situation is relatively different and our companies are in a catch up mode, and except for some Indian large firms and a few MNCs, most of the Indian firms are yet to derive the real benefit of an innovation driven paradigm. To address this important issue and to make Indian Industry (from Large to Medium to Micro and Small Organizations) innovation oriented, the Confederation of Indian Industry (CII) has established for the first time in India the CII Industrial Innovation Awards. Established in 2014, the awards seek to promote culture of innovation in Indian Industry and establish structured innovation processes among Indian firms at all levels. In the year of its inception itself the award has drawn great response and acceptability among the Indian Industry and has been established as a benchmark to assess firm level innovation.

This current publication (compendium) is an effort to capture the dynamics of top 25 innovation driven organizations participated in 2014 edition of the award, and this compendium can be used as a good reference document for the industry to learn a thing or two about innovation best practices. I thank all the people associated with the award within CII and outside for putting their best effort and showing great leadership to establish such an important award at a pertinent time, when the industry needs it the most. I hope this compendium will be viewed as a humble effort towards a larger cause and will prove beneficial for all Indian firms who wish to be even more innovative and competitive in the near future.

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Bilcare Ltd.: nonClonableID-nCiD Technology

01

ABOUT

Founded in 1987 , Bilcare today is a global market leader in the pharmaceutical solid dose packaging with over 25% market share. With over 1000 customers worldwide, spread across 50 countries and serviced through its multiple manufacturing and R&D centre across Asia, Europe and in the US, Bilcare's current consolidated revenue is over US $500 +Mn. Using a multi-pronged, strategic market proliferation, Bilcare's share of international business in the last 5 years grew from 20% of sales to current level of 80%, making it a truly multinational organization.

It is an integrated service provider to the global pharmaceutical industry through its key business verticals: Pharma Packaging Innovations, nonClonableID™ Technologies and Global Clinical Services. *Apart from the several awards received globally, Bilcare has the unique distinction of being conferred with the National IP Award three times since 2009.*

The Approach

Bilcare institutionalized its unique 5 C's innovation pathway (counterfeit, compliance, convenience, communication & cost) enabling value added products process and solution to address the key challenges of its customers.

The research & development facilities of the company are located in India, Singapore, USA and Germany with its 'Global Centre of Excellence' in Pune. These centres are seamlessly integrated to facilitate & support customer's requirements. The R&D centre in India has been accorded recognition by the Department of Scientific and Industrial Research, Ministry of Science and Technology since 2004.

They focus on value addition in the pharma space coupled with their strong research orientation to customer centric Innovations, research and development, which has resulted in continual creation of valuable intellectual property in the form of novel products & services and the path-breaking technology solution - nonClonableID technology (over 230 patent applications and 52 granted patents world-wide) resulting in global leadership with over 1000 pharmaceutical companies as their customers.

The unique blend of pharmaceutical, engineering, and medical scientists working seamlessly with a diverse set of professionals having technology, financial and management expertise, "Team Bilcare" today comprises of multi-cultural-multi-regional professionals across the world; adding value to global pharmaceuticals and other industrial sectors through its innovations, products and services.

The Innovation

nonClonableID™ (nCiD™) Technology, is a unique technology, which can comprehensively identify, authenticate, authorize and track and

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Grand Winner & Manufacturing
Large Enterprise

trace any object / substrate on which it is affixed / embedded or incorporated. nonClonableID™ technology can be incorporated, affixed and / or embedded with ease in any object / substrate making duplication impossible. The technology innovatively exploits the intrinsic nature of nano and micro-structured metal composites together with their magnetic and optical properties to create a nonClonableID™ chip with the highest degree of security.

nonClonableID™ technology has been researched and developed over ten years of intensive research and represents the state-of-the-art technology in physical security. The technology has been used to successfully secure a wide range of items from critical equipment like electronic voting machines for the election commission to automotive parts, from wines to museum artifacts, from agro-chemicals to medical products and for fail-safe totally secured ID cards including those used by the Indian Police and by the special security force of a large Asian country.

The path-breaking technology solution 'nonClonableID technology' was selected for a national project entitled "Customized Adaptation of nonClonableID Technology to Establish Authenticity of Medical Products and improving Patient's Medication Compliance" by the Council of Scientific & Industrial Research, the premier government organization leading the science and technology missions under its prestigious NMITLI program. The project outcomes were outstanding as it was successfully able to showcase the immense value proposition in not only enabling securitization of medical products across supply chain but also facilitate significant improvement in the adherence to medication compliance by the patients paving a new way for effective communication between medical doctors, care givers, patients and even the family members of the patients, establishing a paradigm shift in effective management of patient health & well being. The exceptional outcomes led to the chairman of the monitoring committee to formally state in the concluding meeting that *"nCiD technology will be possibly the first disruptive technology that India would give to the world"*

Use of these inventions in security be it in securitization of ID of entire police force by Delhi Police or in securitization of electronic voting machines by Maharashtra State Election Commission and later by Madhya Pradesh State Election Commission, by National Jute Board or by Department of Fertilizers for secured fertilizer supply chain control, has always enabled a continuous process of safety and well being of people at large.

The Benefits

Bilcare has successfully introduced and commercialized innovations in the form of novel packaging materials, processes and methodologies which have resulted in large scale use across the world. The key innovations which had outstanding success in past are: metalized films and a methodology for making a packaging system for any medical product.

Bilcare's path breaking nonClonableID Technology-a unique blend of multiple technologies comprising nCiD chips & their application systems, nCiD range of readers and their application systems and a highly secure IT system enables the provision of a wide range of novel, comprehensive and fail-safe securitization offerings with effective applicability for diverse industrial and e-governance sectors. nCiD is, particularly, useful for products where counterfeits and fraudulent transactions are rampant, like-textiles, currency, auto components, ID / warranty / loyalty cards, secure / critical documents, diverse finished & packaged products and wine and beverages or in case of securitization / secured management of any transactions having significant financial implications like excise revenue, subsidy / subsidized products / services. The progression of nCiD application ranges from packaged medicine to diverse packaged products and to a wide range of e-governance applications.

The Future

From the first commercial project undertaken for Delhi Police in securitization of police personnel identity cards since FY 2010-11 till FY 2014-2015, the path breaking nonClonableID technology products and services have generated revenues of over INR 25 Crores.

Bilcare aims to achieve significant annual revenues to the tune of INR 400 Crores in the next 5 years. Bilcare is employing a multi pronged business model towards getting its nCiD Technology recognized and used on a large scale. This includes a unique model of collaborative research and partnership with reputed institutions like the CSIR and the prestigious Asian Institute of Technology (AIT) based in Thailand for an enhanced and wider proliferation of its technology usage and deployment.

nCiD Chips Mfg., Data capture, Archival & Activation and nCiD Chip Applicator Systems

A. P. Organics Ltd.: Revolutionizing the Rice Bran Industry

02

ABOUT

A.P. Organics Ltd. is a part of 800 crore Ricela Group of industries based at Dhuri, Distt. Sangrur, Punjab and is a pioneer in the development of physical refining process for production of refined rice bran oil.

The turnover of the company stood at Rs. 205.86 crores in the year 2012-13. A. P. Organics Ltd. has a 125 T.P.D. The company has set up a physical refining plant especially to meet the requirements of Refined Rice Bran Oil for consumer packs and exports. The unit is certified as ISO 9001: 2008 and also as HACCP & BRC, which are international standards of food safety. It sells its product under its own brand name, "Ricela", which has bagged Best Brand Award from Globoil Conference.

The company bagged the First National Award in 2007 for Research & Development and First National Award in the year 2009 for Outstanding efforts in Entrepreneurship, National Technology Award in 2009 for its pioneering developments in the field of vegetable oil processing.

A. P. Organics also won the First National Award in 2012 for Innovation in Product Development.

The Innovation

The very basis of this innovation lies in retaining maximum quantity and quality of oryzanol in refined rice bran oil. Oryzanol is a natural micro nutrient (antioxidant) found in rice bran oil having various health benefits like lowering cholesterol, anti-inflammatory, anti-diabetic etc. A number of research studies conducted internationally have confirmed that 300 mg is the effective daily dosage of oryzanol which can significantly help in reduction of cholesterol levels in human body.

The company started doing trials wherein minimum 300 mg of oryzanol can be retained at recommended levels of daily oil intake. After continuous trials for six to eight months the company was able to standardize the process and was able to increase the oryzanol content to 1.35 percent i.e 1350 mg / 100 grams of oil and improving the quality of oil further. Oryzanol is known as a wonder health nutrient with a whole range of health benefits including lowering cholesterol, reducing hypertension, helpful in blood sugar management, anti-inflammatory, helpful for patients of thyroid and much more thereby making the product a healthy cooking oil.

This innovation is sold under the brand 'RICELA' and relates to physically refined rice bran oil which lowers the cholesterol level better than the costly extra virgin olive oil (study details available at www.ricela.com). This product provides effective dosage of oryzanol (300mg) even in two tablespoons (23.2 gms) of daily oil intake, which is an internationally recommended level of oil intake even for those who have sedentary lifestyle.

The company further undertook studies to check how better cholesterol reduction took place with increased levels of oryzanol. A study was conducted in Postgraduate Institute of Medical & Research (PGIMER), Chandigarh (a Government of India body) on new developed product i.e. 'New Ricela' vis-a-vis groundnut oil and extra virgin olive oil by Dept. of Pharmacology. A perusal of this report reveals that 'New Ricela' reduced bad cholesterol 2 times more as compared to groundnut oil and 1.4 times more as compared to extra virgin olive oil. It further reduced triglycerides 1.6 times more as compared to groundnut oil and 4 times more as compared to extra virgin olive oil, thereby providing the consumers with a choice of healthy product at a much lesser price, making it a very successful innovation.

The Approach

The company has a lot of focus on innovation. A separate team is responsible for the same. The company constantly collaborates with various renowned institutions for training of the employees as well as for joint projects. Some of these include National Dairy Research Institute, Karnal (NDRI), Indian Institute of Chemical Technology (IICT) Hyderabad, CFTRI Mysore among others. Apart from

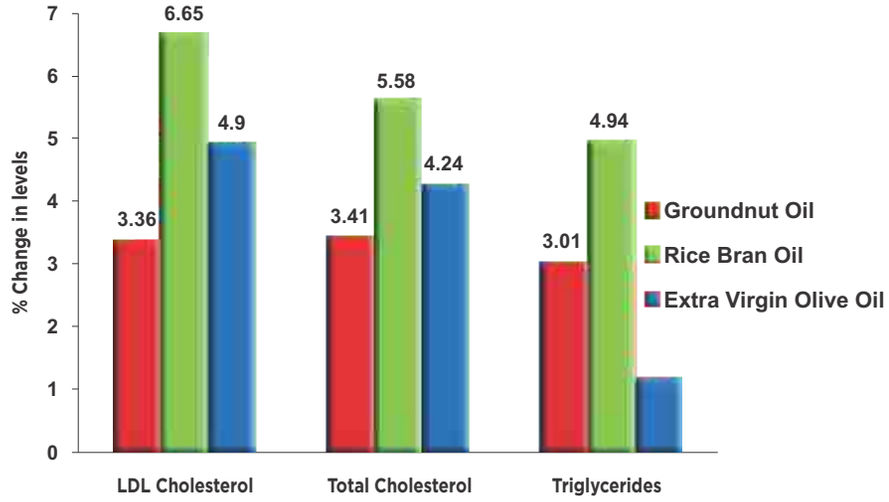
this the company has separate awards for the same to develop a culture among the employees to constantly innovate. The best innovation ideas are recognized and awarded by the management. For the innovation, the company worked on development of physical refining process followed by commercial scale degumming using enzymes for more yield of oil and less water consumption in the process.

The Benefits

The sales of brand 'Ricela' have crossed 3200 MT in last two years as compared to a previous average of 2000 MT. The value addition in rice bran by company has immensely benefitted the consumers, the down-stream industry of rice milling and the paddy growing farmers of the nation. Production of refined rice bran oil through the physical refining technology developed by the company has given significant value addition to rice bran-a by-product of the rice milling industry. This in turn has given value addition to paddy, thereby improving the realization of farmers. The physical refining is an eco-friendly technology wherein less effluents are discharged.

With this innovation, the company exports to various countries such as Sri Lanka, Australia, UAE, Israel, Netherlands, Poland, Pakistan & USA. Currently, the company is exporting around 50 tons per month, and is expected to go up to 200 tons per month in the next financial year. In 2014, the company alone has supplied rice bran oil (with 13500ppm of oryzanol) worth Rs. 157 lacs (Apr 2014-Sep 2014) globally.

Nutritional Facts (per 100g)	
Energy Value	900Kcal
Protein	0g
Carbohydrate	0g
Sugar	0g
Fat	100g
Saturated Fatty Acids	24g
Poly-Unsaturated Fatty Acids	34g
Mono-Unsaturated Fatty Acids	42g
Rans Fatty Acid	0g
Cholesterol	0mg
Vitamin E	50mg
Oryzanol	**1350mg**



Percentage decrease in LDF Cholesterol, Triglycerides and Total cholesterol levels
as per study conducted in Department of Pharmacology, Post Graduate Institute of Medical Education and Research, Chandigarh

The technology innovation in physical refining has revolutionized the rice bran oil processing scenario in the country.

The Future

The company is working towards commercialization of the technologies developed, so that it can further improve realizations to everyone in the supply chain as well as be beneficial to cattle, society and human beings. The company wants to be a global player in this field and will try to make the products reach different parts of the world. The future potential of the physical refining is very vast as the total production and sale of pure refined rice bran oil could go up from the present level of 2 lacs tones to 14 lacs tones as per the potential, keeping in view the present level of production of paddy, thereby saving a large chunk of foreign exchange. The company is working towards R&D on other very viable derivatives of rice bran for health benefits.

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Manufacturing
Medium Enterprise

Pluss Polymers Pvt. Ltd.: MiraCradle™ to Treat Newborns Suffering from Birth Asphyxia

03

ABOUT

Pluss Advanced Technologies Pvt. Ltd. (earlier known as Pluss Polymers Pvt. Ltd.) established in 1994 is a materials research and manufacturing company involved in the field of specialty polymeric additives and phase change materials for thermal energy storage. The company was formed by technocrats – Mr. Anil Mehta (currently - Director Manufacturing) and Mr. Devendra Jain (currently Director Research & Development). Pluss was the first company to make these specialized polymers to improve properties of engineering polymers used in automotive and white goods industry in India. Subsequently in 2001, the company actively started its sales operations. Research and innovation have been the focus of the company since its inception. The manufacturing of the products is done in-house with indigenously developed processes. This helps the company to come out with products in the materials space that are economical and beneficial to the country. Pluss is among the distinguished few in the world and the only company in India manufacturing PCM's. PCMs are special thermal energy storage materials. The company has been constantly growing for the past three years, with a 75% growth in revenue last year. With its innovative products, the company is making its presence felt across the globe with representatives in USA, Turkey, South-East Asia, Russia, Ukraine and South Africa. The Pluss family has also increased manifolds with 50 employees in March 2012 to 130 as of July 2014.

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Manufacturing
Micro & Small Enterprise

The Innovation

MiraCradle™-Neonate Cooler is an affordable passive cooling device developed by Pluss in collaboration with Christian Medical College, Vellore. It uses the advanced sav*E*® PCM technology to induce therapeutic hypothermia among newborns with birth asphyxia. PCMs are special thermal energy storage materials that store and release latent heat at a particular temperature. The thermal energy transfer occurs when the material changes phase from solid to liquid or liquid to solid. MiraCradle™ uses a cascaded system of sav*E*® FS-21 and sav*E*® FS-29 PCMs to provide the precise temperature control of 33-34°C. PCM's are ready to use after it is charged for 6-8 hours in the refrigerator. PCMs are placed in an insulated cradle and the conduction mattress provides a smooth surface for the baby to lie on. It is small, portable, easy to use and costs less than 1/8th of the present devices in the market. The device has been used to treat over 110 babies in the last one year at 35 hospitals across 11 states in India until June 2015.

The Approach

Therapeutic hypothermia (cooling a newborn to around 33°C) followed by maintaining the temperature between 33°C and 34°C for a period of 72 hours has proven useful for treating birth asphyxia. Currently, only expensive electronic instruments are available in the market for such a treatment which costs Rs. 12-15 lakhs and cannot be afforded by most hospitals in India and other developing countries. A team of doctors at CMC Vellore led by Dr. Niranjan Thomas approached PLUSS in Dec. 2012 to explore the use of Phase Change Materials (PCMs) to induce therapeutic hypothermia in newborns suffering from birth asphyxia. Pluss and CMC aimed to counter the aforementioned problems with a 29°C PCM. PCMs are special thermal energy storage materials extensively used to maintain temperatures in various industries. They store and release energy in the form of latent heat. The thermal energy transfer occurs when a material changes phase from solid to liquid viz-a-viz at a particular temperature. Based on understanding of the sensitivity involved in the treatment, it was decided that a liquid PCM cannot be used. Pluss developed a non-toxic form stable PCM which retains its form even while changing phase, thus removing any chance of PCM leaking from the packaging. For the treatment to be effective, it was necessary that the temperature of the baby was below 34°C but not below 33°C leaving Pluss with only one-degree margin. To achieve such a precise temperature control, Pluss developed a highly conductive cascaded system, which is a combination of two or more PCMs which changes phase at different temperatures. By engineering the melting points, thickness, conductivity and placement of the involved layers, a "quasi-automated" cooling system is created, which, while being completely passive, behaves like a servo-automated cooling device. Thus, unlike contemporary counterparts, apart from sustaining core body temperatures of the baby between 33-34°C, MiraCradle™ can also initiate the process and bring infant's temperature down within 60 minutes.

The Benefits

With the help of this technology, over 110 babies have been treated at 35 hospitals across 11 states in India until June 2015. It is portable, easy to use, provides the precise temperature control which requires minimal manual supervision and no requirement of constant electricity supply and costs less than 1/8th of the present electronic devices available in the market.

The Future

With the already established, safety, efficacy and credibility of MiraCradle™, Pluss is now set to take it across each and every district of India in the next one year. Pluss has already appointed distributors in South Africa and Kenya and is all set to launch the product in multiple African countries in the coming three months. In the next two years, Pluss endeavors to take the product to all the developing countries and help solve the problem of birth asphyxia across the world.

TATA Power Delhi Distribution Ltd.: Innovation Model 'With You Non-Stop'

04

ABOUT

Tata Power Delhi Distribution Ltd. (formerly known as North Delhi Power Limited) was incorporated on 1st July 2002 as a joint venture of Tata Power Company Limited (Tata Power) with 51% share and the Government of Delhi with 49% on the Public Private Partnership (PPP) model. TPDDL took over the license to distribute electricity to North & North West part of Delhi through a competitive bidding process initiated to reform the distribution sector in Delhi. With a registered consumer base of 1.40 million and a peak load of around 1704 MW, the company's operations span across an area of 510 sq kms. TPDDL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its consumer-friendly practices. Today, Aggregate Technical & Commercial (AT&C) losses stand at 9.87% which is an unprecedented reduction of around 81% from an opening loss level of 53% in July 2002. The company has implemented high-tech automated systems for its entire distribution network. Systems such as Supervisory Control And Data Acquisition (SCADA), Distribution Management System (DMS), Geographical Information System (GIS), Outage Management System (OMS) are the cornerstone of the company's distribution automation project. TPDDL has also embarked on its smart grid journey and has become the first utility to initiate automated metering infrastructure based auto demand response program in the country which will help in managing peak demand & grid stress. To ensure complete transparency, TPDDL has also provided online information on billing and payment to all its 1.40 million consumers.

TPDDL's changed management experience, distributed leadership system, adoption of latest technology; robust competence development process and innovative & open work culture are the key strategic boosters which helped in building and sustaining competitive advantage in the changing business scenario.

The Innovation

Tata Power Delhi Distribution Ltd. (TPDDL) adopted a comprehensive strategy for Aggregate Technical and Commercial (AT&C) loss reduction. At the time of taking over in 2002 curbing theft of electricity was one of the major challenge / concern area contributing to the AT&C loss level. TPDDL has undergone extensive process re-engineering and technological reforms to reduce electricity theft in North and North West part of Delhi. On technology front, TPDDL has implemented several initiatives such as Automated Meter Reading (AMR), Advanced Metering Infrastructure (AMI), High Voltage Distribution System (HVDS), Low Tension Aerial Bunched Conductor (LT ABC), Energy Auditing for prioritization of areas / resources, SCADA (Supervisory Control And Data Acquisition) implementation, prepaid meter installation, have helped to bridge revenue leakage and contributed to the unprecedented achievement.

Vocational Training cum Tutorial Centre

The Approach

TPDDL had set up special enforcement team focussing on high loss areas, concept of early morning / latenight / mass raids was implemented, settlement schemes initiated, various grievance handling forums were extended etc. With reducing AT&C losses, any incremental change gradually entails much more efforts, thereby posing a stiff challenge for TPDDL. In 2007, TPDDL found that majority of the losses were concentrated in 220+jhuggi clusters within its licensed area. This was primarily due to low paying capacity of people residing in these areas. TPDDL thereafter decided to bring the comprehensive strategy to derive benefits by virtue of CSR. The objective was to enhance the surplus with the economically weaker consumers by securing their future through the introduction of an innovative scheme for providing free death cum permanent disability insurance worth Rs. 1 Lacs to registered and regularly paying consumers residing in JJ Clusters. Further to help them by reducing their expenses by arranging drug-de-addiction camps.

The Benefits

TPDDL has achieved 81% reduction in AT&C losses from opening levels of 53.1% in 2002 to 9.87% at the end of FY' 15 (against the National average of 26%). The company introduced Adult Literacy Centres, Vocational Centres, Children Tutorials, Electrician Programs, Health Camps etc. to enhance the conditions of people living in jhuggis. With sustained efforts, the billing efficiency in JJ Clusters has improved to 80% and the losses have reduced drastically.

The Future

The company aims at AT&C loss reduction, which was 68% in 2009 in slum areas as against to 15% at the company level; to ensure 100% metering; to enhance network conditions in the slum clusters; improvement of billing & collective efficiency; to build relationship and trust among such consumers; to improve the living conditions of 2.10 lacs families residing in slums of TPDDL's licensed area.

Resolving billing & metering complaints through dedicated help desk brand ambassadors who are now appointed in all JJ Clusters. The company has already reached a figure of 290 women literacy centres to cover maximum number of JJ clusters. It has already started operations in 9 vocational training centres which are going to expand to 20 by FY '16. The plan is to have at least one vocational training centre in every District. To further improve the overall collection and billing efficiency of JJ Clusters, the company has appointed franchisees. These franchisees are from JJ slum clusters only and preference was given to
SC / ST entrepreneurs. All Time Cash Collection Module (ATCM) is being set up. In addition to above, TPDDL plans to productize the application so that the company can market it in domestic and international market in various utilities.

Any Time Water RO Plant

CII INDUSTRIAL INNOVATION AWARDS 2014

Service

Large Enterprise

Agappe Diagnostics Ltd.: Mispa-i2 (Blood Protein Analyzer)- Cost Effective and Revolutionary

05

ABOUT

Agappe Ltd. is a vitro diagnostics company working for more than 300 distributors, and has a significant presence in OEM business at both domestic as well as international level. With a world-class manufacturing facility near Cochin, Kerala built on 200,000 square feet of land Agappe Diagnostics Ltd. which has a turnover of more than Rs. 80 crore. This is to conform GMP standards which is FDA approved. It is the only company in India having expertise to manufacture the nephelometry and immuno turbidometry reagents with a vast panel of reagents. The companies' reagent range includes biochemistry kits, serology kits, immuno turbidometry kits, specialized kits, coagulation reagents, hematology reagents and system reagents for closed and open systems. Agappe is also considered as one of the fastest growing and reliable equipment distributors in India for semi automated clinical chemistry analyzer, blood cell counter and fully automated clinical chemistry analyzer. R&D department of Agappe has been recognized by DSIR, Government of India.

The Innovation

Mispa-i2 is a protein analyzer, which analyses quantities of various proteins present in patient's blood or serum. This is a small inexpensive instrument which can be operated by the family physician or in small laboratories. All specialized tests can be done even by small laboratories. So results are obtained quickly; helping both the doctor's and the patients. Mispa-i2 utilize snephelometry and photometry, combined in one single unit. Nephelometry gives good sensitivity while photometry gives good linearity. Photometry and Nephelometry are to be incorporated in the same instrument. Agappe then invented an algorithm for calculating the light absorption rate in both techniques, and then attempt to get the best technique to be chosen for Calibration and program protocol are to be incorporated on the memory card development of in-house nephelometry reagents, compatible to Mispa-i2. Although the company had the knowhow of preparing these reagents for other machines, they then had to fine-tune the ingredients according to the new instrument and its capabilities. However the great hurdle faced by Agappe was that of cost reduction. This was achieved by indigenization of the reagents and designing of the instrument.

The Approach

With diagnostic services in smaller cities not being able to afford standard auto analyzers or nephelometry instruments many tests are usually sent to referral labs for tests, which is both time consuming and expensive. Many patients therefore who are diagnosed with diseases like diabetes, renal diseases lose their precious time and thus their treatment gets delayed. But even the smallest of diagnostic centres in remote rural areas are able to afford Mispa-i2 thereby saving precious time and money for the patients and aids in early diagnosis and treatment. The company is creating a new market, which was not available previously. This market is available neither for big multinationals nor for small Indian companies. Those laboratories who could not afford to do certain tests, are now thinking to do these tests through the Mispa-i2.

The product is sustainable in the near future. When a lab or doctor purchases this instrument, sales of necessary reagents to run the device for the next 5 years is assured.

The management and senior leadership evolve "Innovation Symbols" to represent the values of an organization in the form of value statements, awards, success stories, posters in the common areas etc. The senior/mid senior members of the research and development team are encouraged to

attend the scientific meetings of the highest / authoritarian bodies in the field to gain more exposure to the current status of the industry and its relevance to India.

The Benefits

The instrument is priced at Rs. 1.75 lakhs per piece, which is one-fifth of the price of those multinationals. The reagent cost is half of those multinationals. The technology is therefore affordable to even small and medium sized laboratories of India. Mispa-i2 is capable of testing 25 proteins, and hence is ideal for independent laboratories and hospitals.

Mispa-i2 will help in early detection of diseases, which will prove beneficial especially for smaller towns and rural health centres. The Mispa-i2, (along with the reagent for HbA1c testreagent) will help the doctors in the interiors to detect diabetes at early stages. Health for all especially in smaller towns and rural health centres is possible with this invention.

70 million people are affected by diabetes in India. 20% of people above 50 years are affected by diabetes. It is a silent killer, because of the late complications such as vascular, cardiac and renal complications. Most of such heart complications could be prevented by early diagnosis and timely intervention. With Mispa-i2 instrument and the HbA1c reagent, this important test could be done even in remote villages. Detection of deterioration of kidney function, at the earliest stage, is also equally important. The Mispa-i2 (along with the reagent for Cystatin-C) could do that. When diagnosed early, the patient could be treated properly and further deterioration of the disease could be prevented.

With this instrument, the cost per test has been brought down to affordable level, so that the test could be done even in remote villages. Morbidity and mortality could thus be reduced.

The Future

In India, the total number of laboratories is close to 45,000 which include 2,800 multi-specialty hospitals and 23,000 PHCs. About 25,000 laboratories have a work load of 50-100 tests per day, where Mispa-i2 model will perfectly fit into. Agappe plans to target this 25,000 laboratories within the next 2-3 years. Further, there are about 10 lakh doctors in the country, out of these, about 4 lakh doctors are general practitioners in rural areas, where diagnostic services are very poor. Thus Agappe's strategy is to reach 25% of this market (100,000 new customers) within the next 5 years.

The instrument is now distributed not only in India, but also in 31 different countries of the world. The company is working at continuous improvements of Mispa-i2, to Mispa-i3, and then to Mispa-i4, are already initiated. POCT version will also follow.

Bharat Forge Ltd.: Revolutionizing the Manufacturing Process of a Safety and Application Critical Component (Fluid End) for Oil and Gas Sector

06

ABOUT

Bharat Forge Limited (BFL), a Pune based Indian multinational is a technology driven global leader in metal forming, having transcontinental presence across five manufacturing locations, serving several sectors including automotive, power, oil and gas, construction & mining, locomotive, marine, defence and aerospace. Part of Kalyani Group – a USD 2.5 billion conglomerate with 10,000 global work forces; the company, today, has the largest repository of metallurgical knowledge in the region and offers full service supply capability to its geographically dispersed marquee customers from concept to product design, engineering, manufacturing, testing and validation. The world's largest forging company with manufacturing facilities spread across India, Germany, US, France and Sweden. Bharat Forge manufactures a wide range of high performance, critical & safety components for the automotive & non-automotive sector. The company is also the largest manufacturer and exporter of automotive components and leading chassis component manufacturer in the world. The company is looking beyond automotive and has embarked on an ambitious and exciting journey to redefine its already existing presence across several critical business vertical such as oil & gas, power, locomotive & marine, aerospace, defence, metals & mining, construction and general engineering. 'Expanding into new horizons' will give Bharat Forge a completely new growth perspective. It will begin the transformation of the company from an auto component supplier to an engineering company.

The Innovation

The invention particularly relates to designing of manufacturing method for the fluid end (a critical component in oil and gas sector) by effective utilization of raw material and machines with improved mechanical properties. Present innovation of fluid end results in 62.5% reduction in machining time with significant improvement in material savings. This innovation has ensured near-net shape input to machining so as to establish right balance between forging and machining process to effectively utilize material and machining time which leads to improved productivity.

In the invented process, the cogging of the ingot produces a cogged bloom. The process of upsetting ensures a performance of required dimensions and an optimized input to closed die forging. This further ensures that the flash produced is minimized and the lateral load on dies is reduced, thereby the die performance is improved. This helps to produce a near-net shaped component after closed die forging on the hammer. The closed-die-forged component is then subjected to rough machining followed by heat treatment, semi-finish machining and finish machining to produce the final component.

The company had to overcome many hurdles during the initial phase of manufacturing such as safety and application critical components. The conventional manufacturing method was the combination of "Open die

forging, machining and heat treatment". With this, 10 to 15% of shape formation was achieved through open die forging and remaining 85 to 90% shape was achieved through machining. This process resulted into about 40% utilization of material thereby leading to about 60% wastage of material from cogged bloom to finished part. During mass production of such components, substantial raw material is wasted by conventional manufacturing method which results into large machining time and poor yield.

Then this process was invented by changing route from machining to near net shape forging. This new knowledge and technology gained from present innovation is horizontally deployed to various components. The primary product focuses on valves, drill bits, surface flow and sub-sea equipment. With its expertise in metallurgy and metal forming, Bharat Forge plays a value addition role in manufacturing critical equipment needed in the oil and gas sector.

The Approach

Innovation has been the driving force behind Bharat Forge and it is applied across every aspect of their business. The company has been focusing sharply on innovating for the automotive sector with new technology and products while continuing to explore opportunities in the non-automotive sector. Over the years, Bharat Forge (BFL) has invested in new technologies, R&D and solution-providing capabilities. Combined competencies with company's best-in-class, world-scale manufacturing capacities and skills have resulted in BFL being an innovation-led, end-to-end solutions provider and a dynamic partner to their customers. The company has established its new R&D centre, "The Kalyani Centre for Technology and Innovation" which is an umbrella unit catering to Kalyani Group requirements of advanced learning, innovation and extensive research & development. KCTI is fully equipped with all the advanced equipments required in the field of research in metal processing, material analysis, material testing, virtual manufacturing, etc.

BFL is extremely focused on people's capabilities and is working towards creating a 'Global Talent Pool'. It has been BFL's endeavor to create more brain power in the company by bringing education into their system and by providing opportunities for higher studies. As a part of this initiative, BFL has tied up with several leading global institutes and universities such as the BITS, Pilani for B.Tech in Manufacturing Engineering; Warwick University, UK for M.S. in Business Management; IIT Bombay, Defence Institute of Advance Technology (DIAT) and BITS Pilani for M. Tech; Deakin University Australia, IIT Bombay and IIT Kharagpur for Ph.D. etc. BFL has a strong in-house trained research group of 50 highly qualified full time researchers to create breakthrough technologies in development of components for new platforms through partnership approach with its customers.

The Benefits

Besides, achieving near net shape forging with effective utilization of raw material and machines without compromising on mechanical and metallurgical properties and performance of component, the present innovation of fluid end results in 62.5% reduction in machining time with significant improvement in material savings. The innovation has ensured effective utilization of raw material, machines and equipment. Due to successful manufacturing and commercialization of this innovation, company's confidence level has been increased to produce parts for sectors such as oil and gas, wind energy, power, cement, marine, petrochemical and sugar industry.

The innovation leads to substantial savings of material, time, energy and cost which ultimately benefits the society and environment. The current innovation has laid 27% reduction in material wastage, and an energy saving of 17%. This innovation has made the company one of the principle suppliers of the oil and gas equipment. This innovation has helped Bharat Forge in strengthening its market position by increasing market share in non-automotive sector.

The Future

Similar kind of innovative concept has been horizontally deployed in Bharat Forge Ltd. on non-automotive components like huge valve bodies, hollow wind turbine rotor shaft, blow out preventor etc. and will be implemented in future on other components. As per the current innovation, the innovative idea is applicable to any critical to forge components with capability: 300 kg-3000 kg, which are formed from large ingots. Bharat Forge is large supplier to the oil and gas industry in North America, largely for offshore drilling and shale gas. As a result, various global customers are looking towards Bharat Forge as a co-development partner for product innovation.

Biocare India Pvt. Ltd.: Magnetized Fly Ash as Soil Conditioner

07

ABOUT

Biocare India Pvt. Ltd. was established in the year 1996 by three young entrepreneurs. The company is engaged in providing exclusive range of products in agriculture and public health at affordable rates. Biocare comprises of eminent individuals from diverse fields, who act with autonomy and independence in exercising strategic supervision. The management observes the highest standards of ethics, transparency and disclosure. The team Biocare works with clear and common purpose to run the agriculture business successfully. The combined skills of its people and their passion for result help in Biocare's continuous success.

The Innovation

Biosil-Magnetized Fly ash innovation relates to the field of disposal of fly ash generated in thermal power plants and more particularly to the large, small field for adding economic value to fly ash by use as soil conditioner. There are several studies that also propose that Fly ash can be used as a soil ameliorate that may improve physical, chemical and biological properties of the degraded soils and is a source of readily available for micro-and macro-nutrients plants . Practical value of Fly ash in agriculture as an eco-friendly and economic fertilizer or soil amendments can be established after repeated field experiments for each type of soil to confirm its quality and safety. Fly ash has great potentiality in agriculture due to its efficacy in modification of soil health and crop performance. The high concentration of elements (K, Na, Zn, Ca, Mg and Fe) in fly ash increases the yield of many agricultural crops.

The Approach

The disposal of fly ash from coal fired power station causes significant economic and environmental problem. At present 300 million tons of coal is consumed every year which constitutes nearly 40% of the total power generation which in turn produces 112 million tons of fly ash and is expected to increase rapidly in current physical as compared to 275 million tons of 2013. The large volume of fly ash poses serious environmental problem, thus there is a need to develop technologies for producing value added products on sustainable basis. Realizing this problem, the company started thinking around the fly ash utilization in agriculture. Initially, trails were done wherein simply fly ash was used, but huge quantities were required to produce good results and the farmer was reluctant to do so. To increase the efficiency of the product the fly ash was magnetized and it is now being used in little quantity which is producing very good results. An idea was generated, wherein, a novel soil conditioner “Magnetized Fly Ash” has been prepared from fly ash obtained from Koradi Thermal Power Plant, Nagpur through magnetization and named as “Biosil”.

The implementation strategy was designed as follows:

1. Developed Novel Soil Conditioner “Biosil” from fly ash using specific technology.

2. Studied the physico-chemical characteristics of “Biosil” with special reference to its acidity/alkalinity and micro- and macro-nutrients content.

3. Conducted field trials on different crops to assess the improvement in the soil quality and crop productivity with "Biosil" fortified with Recommended Dose of Fertilizers (RDF), keeping Vermicompost and RDF as controls.

4. Prepared the crop specific management chart using the Biosil, RDF and Vermicompost.

The Benefits

The physical geochemical and chemical parameters to characterize fly ash are the same as those for natural soils, e.g., specific gravity, grain size, water berg limit, compaction characteristics, permeability coefficient, shear strength parameters and consolidation parameters. Fly ash is the cheap source of minerals and trace nutrients. The micro-macro nutrients present in coal get generally concentrated in the ash. It is by virtue of this and the ability of fly ash to modify the physical properties of soils, it works as a soil conditioner enhancing the yield of crops. The soil fertility increases; nutrients available in the soil will improve by using this product .The farmers income increases. The product is available to the farmers at affordable rates. It causes no pollution to the environment. Yes, we did meet the defined parameters and we have enough data to substantiate their claims. A filed study on different crops has been conducted for over 5 years and that data can be sent accords additionally if required. This product contributes 40% to the top line and 50% to the bottomline. Although the application of fly ash as organic agriculture input is similar to the lime application to soil, the latter causes global warming. Therefore, use of magnetised fly ash is helping to improve, the soil fertility, producing better crop yield -increasing the farmers income - reducing the carbon foot print.

The Future

Initial field trials of Biosil carried out, showed good results on the soil quality and the crop growth. It is now proposed to study the effect of Biosil along with Recommended Dose of Fertilizers (RDF) on soil structure, quality and fertility and on the productivity of different crops, keeping RDF and Vermicompost as controls.

In the next three years, company would like to increase their production two fold. As Biocare has got excellent results in its usage as an organic agriculture input, they would like to expand operations throughout India. As organic agriculture is the need of the hour, company feels that the future of this kind of product is extremely bright. This product is being used as a resource from waste and is helping save the environment and is also increasing the farmers income through better crop yield.

Fleetguard Filters Pvt. Ltd.: Cummins India's Innovative Air-Filter Product a Hit With Indian Farmers

08

ABOUT

Cummins in India is a group of complementary businesses that design, manufacture, distribute and service engines, generators and related technologies. Its technology and pioneering initiatives bring innovative solutions and dependable services at the best possible value to users across the country. Cummins India Limited, the country's leading manufacturer of diesel and natural gas engines is one of the eight legal entities of the Cummins Group in India. Comprising of four business units-Industrial Engine, Power Generation, Distribution, and Automotive, Cummins India Limited is also the largest entity of the Cummins Group in India. The industrial engine business caters to the industrial sector with its broad spectrum of diesel engines ranging from 65 HP to 3500 HP. The range is designed to power varied market segments such as Construction, Mining, Compressor, Marine, Rail, Agriculture, Pumps, Oil & Gas, Power Generation and Defense.

Established in 1991, Cummins Generator Technologies India Limited is a market leader in the brush less A. C. Generator (Alternator) product range. The Company has consistently set new standards of quality and business excellence offering premium quality AC generators in the range 0.6 to 20,000 kVA. Tata Cummins Limited is a 50:50 joint venture between Tata Motors Limited, India's largest automobile manufacturer and Cummins Inc., USA, world leaders in design and manufacture of diesel engines. Cummins Technologies India Limited was formed in 2008. The entity encompasses seven divisions-Cummins Turbo Technologies, New & ReCon Parts India, Cummins Emission Solutions, Cummins Business Services, Cummins Fuel Systems India, Cummins India Technical Centre and Phaltan Engine Plant Cummins India Foundation.

The other advantage Cummins has over the competition is that it produces and supplies superior integrated power systems, making them a one-stop shop for all of their customers' needs. It drives innovation across people, products and practices. In India, its employees have led CSR projects to bring power to remote villages by designing engines that can run on locally available fuel (like Jatropha, Pungania etc.) It uses advanced technologies like waste-heat recovery, combined heat and power systems to create innovative products. It also innovates in sustainable practices like re-manufacturing of their engines that allows material reuse and uses 85% less energy for manufacturing. Understanding the customers' needs and applying the creative ingenuity to make the company a better, faster place for the future success in an increasingly competitive environment.

The Innovation

Cummins filtration business-Fleet guard Pvt Ltd.-is about an innovative air-filter product with 10 x performance. This innovation delighted the customers (Indian farmers) and helped the business to grow in India (despite tough competition). Cummins filtration supplied air filters to Escorts for their 6060 tractor engines. These tractors operated in a high dust / contaminant environment-post paddy harvesting, banana mulching etc. Cummins learnt that the end user was burdened by the air filter life being less than 2 hours due to clogging in this harsh environment. The company was lagging behind the competition whose air filter life was 10 hours. Thus, the company set an aggressive target to design air-filter that will have 100 hours life and thereby improving the productivity of the end-user (farmer).

The Approach

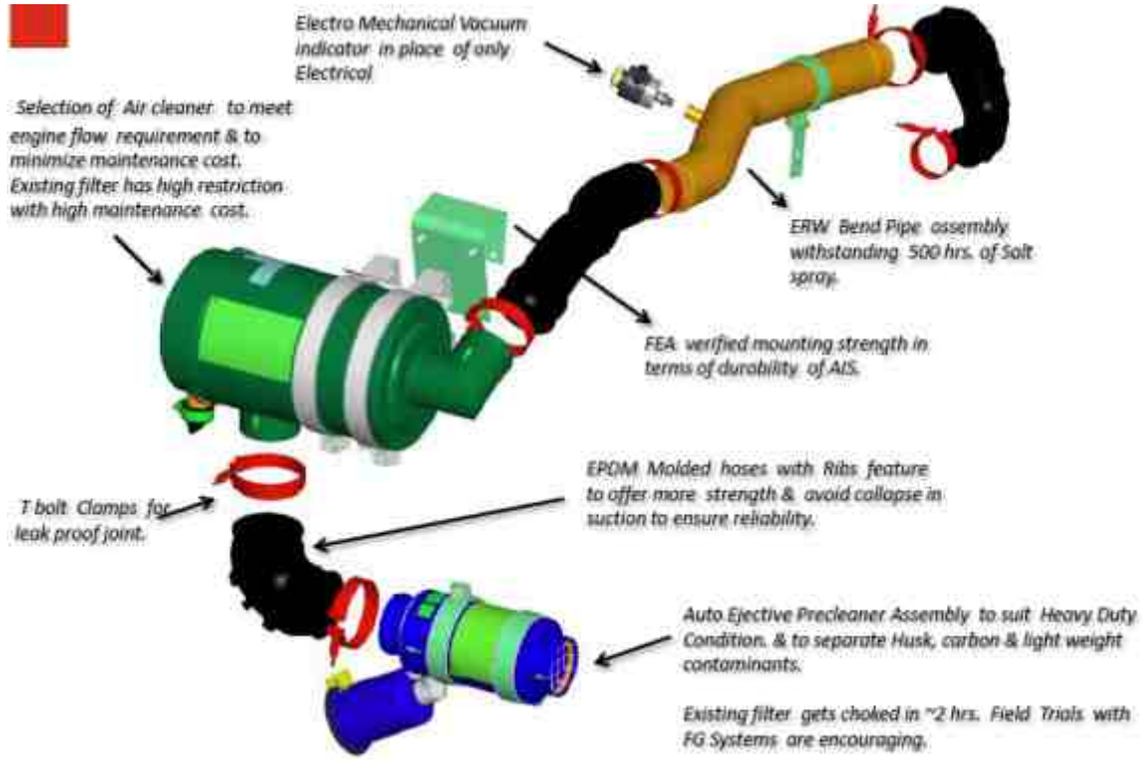
The company started its innovation project with field studies to understand the operation environment and get customer insights. They used an Analysis Led Design (ALD) approach for rapid prototyping and feasibility demo for new ideas. The pre-cleaner and auto ejection system-key features of their innovation-form a compact module and can be easily retrofitted to existing systems. This feature makes it easy for the customers to adopt their innovative solution. They did extensive field validation and user feedback for improving their innovative solution.

The Benefits

The farmer is able to use air-filter for 200 hours continuously in the same harsh environment. The positive impact of this innovation is clearly seen from the increased revenue from this range of air-filter products. Extending the change of interval from 8 to 400 hours directly gives the farmer a benefit of Rs. 200 to 225. In addition to this engine's health improves which considerably reduces its maintenance cost. The productivity is improved as the engine operation is uninterrupted by maintenance interventions.

The Future

The company created a new business opportunity from its innovation – the company did not have a business till last year for the supply of Air Intake System to tractor manufacturers. With this innovation, over the next three years, the company would like to extend its application to harvest in agricultural domain. It plans to develop both stationary and automotive applications as well. It is exploring another important application for extreme environment conditions like those in coal mines, where the surrounding air has a high concentration of dust particles.



Optimized FG design to reduce initial restriction as compared to existing complete responsibility of Air Intake system in terms of reliability, durability & maintainability.

HI-TECH Robotic Systemz Ltd.:
Indigenous Remote Surveillance & Reconnaissance Device
HRS Mole

09

ABOUT

The Hi-Tech Robotic Systemz Limited (THRSL) develops and deploys leading-edge robotics, computer vision and artificial intelligence solutions. As one of India's first mobilerobotics and AI ventures, the Hi-Tech Robotic Systemz has 14 patents state-of-the-art technology. The solution spectrum integrates products and services catering to the requirement of Defence, industrial and education sector. The company is associated with government defense labs and has also developed & delivered several unmanned robotics projects to the army, paramilitary forces and as well as private companies of India. Besides being involved in industrial automation, The Hi-tech Robotic systemz has developed educational kits and courses to help the budding minds with know-how in robotics.

The Hi-Tech Robotic Systemz Ltd. is one of the leading Indian Automated Guided Vehicles (AGV) solution provider that has helped the manufacturing sector to increase their productivity multi-fold and also work in a clean and pollution-free environment. THRSL is also moving into international business market and plans to go overseas soon.

The Innovation

Indigenous Remote Surveillance & Reconnaissance Device HRS Mole is a compact, rapidly deployed, remotely controlled reconnaissance & surveillance robot for identifying, monitoring and tracking intruders & threats. When deployed in a conflict area, it can detect the presence of enemy combatants, like terrorists holding people hostage, and transmit pictures of enemies and maps of rooms in real-time, to a receiver placed far away from the battle zone. This helps then security forces to get an idea about the danger inside without risking the life of a commando.

It is light, rugged and robust and has features like remote tele-operation, wireless transmission and night vision scope of work with a camera and is rugged enough to take a 30 feet fall during field operation. It can also be used for end to end integration of electro-mechanical systems applications, reconnaissance and surveillance, battle damage assessment and in pipe exploration, tunnel and other inaccessible areas.

In addition, the company has also provided Unmanned Aerial Vehicles. THRSL that has been working towards the development of mini and micro class UAVs for the Indian defence applications using lightweight materials and gimbal stabilized payloads indigenously.

The Approach

The approach of "To be With the Customer" is helping the company to achieve the realization of innovation in practical designing, manufacturing and production. Their in-house capabilities include systems engineering, architecting, designing, manufacturing and production. External networks have a very important role and the company has a thriving technology advisory board which includes professors from USA based universities, thought leaders of industry and famed designers. Quarterly, innovation process as well as products are presented to this group for their inputs on not only product design but more importantly on customer perspective and competition.

THRSL has been working with various strategic organizations such as DRDO, Department of Atomic Energy, Railways and several other private sector organizations, designing, developing and deploying special purpose robots /robotic systems such as CBRNe UGV, Tele-operated BMP Tank, Remotely Operated vehicles, Automated Guided Vehicles etc.

Due to Matrix organization and cross-functional teams, THRSL is able to achieve the success of innovating ways to release products in a cost controlled environment.

The Benefits

The innovation is designed to keep the soldier free from continuous monitoring of the target. Target tracking applications give live information about the target or region of interest to be in the FOV, so that soldier/commander can be free and more attentive to command the situation.

The company's innovations are technology centric and done indigenously thereby, restricting the outflow of foreign currency. The company has worked on 17 projects for DRDO , which provides 50 AGV system to industry and 50 sets of robots to defence and caters to 70 customers for design related requirements.

The Future

The requirement of robotic solutions is catching-up in their country. The company today, offers solutions in various domains of robotics. In the coming years, the company wishes to implement 'Innovation to Productization' as its USP while catering to production requirements of the market. The company aspires to lead the market to use their robotic solutions and prepare its elf for catering to the volume requirements. Also, the company will be taking their products internationally-not only to USA and Europe but also to the other south-East Asian countries.

ISK Bearing Industries: Innovative Bearings for Three Wheelers

10

ABOUT

A very small inception that took place in the year 1991 by the name of “Jay Khodiyar Engineering Works”, which was gradually converted to “Jay Khodiyar Industries” in the year 2007, later on by shaking-hands with “JEI Bearings”, the modest beginning of “ISK Bearings Industries” has taken place in 2010. ISK is a pioneer manufacturer of innovative bearings for ‘Three Wheeler’ application in India. ISK is also India's 1st manufacturer of wheel hub bearing units for the new Generation cars. ISK is also engaged into manufacturing of Wheel / DAC Bearings, Clutch Release Bearings, Tapered Roller Bearings, and Ball Bearings for cars. As a tech-savvy manufacturer of automobile bearings, ISK has brought some remarkable innovations into the bearings and using up-to-the-minute technology, ISK has invented the most advantageous “3rd generation Rear Wheel Hub Bearing Unit”, Front Wheel Hub Bearing Unit, Improvised Steering Column Bearing, and Slider Roller Bearing kit for Three Wheeler application. ISK Bearings Industries is located in Gujarat's top ranked industrial estate called “Metoda GIDC”; where all kind of basic and extraordinary facilities and services are easily available.

ISK Bearings Industries spread upon total 37,635 sq ft of base land with built-up area of about 25,000 sq ft. ISK Bearings Industries having state-of-the-art manufacturing set-up with latest machines like “ACE”- India made CNC, “ACE”- India made VMC, “INDUCTOTHERM” - India made Induction Hardening, “SRB” - India made Internal & External Grinding, “DISKUS WERKE”- Germany make Surface Grinding, “KOEBAU MULTIMAT” - Germany made Centre-Less Grinding, Vibrating, Washing, Imported Automatic Tube Parting, Laser Marking, Magnaflux Crack Detection (MPI) Unit etc. ISK Bearings Industries also has in-house laboratory, which is fully equipped with “MITUTOYO” make Coordinate Measuring Machine (CMM), Contracer, Roundness Tester, Roughness Tester, and Slip Gauge. ISK also has “OLYMPUS” - Japan made Microscope, Profile Projector, Hardness Testers, and other necessary gauges and instruments to follow in-house calibration under the strict quality control norms. ISK can produce 15 Lacs of bearings & 3 lacs of automobile components per annum.

The Innovation

ISK Bearings Industries has invented such a bearing that gives incomparable advantage like saving of fuel & grease and pollution control. It also contains the advantage of significant mileage increase of 9 kilometer, which is also confirmed & certified by ARAI (The Automotive Research Association of India). This is beneficial to the end users in terms of savings of fuels (CNG/Petrol), grease, increasing of mileage, increasing of extra income as well as socio-economical condition of auto rickshaw owners / drivers.

The Approach

The Wheel Hub Unit is a complete & ready-to-fit assembly, which doesn't require buying separate spare parts and thus it saves great time and money even in terms of loss of fair income & time when the vehicle rests into the garage for repairing purposes. It provides significant advantages to the end users like- The Advanced Technology; Increase of Mileage; thus increase of income; increase of socio-economical condition of the auto rickshaw drivers; saving of fuel; saving of foreign exchanges; Saving of grease; no recurring cost to the user; saving of time & money; reducing friction; helps to reduce CO_2 ration by substantially reducing engine load; thus helps to control the current global warming condition; smoothest driving experience; easy fitment; as a ready-to-fit complete assembly, there is no need to purchase separate spare parts; therefore, it does not require to avoid dimensional variations between different-different spare parts; zero maintenance product.

The Benefits

There has been a relief to the auto rickshaw drivers / owners, relaxation from refilling of grease is truly a headache for any auto rickshaw driver particularly the Bajaj (RE) auto rickshaw drivers. If they miss refilling the grease, they might have to suffer a lot. The innovative bearing is useful in this parameter. Saving of time & money is obviously a great relief for the auto rickshaw drivers / owners particularly when they are not required to drive their three wheeler to the garage for refilling of grease along with other minor repairing works very frequently. They can save a lot of time and earn more by avoiding a fair loss that arises from multiple visits to the garage.

More mileage means more benefits to the three wheeler owners, more earnings to the three wheeler drivers results into improvisation of their social & economic living standard. Saving of fuel which results in saving their precious and non-renewable natural resources, which saves foreign exchanges of our country. The various field tests conducted by ARAI are confirming that their innovative bearings are helping in tremendously increasing the mileage of the vehicle.

The Future

Currently, there are about 80 lacs three wheelers running on Indian roads. Some of the major three wheeler manufacturers are Bajaj, Piaggio, Mahindra, TVS, and Atul, who are holding about 90% of total market. ISK Bearings are already supplying their 1st, 2nd and 3rd generation wheel hub bearings under their "ISK" brand name. They are also supplying their Innovative Three Wheeler Bearings to one of the major players of three wheeler bearings their innovative bearings have vast potentials and they target a huge market with an aim to remain unparalleled (in terms of manufacturing capacity) as well as fulfill the demands of the market.

Jyoti Cero Rubber: Innovative Solution to Wear and Tear Problems in Processing Plants

11

ABOUT

Jyoti Cero Rubber is an ISO-9001-2000 certified company, which is managed by a professional group of technocrats, primarily involved in designing, finding solutions and innovating against the wear and abrasion problems in the processing plant for material handling system by using wide range of polymer and filler. Its major customers are steel industries, cement, power plants, aluminium plants and mining industries. It uses a slogan "Wear is unlimited...JYOTI CERO brings it within limits" and set its motto as "Innovate to enhance the life".

Jyoti Cero develops the products as per the working environment and requirement of machineries to achieve the maximum satisfaction of their customer and always aims to improve the quality with the help of in-house R&D and adopt new technology to meet the customer requirements & specifications whilst increasing the productivity. The rubber is widely used, ranging from house hold to industrial products, entering the production stream at the intermediate stage or as final products.

The Innovation

Hybrid Idler: The prior art of idler roller are made of ERW steel and have a wear life of approximately two weeks to three months depending on the environment in which they are used. In the most abrasive environment such as, slag and coke of steel industries and clinker of cement industries. Life approximately of 2-3 weeks and required for approximately four hours for replacing the warn out idler roller with a new one. The objective of this present innovation is to manufacture idler rollers with a high abrasive material to achieve longer life without charging the existing arrangement of conveyer belts.

The Approach

R&D development, innovation, continuous quality improvement and direct interaction with the end user are the company's USP, which gives the company a unique recognition in front of their customer as a trouble shooter.

The company has done an extensive study in the eastern zone where steel industries, mining industries, cement industries, power plants are situated in good numbers and has gained good opportunity. The company's USP is to develop the products as per the working environment and requirement of machineries to achieve the maximum satisfaction of their customer and always try to improve the quality with the help of in-house R&D and adopt the new technology with little modification to match the company's requirements to meet the customer requirement & specifications to increase the productivity.

The Benefits

The company provides the solution in the area of wear and abrasion of Indian industry, especially in the area of conveyor system of bulk material handling. It can be said that it is tri-bology related solution where engineering techniques are used to protect equipment and machinery from wear and abrasion. In Indian industries around Rs. 36,000 crore per annum loss is due to wear and abrasion effect. Innovation is the key factor of the company. From the day of foundation of the company, it has developed more than 25 products for the customers and has improved the life of plant and machineries from 8 to 10 fold and out of which 1 product is patented and one is under IPR process.

The Future

One of the company's innovated product “Hybrid Idler” has very high abrasion resistance properties and very low coefficient of friction. The unique combination of polymer and ceramic powder is coated on the idler by casting method and hence is an integral part of the unit. The hybrid idlers have worked dramatically well — the lifespan has been extended eight-ten fold as compared to conventional Idler. In the course of marketing survey, the company came to know about the total business potential of “HYBRID IDLER” in India. They have done this survey in division of four zones (East, West North & South). As per the company's survey, the market potential of “HYBRID IDLER” is around Rs. 3.85 Cr. for 27 km of conveyor belt / year in Tata Steel alone and total network of conveyor belts in Tata Steel is 120 km. (approx.) so that the company can understand that there is huge opportunity in the market. As per the company's survey held all across India, it can be easily calculated that the placement turnover of “HYBRID IDLER” , which comes to minimum 200 -250 Crore in a year .

L&T Electrical & Automation: Radiation Cross-Linked Thermoplastics

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ABOUT

L&T Electrical & Automation deals with low and medium voltage switchgear products, electrical systems, energy meters and automation solutions. Its products and solutions address the power distribution and control needs of segments like industry, utility, infrastructure, buildings & homes and agriculture. A major strength of L&T is its in-house design and development centre for switchgear as well as a tooling facility that designs and manufactures a wide range of high precision tools, a pre-requisite for high quality products. The manufacturing operations of these businesses are located in India as well as in Saudi Arabia, Jebel Ali (Dubai), Kuwait, Malaysia, Indonesia, Australia and the UK.

The Innovation

L&T recently pioneered the use of radiation cross-linked thermoplastics in the Electrical applications industry which promises to significantly bring down material intensity of electrical products while reducing the time required for production.

Radiation cross-linked thermoplastic has compact product design with no melting and limiting use of metal hardware. It also ensures no powder formation. Since electrical equipment tends to get heated during use, for heavy duty products traditionally thermoset material is used in the industry which is immune to increase in temperature. But this calls for increased use of plastics apart from requiring more time for manufacturing.

L&T have been instrumental in creating the first in-house vacuum circuit breaker testing fixture in the electrical switchgear industry. This traditionally is an unwieldy process requiring significant time and skill for testing the products. With the fixture developed by L&T E&A the cycle time for production of MV switchgear particularly the VCB has reduced significantly. This fixture is suitable for conveniently testing on the shop floor while eliminating the requirement of skilled manpower for VCB testing.

The Approach

L&T E&A continuously promotes a culture of experimentation that facilitates innovation and creation of intellectual property. It has filed over a 100 patents every year consecutively for the last 7 years and over 150 patents consecutively for last 4 years. The In-house design and development centre and tooling facility bring a strategic edge. They use techniques like creative problem solving process, green hat sessions, brainstorming, innovation workshops etc. The Product Development System (EPDS) implemented since 2005, is a robust product development and management system to carry a product idea all the way through to the market. The company's structured innovation process (iP3) facilitates experimentation with ideas pertaining to processes, business model and delivery mechanism etc.

The Benefit

The radiation cross-linked thermoplastic has seen annual recurring savings of Rs. 20 lacs and a revenue generation with new products of Rs.100 Crore while the VCB testing innovation has seen annual savings Rs. 24 Lacs.

The Future

With its strong R&D base, a climate and culture of innovation brought a structured facilitation mechanism many more pioneering innovations are most likely to happen at L&T Electrical & Automation.

TODAY'S MSD

with you at every stage of life

MSD Pharmaceuticals Pvt. Ltd.:
Project 'Sambhav'

13

ABOUT

MSD also known as Merck & Co is United States based company which is an innovative global health care leader which is committed to improving health and well-being around the world by bringing the first and best-in class medicines and vaccines. The company offers a diversified portfolio of prescription medicines, vaccines and animal health products. Since its existence in India, the company has moved quickly in laying the foundation for a business that is differentiated by its focus through launching innovative products relevant to India. MSD in India currently operates in various therapeutic areas in human health, including metabolics, cardiovascular, vaccines, critical care, virology, oncology, women's health, dermatology, respiratory, and primary care, and offers a strong and diversified product portfolio of 60 brands in total. MSD has won multiple industry recognitions for their programs and initiatives. It's the recipient of Golden Peacock Award, Best Employer for Women Award; Healthcare Leadership Award for Marketing Campaign and the OPPI Marketing Awards for best Campaign for existing and new products.

The Innovation

Project 'Sambhav' was one of the innovative access initiative in healthcare which is a multi-stake holder, multi pronged approach to facilitate the treatment for Hepatitis C in India. The project was launched in India in 2012 with an aim of providing sustainable access to treatment by combining disease management with a micro-finance based solution. According to survey conducted by WHO, India has more than 12 million patients infected by Hepatitis C, thus making it a major health threat. Looking at the serious nature of the disease, the treatment rate in India is less than 1% due to various economic and non-economic barriers, this is what gave birth to project 'Sambhav'.

Prior to launch of this program, MSD used to focus only on the traditional methodology of promoting the medicine in the Hepatitis C treatment area. MSD India launched a medicine pegylated interferon by brand name ViraferonPeg for the treatment of this disease. However, they soon learned that the new medicine was affordable only for 3-5% of the population due to various market issues. Due to these reasons, MSD decided to focus on solving various patient-related barriers to increase treatment rates. The strategic rationale for this program was to reduce all the barriers of treatment of Hepatitis C and move towards expanding access to at least 40-45% of the population by offering services like Sambhav program along with the medicines.

The key highlights of this project are Integrated Disease Management Support from disease awareness to treatment and rural financial inclusion. The program also includes broad sections of the rural community, covering those without prior banking exposures to enable access. The program is built on the premise that bottom of the pyramid based on economic status of population doesn't subsidize for those who can afford therapy. The program effectively provides zero percent interest loan if the same is spread over a certain period of time and the payment on the program is subject to treatment success. The first phase of project 'Sambhav' was launched in Punjab as the state has the highest prevalence of Hepatitis C in India.

The Approach

The dismal treatment rate of 1% for Hepatitis C in India, set the team of MSD to address this issue. The complex problem of awareness, economic and non-economic barriers was disaggregated and a solution set for each was sought. Best practices were drawn from other industries like automobiles, micro-finance, real estate and FMCG. MSD then set up a multi-stakeholder task force representing global, regional and local teams from multiple departments like strategy, sales, medical, compliance,

legal, and finance. This team also included external stakeholders like physicians, who are experts in treating hepatitis, supply chain partners and patient groups. After that extensive market research was conducted by MSD to re-validate hypothesis on customer behaviors related to disease management and barriers thereof. Another hurdle that was faced during the initial days of project was slow uptake of implementation. There were several reasons for slow uptake including credit policy misalignment - the patients largely hailed from rural and farming background without any credit history or documented income proof. This hindered designing of balanced credit policy and objective income assessment.

The Benefits

The results of the project have been encouraging with more than 500 patients successfully initiated on therapy via project 'Sambhav' in 2013 and more than 1000 patients till date. This represents approximate 20-25% of the treated patient pool in Punjab (Total of 2000-2500 patients seek treatment every year in Punjab). The program has successfully established proof of concept in providing access to treatment beyond the upper 2-3% of the general population. The income profiles of enrolled patients reveal that greater than 80% of those on the program belong to the middle and lower income groups. Greater than 25% of the patients accessing treatment in program operated territories were through project 'Sambhav', which indicates increased access and treatment rates in the targeted geographies.

The Future

Program like project 'Sambhav' has direct application in all countries where a large segment of the population pays for healthcare out-of-pocket. The cost of healthcare across the globe is increasing as a result of increased technology, aging population and rise of life style diseases. In this context, this innovation can meet the healthcare needs of a significant part of the population in a sustainable way without putting significant economics train on families. Thus, project 'Sambhav' has applications across multiple therapy areas and across multiple geographies where non-economic and awareness barriers play a major role, in addition to economic barriers as well as where funding for healthcare is predominantly expensive.

Praj Industries Ltd.: The 'EcoSmart' Way of Taking Bio-Based Technologies to the World

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ABOUT

What started off as an entrepreneurial venture three decades ago, is today considered to be India's one of the most successful bio-fuels company, which takes bio based technologies from India to the world. Praj Industries offers innovative solutions for beverage alcohol and bioethanol plant, brewery, water & wastewater treatment plant, critical process equipment and systems and bioproducts. It is also a globally leading company with over 600 references in more than 60 countries across 5 continents, acquiring an international repute for responsible and reliable solutions. Its core business of ethanol & brewery forms 80% of its top line. Praj has made specific efforts over the past three decades in enhancing energy efficiency of plants, reducing water intake for process and making distillery plants recycle, reusing the waste streams in order to reduce their impact on environment. 85% of ethanol in the world is consumed as fuel ethanol. Company has well equipped manufacturing facilities - one in Pune and two at Kandla (Gujarat), ports of India and another at Wada near Mumbai. The units are accredited with ASME 'U' and 'H' stamps and ISO 9001-2008. Equipment engineering and fabrication is in accordance with international standards and codes. Praj has recently come up with a world class manufacturing facility for its Industrial Biotech Products and Processes (IBPP). Praj employs more than 1000 professionals in India and overseas from various engineering and other disciplines.

The Innovation

The innovation termed as EcoSmart suite of technologies helps quick scale up of plant without investing substantially into capex. For example, any capacity enhancement would mean investing into a new boiler which involves substantial capex. With the steam integration, as part of the EcoSmart technology, one does not need higher steam consumption. The plant also enables the investor to diversify his portfolio of products. The offerings not only help the customer derisk his business by diversifying the product portfolio (he can produce different grades of ethanol like fuel, beverage or pharma / perfumery grade), thus, enhancing the quality of beverage grade alcohol thereby making it possible for him to charge higher price for different grade of alcohol. The offerings help the customer reduce steam / energy cost thereby saving on opex. It also helps the customer to fulfill his environmental obligations by reducing carbon footprints, as lower energy means lower water consumption. However, there were few hurdles that the company had to overcome. First difficulty that the company had to face was of balancing out capex and opex though it was a challenge but, to start with the idea was to optimize the opex and reduce the total cost of ownership of the solution. Another hurdle was to market it to the customers when they had already spent on the Greenfield project - the payback was demonstrated through audits by customizing the solution as much as possible. Funding solution for such a short term investment was also a critical issue.

The Approach

Customer feedback was gathered through customer satisfaction survey or through direct interaction with customer. Also, through annual technology meet which has a separate interaction with regional entities on the same. A separate group called Centre for Innovation and Applied Technology would take up the feedback starting with problem statement. Literature and IP survey was undertaken. A stage gate system was put in place to take the ideas forward. Process simulation and piloting was then undertaken which was followed by extensive experimentation trials on plant scale. Customer feedback was again gathered, based on product sample, etc.

The Benefits

Praj expects improved customer engagement and higher customer satisfaction as one of its key objective in the area of customer satisfaction through innovation. This will help the customers to face challenges in any economic situation and provide greater flexibility with respect to changing of demand climate. However, this innovation takes root, company then expects the industry benchmark with respect to steam and water to move down by 30-35%.

The Future

The approach Ecosmart is a new process, which will produce all the above products simultaneously with 30% less energy than the conventional process. Normally, any product flexibility would have required higher steam consumption in the plant. All existing plants globally operate on the conventional system of distillation. A separate identified organization has been created which will first audit plants and then implement the innovation at each client location. A detailed marketing strategy and an approach has been drawn up for each region.

Ravel Electronics Pvt. Ltd.:
EKONICS & AVANI- Fire Alarm System

ABOUT

RAVEL ELECTRONICS Pvt. Ltd., since its inception in 2003, has quickly moved to the forefront as a leading manufacturer and supplier of complete range of Microprocessor-based fire alarm control panels. Ravel always meets the expectation of consultants, architects and customer by providing quality, reliable and authentic products. RAVEL'S dream is to design & develop a safe and secure environment for every commercial and industrial establishment. RAVEL strategically develops customized products and possesses latest state of the art design and technology. We also provide world-class products, services & superior value for money, pursuing quality management system in compliance with international standards. The UL certified panel ensures not only timely detection of a fire incident but also reduces false alarms, which pose as one of the worst threats to most of the fire alarm panels. Ravel deals with a wide range of fire detection systems, including conventional and addressable systems. RAVEL has a manufacturing capacity of over 10000 panels per annum which covers microprocessor-based addressable, conventional , gas release as well as repeaters. Their factory trained, fully competent and committed technical team stationed at headquarters is ever ready to attend to the customer calls with the least down time. The products at RAVEL are maintained by qualified professionals. We are fully equipped with relevant calibrated measuring & testing instruments and use necessary dyes, tools, jigs and fixtures for all operations. Ravel's work environment is static free and possesses advanced manufacturing system starting from component forming to wave soldering machines for required systems and assembling. They maintain well stacked inventory of raw materials, semi-finished & finished goods handled by qualified professionals. RAVEL has established itself as a brand in foreign soil and is successfully exporting its products in various countries across the world. Distribution of these products for use of consumers or business users was achieved using direct or indirect means through intermediaries.

The Innovation

Fire Alarm System which monitors any occupancy and notifies in case of fire with an audiovisual alarm. EKONICS-creating a review process allows growth of innovative and valuable ideas. Refining, developing and identifying these ideas with the potential brought the creation of EKONICS [Digital Alarm and Voice Evacuation System] at RAVEL. EKONICS became a well-supported and recommended product due to its effective evacuation of an area or building under fire or any other emergency with assisted live announcements during times of panic and confusion. The product carries some unique features like loop capacity, IP based networking for remote monitoring and controlling, redundancy in case of failure of power supply board, substantial reduction in length of cable used in the project. Other similar imported brands are at least 60% more expensive than their solutions.

AVANI-analogue addressable fire alarm control panel also developed by the core technical unit at RAVEL is a cost effective intelligent addressable fire alarm control panel having an extensive list of powerful features. It combines user friendly circuits with device/detector wise configuration facility.

The Approach

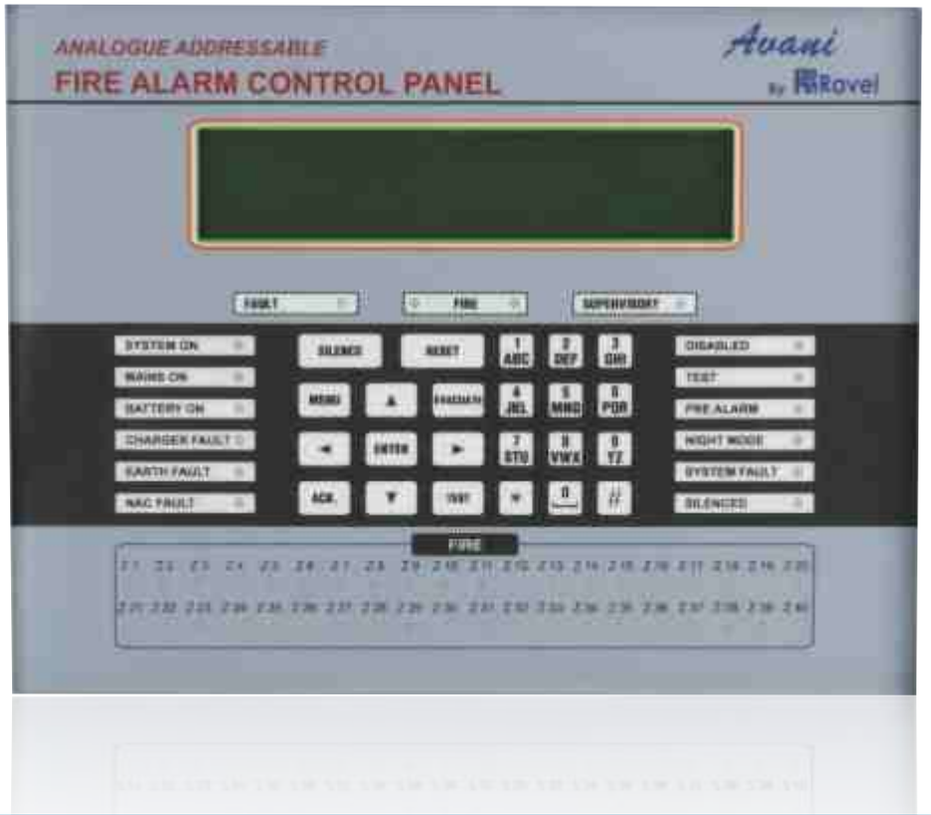
Earlier there was a separate system to monitor gas and fire. The company has integrated gas detector with the fire alarm panels. As detectors measure a specified gas concentration, the sensor response serves as the reference point or scale. When the sensor's response surpasses a certain pre-set level, an alarm will activate through the panel to warn the user. A voice evacuation system is installed with the safety of staff and general public in mind. It is a system that assists in the effective evacuation of an area or building during a fire or other emergency. All broadcasts, be it live announcements or continual music, can be sent to all areas of a site or to selected areas (referred to as zones). Research has proven that in an emergency people will react without confusion or panic if they receive a clear, intelligible message. These messages are stored within a voice alarm system.

The Benefits

Ravel has been a part of the global network through FIRE & SECURITY ASSOCIATION OF INDIA (FSAI) which is a non-profit organization representing the fire protection, life safety, security, building automation, loss prevention and risk management domains. To foster a spirit of safe living among all citizens of India and inculcate a proactive mind-set towards safety and security at all times, is one of the association's primary aim.

The Future

One major activity is to setup their own state of the art production centre in the vicinity of Chennai. Once this is done they will commence manufacturing of the detectors, which would help the organisation to do away with the import and this would in turn benefit the nation at large. The proposed production set up would also facilitate production of projected panel and devices growth in India and export markets. On the product side work is in progress to launch the 12 loop addressable panel with integrated voice evacuation and fireman telephone. This range would put their company in the premium category, where only multi nationals like UTC and Honeywell can compete and in turn would also permit them to start focus on high end projects with devices ranging from 5000-10000 nos. Targeting the introduction of e-commerce, products from Ravel as a local manufacturer and a 24x7 customer help line will provide customer satisfaction and many customer benefits. This would also add to their efforts of reaching the 100 Cr. mark through high-value orders. Centralizing all the outsourced products concerned with fire detection and alarms, they will be manufactured by Ravel in the next three years time. The company also aims to obtain EN certification for the entire range apart from existing UL certification, in order to enter European market. Develop and deliver systems to work on a single pair of cable handling fire, public address, telephone and third party controls.



Sesa Sterlite Ltd.:
Unique and Innovative Red Mud Filtration Process

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ABOUT

Sesa Sterlite Limited ("Sesa Sterlite") is one of the world's largest diversified natural resource companies. The company's business primarily involves exploring, extracting and processing minerals and oil & gas. The company produces zinc, lead, silver, copper, aluminium, iron ore, oil & gas and commercial power and has presence across India, South Africa, Namibia, Ireland, Australia, Liberia and Sri Lanka. Sesa Sterlite has a strong position in emerging markets with over 80% of its revenues from India, China, East Asia, Africa and the Middle East. Sesa Sterlite is a subsidiary of Vedanta Resources Plc and is listed on the Bombay Stock Exchange and the National Stock Exchange in India and has ADRs listed on the New York Stock Exchange. The Alumina Refinery at Lanjigarh includes other associated facilities such as a 75 MW Captive Co-Generation Power Plant (CCGPP), 65 Kilometer Water Pipeline from Kesinga to the Plant and 16 Kilometer long Railway Corridor connecting the refinery to nearby Ambodala Railway Station. The company is planning to expand the plant from 1 million to 6 million TPA. This is the only Alumina Refinery in the country having successfully implemented Zero Discharge System and actively working on the Zero Waste Project for the first time across the globe.

The Innovation

Unique Powdery Red Mud Filtration unit - One of its kind in the world

Lanjigarh refinery disposes red mud slurry contains 505% solids using high pressure diaphragm pump and is highly alkaline (pH:12). Red mud is usually discharged into storage impoundments where the solids settle and consolidate and alkaline water accumulated at the top is removed. Therefore, this idea was generated to store the red mud in dry powdery form instead of slurry form to prevent environmental impacts like leakages, erosion of red mud and discharge into nearby surface waters as well as minimizing the land requirement for storage. It is a unique automatic system developed for the first time where all the risks of red mud pond have been eliminated.

Since powdered red mud is having alumina content of 22-23% and enriched iron content of 43-45%,, it is being used as a raw material in cement industries, replacing laterite, which has led to reduction in harmful gas emission like hydrogen sulphide.

Further, powdery red mud is also utilised in construction material. The land requirement for storage of red mud can be reduced to the level of 40-50%. The wet storage of red mud can be eliminated completely, thereby reducing environmental risks to a great extent. RMF unit has successfully reduced caustic loss by 20%, leading to equivalent reduction in caustic import. This has resulted to a reduction in carbon footprint.

The Approach

The vision has enhanced business performance through innovative waste management practices "waste to wealth".

Innovation is the core competency of Vedanta framework along with the other thrust areas like safety, technology, sustainability and governance. The unit has taken up lots of R&D and pilot test works with renowned institutes, both at national and international level for complete utilization of red mud. Test results, as obtained under different process simulation conditions, showed encouraging results. Commercial viability of these innovative projects is in progress to implement them under plant scale.

The unique project of producing red mud powder has been commissioned in a fully mechanised and automatic plant in November '13. The system has been developed in-house after continuous research for more than three years. RMF was executed successfully under the direct leadership of unit head. In order to bring in more focus on "Zero Waste" alumina refinery concept, the unit head has taken up "100% utilization of red mud into value added products" as one of his Key Performance Indicator (KPI).

Lanjigarh team strongly believes that an innovative culture requires advancement in processes for discovery, experimentation, and developing portfolios of options. So it has created a well-defined set of innovation competencies and majority of the team members involved in this project are designated star performers.

Keeping up with this waste to wealth approach, the company has also worked towards complying the MoEF notification by undertaking bulk utilization of fly ash in cold setting, cement-free green concrete manufacturing which is one of its kind in the world.

The Benefits

Successful waste to wealth is implemented. The company has installed red mud filtration plant for 1 million tonne per annum alumina production which is a big success and proven financial benefits along with addressing environmental concerns. And there is reduction in additional land requirement by more than 50%. There is also a probable recovery of iron & titanium and aluminium purity is premium due to less V_2O_5 content in product alumina. The innovation also helps to foster eco-friendly environment and is a role model for other refineries. There is reduction in caustic import which minimizes the carbon footprint. As part of the CSIR project, the company promotes green concrete making without capital cost in villages.

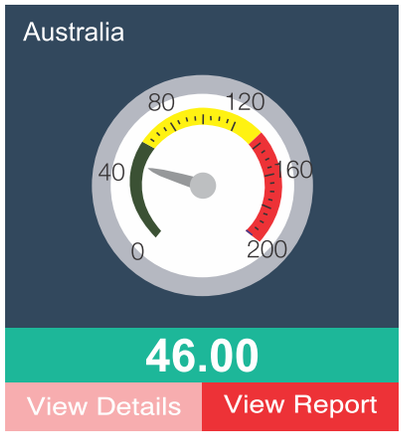
The Future

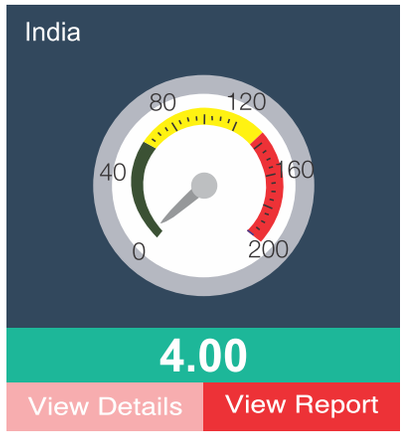
As of now 50 KT of powder red mud has been utilized in cement industries and 1.5 -2 lacs MT lined up for sale. The company has tie ups with renowned national and international institutes for 100% utilization of red mud. Enrichment of iron and titanium by 50% in treated red mud has been achieved in R&D activities and feasibility studies are underway for setting up on plant scale. Successful implementation of iron and titanium recovery projects will ensure 100% utilization of red mud into value added products. This will create a new benchmark in the field of aluminium business thereby, ensuring fullest utilization of red mud into profitable business opportunities.

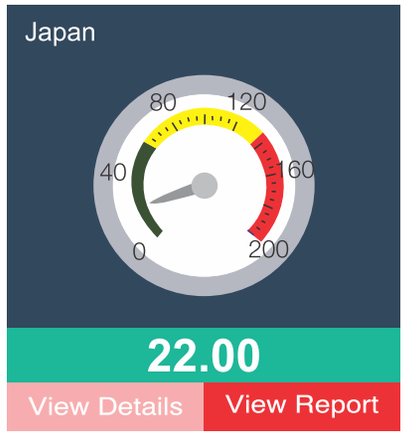
Through achievement of these goals, aluminium metal can be identified as a "Green Metal". This will help to give aluminium business a competitive edge over the other metal business. India will become the leading metal producer of aluminum in the world.

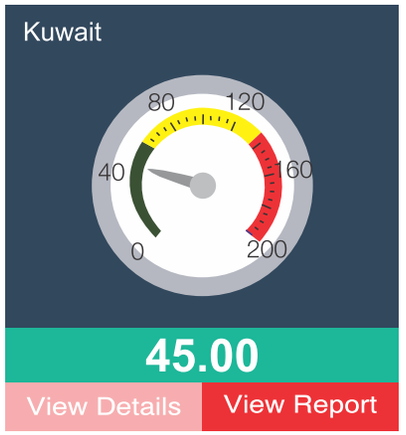
Fly ash utilization in geopolymer concrete is started in the group companies with a vision to stop cement usage. The company is interacting with its group companies and is transforming the use of technology in their associated locations. The company is aiming for zero cement use in its group locations by replacing it with the geopolymer concrete for the next three years so that 100% fly ash utilisation can be achieved.

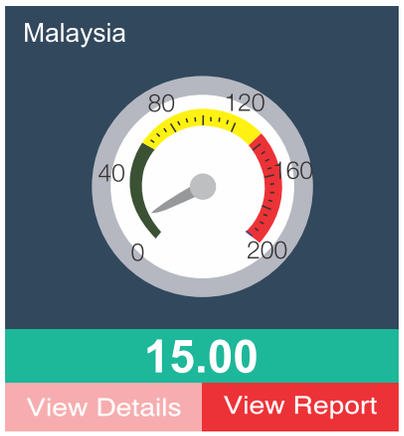
The company is setting new benchmark in aluminum business in converting waste into value added products. At present, the company is producing vanadium sludge of 100 tonnes per month. It has already initiated the project of producing 220 tonnes per month. In coming years, as the expansion of 5 million tonne per annum alumina refinery is about to commission, the company will replicate the same process for additional vanadium sludge production.

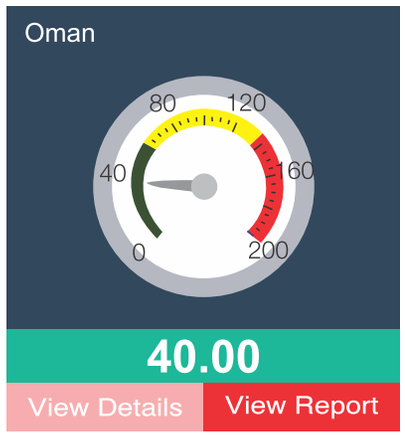


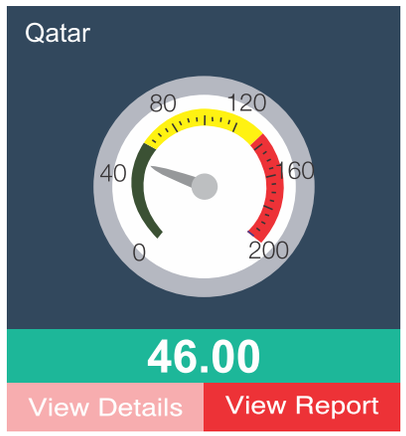


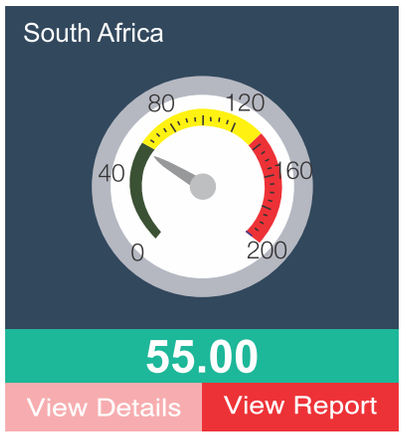












SIERRA ODC Pvt. Ltd.:
eFACiLiTY® an innovative Software

ABOUT

SIERRA ODC Private Limited, the developers of eFACiLiTY-Enterprise Facility Management Software was founded in 1998 with its headquarters in India and operational offices in Singapore, Malaysia, USA, Middle East and Africa. Since its inception, SIERRA has steadily established itself as one of the leaders in providing IT solutions for top enterprises worldwide. SIERRA today has an exalted clientele that encompasses 20+ fortune, 500 customers and 10+ government organizations in its clientele with 80% of its business comprising of software exports.

SIERRA stands out in today's technology market with its innovative product eFACiLiTY®-Enterprise Facility Management Software that addresses entire facility management operational requirements like asset management, property management, maintenance management, energy dashboards, visitor management, facility booking, space management, tenant billing, resource management, time and attendance management, travel request management and mail room management requirements.

The Innovation

SIERRA's hallmark feature to stand out in today's scenario is their innovative product eFACiLiTY®- Enterprise Facility Management Software. eFACiLiTY® is today India's leading facility management software and competes in Middle East, Africa and Asian markets with world's leading products in the same space like IBM's Maximo and Tririga, Archibus, FSI etc. This product is completely developed by SIERRA; it owns the IP of this product.

eFACiLiTY® provides a complete perspective on the facilities operation by bringing together space, people, assets and maintenance into a single system. By combining this information together, it provides unique views on the overall performance of the facilities, resulting in more informed decision made at lesser costs and efforts.

The Benefits

eFACiLiTY® includes a software which understands the exact nature of the problem, generates a maintenance work order with the directions to fix the problem based on the best practice that is defined by the manufacturer of the equipment, lists the technicians, tools and spare parts required, gives safety instructions to take care while fixing the problem, generates work order, automatically sends SMS / Email alert to the technician or external contractor. The technicians fix the problem even before you realize that the equipment has broken down and all this happens in minutes without failure. This applies to any critical and non-critical equipment like ventilation systems, security systems, power systems or any kind of electro-mechanical equipment.

The system detects visitor movements and reduces energy wastage owing to intelligent and innovative management of lighting, project on systems of meeting rooms and conference halls.

eFACiLiTY®, today, competes and bids for tenders against world's leading CAFM products like IBM's Maximo and Tririga, Infor, Archibus, FSI etc. and has won many of the tenders against them at several occasions for both government and enterprise level projects. eFACiLiTY® has been successfully implemented to manage large buildings and infrastructure for clients across the globe.

The Approach

The company originally being a pure services company has a stronghold in hardware integration / automation technologies and vast expertise in developing enterprise level software projects for enterprises across multiple industry verticals. SIERRA has developed a highly automated *Warehouse Management System Integrated* with *Automated Storage & Retrieval system (ASRS)* to manage one of Asia's biggest automated warehouses for the world's largest 2-wheeler manufacturing company integrating with Muratec, Japan's Automated Storage & Retrieval System (ASRS). Similarly, SIERRA is also implementing a Warehouse Management System's (WMS) integrating with Automated Storage and Retrieval System (ASRS) for *Bharatiya Reserve Bank Note Mudran Private Limited*.

The Future

SIERRA aims at making eFACiLiTY®, as the world's best and most innovative Facility Management Software. For this, SIERRA is pursuing a full-fledged execution towards scaling up the reach of eFACiLiTY and extending eFACiLiTY's innovative capabilities and functionalities. The company has a dedicated, highly motivated and skillful team that is continuously working on extending the features of the product, implementing new technologies and improving the integration capabilities with a plethora of automation and control systems to improve its mindshare and market share in the FM industry. SIERRA believes that there is a great potential for eFACiLiTY® in the global markets – with most buildings becoming smarter, increasingly intelligent, environment friendly and energy efficient.

Southern Agro Engine Pvt. Ltd.:
Vijay Single Row Paddy Weeder

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ABOUT

Southern Agro Engine Pvt. Ltd. (SAEPL) is an industry engaged in the manufacturing and marketing of IC Engines, agricultural implements and construction equipments from 1998. It is an ISO certified company with all products approved by all State and Central governments for subsidy scheme. The company makes sure that all the engines are certified with BIS standards and the power tillers are also certified by FMTTI. Many of its agricultural equipments have also won certification from leading agriculture universities. Some of the company's foreign clients include Sri Lanka, Bhutan, Middle East and East African countries.

The standout point of the company is that the products are manufactured as per the farmer's requirements and demand. The team is backed by a strong team of engineers, who are engaged in the continuous improvements of products and innovating new products after regular interval of time.

The Innovation

SINGLE ROW WET PADDY WEEDER

This innovation is first of its kind in the field of agriculture. This is designed keeping in mind the different types of farming across India. The single row wet paddy weeder has a facility to adjust the weeding width to accommodate the row patters from 150 cm to 300 cm of row plantation. Maximum weeding is ensured by the ergonomically designed hydro-profiled float and this enables maximum and effective usage of fertilizers and higher yield. This innovation has redefined powered paddy and for the first time a float is used in a powered single row wet paddy weeder of this class. The design of the float forcefully directs the weeds towards the tines to ensure effective weeding. The float is scientifically redesigned to ensure diversion of the wet soil towards the stem of the paddy for better strength of the standing crop. The innovation is stronger since material of the tine blades ensures better performance and life. The overall structural design not only makes it user friendly but also ensures better soil agitation and aeration. The product is tested and approved by agricultural ministry authorized universities & agencies for government subsidies which is beneficial for the farmers. The product has been applied for patent rights and applied for industrial design rights.

The designing of the machine involved vast research and studies. The innovation engaged the end user by finding out its need and requirement and taking technical assistance from experts outside the company and functions were further improvised by consulting various agriculture institutions.

Factors such as human fatigue were observed during the usage of the equipment. The float was designed to overcome this. To make the machine more user and gender friendly the weight was scaled down to under 15 kgs. Changes were made by introducing a carry handle which enabled single person to carry and shift between rows. The handle was re-designed to split handle type to accommodate the product and fit into defined size of a carton box. The product was designed in such a way that it eliminated the requirement of a trained technician for assembling at the customer end. The final hurdle was to make it cost-effective to the customers, the machining and manufacturing process were re-defined without compromising the quality of the product.

The Benefits

The Single Row Paddy Weeder has the maximum weeding effect because the weeds are forcefully directed towards the tines due to the design of the float. The weeds are cut and removed along with the roots giving the maximum effectiveness of weeding, and increase in yield. The combined functions of tine's and the float makes for a good agitation of soil and improves the aeration of the soil while at the same time the soil is diverted towards the paddy plant giving additional strength to the standing crop, which helps in the growth of healthy roots vital for good growth of the paddy and results in increasing the yield. The compact design of the product gives an added advantage as the storage place required is very minimal as compared to other powered paddy weeding equipment's. The machine is also easy to maintain since it requires minimum maintenance. No trained technician is required to assemble as the product is directly functional. The product helps the customer overcome manpower shortage issue and achieve effective weeding at the same time.

The Future

The company's long-term goal is to become a complete solution provider for mechanization in agricultural field. The company aspires that every paddy farmer in India should be a proud owner of this product in the next 3 years. The company is working at creating awareness of the product among the farmers by different means of promotional activities and enhancing government support to farmers by means of subsidies.

TATA Chemicals Ltd.: Fossence for Healthy Gut and Weight Management

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ABOUT

Tata Chemicals Limited is a global company with interests in businesses that focus on LIFE: Living, Industry and Farm Essential. Through Living essential portfolio, the company has positively impacted the lives of millions of Indians. Tata Chemicals is a pioneer and a market leader in India's branded iodized salt segment. With rapid urbanisation and threat of life style diseases, there is an increasing demand for ingredients which fortify and enhance functional benefits of popular foods without altering taste and texture of existing food preparations. There is also a need for more Indian players who can provide such ingredients with a clear understanding of the needs of the local Indian consumer's tastes . The work at their Innovation Centre thus, focuses on enabling Tata Chemicals to become a significant provider of nutritional ingredient and solutions. Tata Chemicals innovation centre is home to world-class R&D capabilities in the areas of nano technology and biotechnology. The company's centre for Agri-Solutions and Technology provides advice on farming solutions and crop nutrition practices. Inline with its mission, 'Serving Society through Science', the company is applying its expertise in sciences, to develop high-tech and sustainable products. Tata Chemical's mission, vision and values are deeply rooted in the principles of sustainability. Tata Chemicals set up a non-governmental organisation–Tata Chemicals Society for Rural Development (TCSRD)– that works towards holistic community development, including managing water, land and other natural resources, encouraging enterprise development, and promoting health and education. TCSRD's activities have been recognised at a national level.

The Innovation

Tata Chemicals launched FOSSENCE™ (Fructo-oligosaccharides) one of the nutritional products developed in-house. FOSSENCE™ is one such natural ingredient which can provide useful nutritive benefits by powering food with prebiotic dietary fibre. FOSSENCE™ is a natural,100 percent soluble dietary fibre that is used in a wide variety of food stuffs to boost nutritional and health value. It is one of the most popular prebiotics; it is not digested by the enzymes of the stomach and the small intestine but easily fermented in the large intestine leading to selective growth of healthy bacteria and suppressed growth of pathogenic ones. While the recommended total dietary fibre intake is 21gm to 38gm for adults, the consumption, in reality, is much less. FOSSENCE™ can help bridge this gap.

The Approach

The process for idea generation was based on bottom up approach, where all the researchers joined in brain storming session and listed all possible ideas considering biotechnology as platform for wellness food sector. During this process, scientists also focussed on generation of intellectual property (IP) and care was taken to avoid any infringement.

The Benefits

Tata Chemicals Limited developed a patented technology for the production of FOSSENCE™ enabling them to produce high purity product that has competitive advantage over existing products. Successful implementation of their innovative technology for manufacturing of FOSSENCE™ (Fructo-oligosaccharide, FOS) has boosted Indian food manufacturing ecosystem by substituting currently being imported FOS with FOSSENCE™. New products in various categories like bakery products, cookies, nutri-bars and various Indian sweets have been launched using FOSSENCE™ as an ingredient. This lead to increasing the fibre content of these products which helps in addressing the fibre deficiency among Indian consumers. Apart from providing all the benefits of a prebiotic dietary fibre, FOSSENCE™ also helps in improving the taste, texture and over all sensory profiles of the food products in which it is incorporated. As a prebiotic dietary fibre, it provides improved digestive health by promoting growth of healthy bacteria in the gut and increased absorption of minerals such as Calcium, Iron, Zinc and Magnesium.

The Future

The importance of innovation is embedded in the mission of Tata Chemicals as "Serving Society through Science". The mission of Tata Chemicals Innovation Centre has been defined as to be a world-class R&D cluster that would drive the creation of innovative, sustainable technologies and businesses for the well-being of communities nationally and globally. The company aims at becoming the preferred supplier of prebiotics in India and among the top 3 in the world, emerging as a solutions provider in Gut health and Weight management, supporting the ecosystem for high quality specialty ingredients manufacturing in India for domestic as well as export markets, providing science-driven and innovative solutions to customers in the areas of Gut health and Weight management and have a positive impact on public health.

iON Assessment Management

TATA CONSULTANCY SERVICES

Overview of iON Assessment Lifecycle Management (ALM) Solution

TATA Consultancy Services Ltd.: Revolutionizing Examination Process

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ABOUT

TCS is in business from the last 46 years with consolidated revenues of USD 13.44 Billion in fiscal year 2013-2014 together with a consistent 27.81% CAGR since 1998. TCS is a pioneer amongst IT companies globally and a mega player offering consulting-led, integrated portfolio of IT & IT-enabled services delivered across all major geographies through a unique onshore-offshore model i.e. 'Global Network Delivery Model TM '. The model offers multiple levers of time zone, language, skills and local business knowledge to deliver high quality solutions across the globe, 24x7 with globally connected workforce, seamless integrated delivery processes & through multi-tiered infrastructure. TCS has firmly established its presence in the global arena by consistently winning large deals such as USD 100 Million (2) in Q1-14.

TCS delivery mechanism is through its Independent Operating Units (IOUs) that conceptualize, sell, deliver and support TCS' offerings to create value for customers. TCS' Industry Solution Units (ISU), serve customers with a focus on domain expertise in a specific industry vertical and operating globally by providing customers with a single view of TCS i.e. from sales to relationship management and delivery thereby, enhancing customer centricity, drive operational agility, develop domain specific solutions and create growth opportunities. TCS' Horizontal Service Delivery Units provide their services to all industries and markets in collaboration with the ISUs.

TCS Innovation Labs develop transformative, research-based solutions for customers through a comprehensive 360° interconnected research ecosystem with over 19 labs worldwide which collaborate with a wide network of partners, institutions and venture capitalists on forward-looking solutions. TCS' Co-Innovation Network (COIN)TM is a rich and diverse network that drives innovation in an open community which has Innovation labs connecting with Institutions/Partners.

The Innovation

The increasing number of assessments being conducted, today, presents various challenges in using the traditional paper-and-pen methods for end to end assessments. The need of the hour is an integrated solution that offers a reliable and effortless way to conduct assessments and automates the pre-exam and post-exam procedures involved. It eliminates security risks arising out of printing and distributing test content. This innovation by TCS, reduces candidate impersonation risks and also avoids manipulation of scores. While it helps in real time monitoring of exam across multiple centres. It also prevents delays in evaluation and publishing of results.

iON Assessment Management solution simplifies the assessment process, starting from applicant registration to publishing of results. iON Assessment Management comprises of various modules (Application Management, Allocation Management, Item Management, Assessment Management, Evaluation Management, Results Management & Certificate Management) which are integrated. Customers can choose the modules as per their requirement and the solution can be easily configured in a very short duration of time. iON Assessment Management supports in handling multiple formats of question-multiple choice / multiple select / short answer / comprehension / linked answer / subjective / typing / programming / parameterized type.

iON Assessment Management is a highly scalable & highly secured solution designed to operate over a distributed architecture with no dependency of internet in the candidate's machines, during the exam. The distributed architecture based solution allows large number of candidates to take the test across locations at a given time in a single shift.

The Approach

Their approach has been focussed around 4 key result areas for a successful exam. Firstly, Optimal Exam Operations which help to develop large Infrastructure to deliver assessment in a single session, where clients get to concurrently conduct the exam for maximum number of students. It leads to reduction in time as well as cost. Secondly, Robust Infrastructure where there is a process in place to check whether a test centre qualifies to be a Local Infrastructure Service Provider (LISP) and sanitize every machine to ensure similar experience across the centres. Thirdly, Innovative Solution in which the product assures end-to-end integrated assessment platform, Proven scalability for High stake exams, highly secured question paper authoring module, real time monitoring and multiple patents (pending). And fourthly, standardized process where the delivery process for the product is clearly defined such that standard Operating Procedures (SOP) for every activity across Pre, during and Post Exam stages. It, clearly, describes the responsibility of each and every activity. There is a proper communication flow identified across the 3 levels – Centre level / City level / State level.

The Benefits

It helps, over 1 million candidates in a single shift taking examination at the same time and over 90% reduction in the exam conducting process cycle time with a coverage across 200+ cities across the country. It eliminates risk of security incidents. It gives transparency as it shows real time status on examination conducted through iON command centre dashboard. There is 35% reduction of costs per candidate assessment for the exam conducting body. Re-evaluation effort has now been completely removed. For every 8000 pages, 1 tree has to be cut. Assuming a 40 page booklet & assessment of a crore candidates, 40 crore pages would be used. iON Assessment saves approximately 50,000 trees from being cut for every 1 crore candidates assessed. Provisions for differently-abled candidates standardized across the centres giving an opportunity for everyone deserving to take the assessments. Finally, the exams can be conducted in any language, allowing eligible candidates from all the strata of society to appear for an exam.

The Future

It aims at expanding customer segment base and enhancing various question and response types. It is also working on providing automation solutions in all exam types, including paper & pencil.

TATA Consulting Engineers: New Approach to Sea Water Based Fuel Gas Desulphurization System

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ABOUT

TATA Consulting Engineers Ltd. (TCE), is an integrated design and engineering consultant providing services in key sectors such as power, nuclear power, infrastructure, chemical, steel mining and metal, urban transportation. TCE offers a holistic basket of services from concept to commissioning including project management, EPCM, construction management, advanced technologies, etc. Since its inception in 1962, TCE has executed over 7500 assignments of varied nature covering power, chemical, industrial, infrastructure, water supply and sewerage, steel metals and mining projects. TCE's clientele span government, private corporations, EPC players, drawn from across the globe. TCE has consistently been recognized with prestigious awards in India and abroad. In 2012, TCE won MPS (Modern Power Systems) Innovation Award and was also nominated for Platt Global Energy Award for its excellence in engineering for the Mundra 4000 MW Ultra Mega Power Plant.

TATA Consulting Engineers Ltd. (TCE) is a wholly-owned subsidiary of TATA Sons, a leading business conglomerate in India with an annual turnover exceeding US $ 103 billion employing over 580,000 personnel.

The Innovation

This innovative process relates with the conventional sea water based Flue Gas Desulpharization (FGD) plant, wherein sea water is used as an absorbent of SO_2 to limit its emission from the flue gas to the atmosphere. In one of the power projects engineered by TCE, Ministry of Environment and Forests (MoEF) enforced a new condition making FGD installation a must for plant operation at a time when the plant was almost ready for commissioning. This is when an innovative method was conceived and implemented by TCE, making it possible to install sea water based FGD by eliminating the need for additional sea water drawal, saving time and about Rs. 60 crores and Rs. 6 crores per annum in Capex and Opex respectively. This innovative process utilizes the seawater available for condenser cooling and thus, eliminates the need for additional sea water. This process is fit for both new as well as retrofit plants as the system can be installed with minimal disturbance to operating plants. This innovative process belongs to air pollution control sector which helps in limiting air pollution emission from power plants. It is applied to a large coastal based coal fired, thermal power plant. This process could also be applied in other coastal based air polluting industries to limit SO_2 emission in the atmosphere.

The Approach

FGD installation was made mandatory by MoEF shortly before the plant was ready for commissioning. Sea water based FGD plant requires large amount of sea water and meeting that requirement through conventional process would mean huge expenditure and considerable time to establish a dedicated sea water intake system for supplying water to FGD plant. This would have made the plant economically less attractive. This innovation is in response to the challenge imposed by the project. Without this innovation, it would have been impossible to commission the plant in time and within the budget.

The developed solution is the key which differentiates the company's core business of power plant engineering and hence, of strategic importance. The above factors led to the generation of this unique idea and triggered them to think differently.

However, there were many hurdles which the company had to face. The first challenge was to convince the FGD suppliers regarding the feasibility of such a system as this experience was new to them. Although, FGD plant performance was not affected, they were apprehensive about the overall plant operation (the plant cooling water system) as any non-performance of the plant could impact their successful closure of the contract. Lot of discussions with their technical experts were held to

convince the FGD supplier of the technical feasibility of the method proposed by TCE. Secondly, customer was also apprehensive, as the system was not proven. Although, many had liked and appreciated the idea, they were required to be convinced about the technical feasibility of the system proposed.

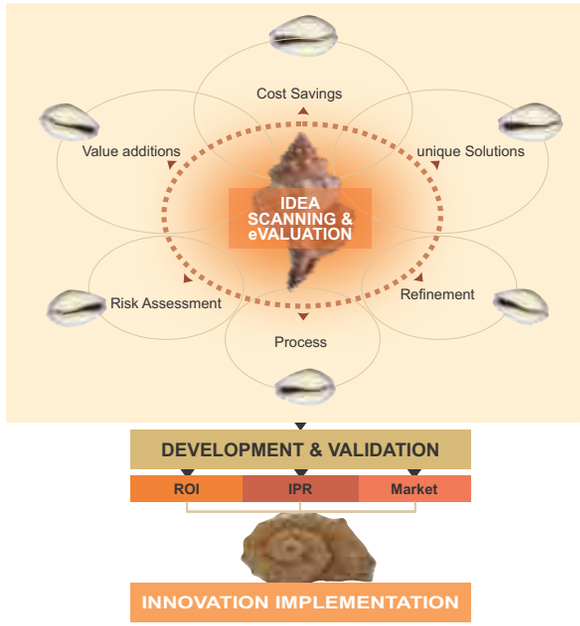
TCE InnoVision and TATA InnoVista, which are the innovation contests held within TCE and at the Tata Group level respectively are run every year and employees are encouraged to participate in them. This innovative solution for FGD plant won Tata Inno-vista contest in the year 2014 at Tata Group level under the category "Promising Innovation-Core Process".

Such a contest gives an opportunity to the employees from across the Tata ecosystem to think innovatively and suggest solutions.

TCE's work systems interface various agencies such as suppliers of the equipment and systems, customers, other consulting agencies, contractors etc. during various stages of the project execution. Such interfaces provide immense opportunities for working together with these stakeholders, to develop value added systems and solutions to meet and exceed customer expectations during the course of project execution.

Aerial View of all 4 FGD Units

Innovation Management at TCE



The Benefits

This innovation led to savings of about Rs. 60 crores and Rs. 6 crores per annum in Capex and Opex to the customers and helped to meet the schedule committed to MoEF. The innovative method implemented in this project resulted in about 50% reduction in water drawal requirement over the conventional system. This innovation method also helped the plant in energy conservation and reduction in carbon footprint to the tune of about 25000 tonnes per annum, thereby enhanced TCE's contribution towards environmental sustainability.

This innovation is already been filed for patent. With such innovative process TCE is expected to contribute significantly towards sea water based FGD plant installation.

The Future

There are large number of coastal plants operating in India and many are expected to come up in the future. Except few plants, none of the operating plants have FGD system installed in them. MoEF has already published a draft notification proposing revision of the pollution emission norms for power plants. The draft as issued for review calls for reduction in SO_2 emission from the operating as well as future power plants and that would require installation of FGD plants. This innovative process will be an ideal choice for both retrofit as well as new power plants to restrict SO_2 emission within permissible limits. Business opportunities are also expected from overseas market where older power plants are being renovated.

TATA Steel Ltd.:
Nest-In

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ABOUT

Tata Steel is the flagship company of the Tata Group and in its journey of more than hundred years, TSL is fully integrated from mining to manufacturing and marketing of finished products. It operates captive iron ore, coking coal and chrome ore mines in the Indian states of Jharkhand and Odisha. The main products offered are HR Coils, Cold Rolled Coils & Sheets, Galvanized Coils/Sheets etc., in Flat Products and Rebar & Wire Rods in long products. With a focus on continuous improvement, innovation and the state of art manufacturing facilities, Tata Steel has been able to meet the stringent requirements of high-end customers of Automobile and White Goods thereby reducing their dependence on imports. Today, Tata Steel is one of the largest supplier to the domestic automobile industry (37% market share) and leading re-bar supplier (10% market share) in the country.

The Innovation

Nest-In is a light gauge steel frame construction made of cold rolled high strength galvanized steel offering high seismic and fire resistance, and a conventional look and feel. It is a complete turnkey construction solution and comes with standard doors, windows, and foundation and installation service. Currently, Nest-In is available across the country in various customized layouts ranging from 200 to 1500 sq ft, with various configurations of rooms, toilet, kitchen, hall and veranda. Typically, a 350 sq ft Nest-In house can be built in just 9 days after the site is ready and the material reaches the site. The construction process is almost dry and does not waste resources or pollute the environment to the extent the conventional building methods do.

Nest-In is ideal for varied applications like Houses, Shops, Schools, Relief Housing, Police Station, Aanganwadi/Community Centres, Toilets, Medical Clinics, Guard Huts, Rooftop houses, Cafeteria, Store Rooms, etc.

This affordable, good quality and eco-friendly construction solution is priced between Rs. 1000 to Rs. 1400 plus taxes, depending on the consumer requirement and site location. Till date more than 150,000 sqft area has been covered under Nest-In across the country, through 500+ unit installations.

The Approach

Aligned with the company's vision of developing leading edge solutions in technology, process and products, the themes are selected based on the company's long-term business plan and technology roadmap. The themes cover areas such as new market development, new product & technology development, operational efficiencies, energy efficiency improvement etc. Idea generation sessions are organized in different areas based on the themes. Bringing new steel products and creating unique market offerings, is a key part of the TSL strategy. Tata Steel has embarked on "Project Innovent" which is a vehicle for consumer innovation and the focus is on identifying significant stated as well as latent customer requirements by using specific tools, and developing them into business concepts. TSL works towards developing leading edge technology and processes, through new product development portal and the I-Eureka process at research & development (R&D). They invite technical contributions from widespread and diverse sources, including academia, suppliers and customers. Tata Steel collaborates with top research innovation culture institutes/IITs/IISC/CSIR labs across the country and globe.

The Benefits

Achieving sales to SMEs through distribution by replacing intermediary is a big shift in the way ferro alloy's business is conducted in India. Starting from 40 mt in the first month, TSL reached a level of average sales of 6000mt/month and from one state (West Bengal) to eight states in India in 19 months through this model.

With usage of 50 grade of Tata SILCOMAG, instead of the widely prevalent 60 grade in the market, the customer stands to gain Rs. 3800/mt usage of SILCOMAG 50-grade. All customers taken together would enjoy the benefits of Rs. 17 crores. Tata Steel sales of this grade of SILCOMAG has brought benefits of Rs. 3.5 crores in 46 months.

SILCOMAG creates a long-term competitive advantage for Tata Steel in SME segment, which holds key to India's future and has helped in securing 10% market share in SiMn in India.

The Future

TSL will be working in future on high strength steels and aspires to enter into new business sectors like electric steel. There is a plan to develop CRGO steel technology jointly in collaboration with Rashtriya Ispat Nigam Ltd(RINL), National Metallurgical laboratory (NML) and Ministry of Steel.

In India, iron ore slime is a threat to otherwise growing steel industry. Various projects are being done on the effective utilization of slime in areas such as pellet making, soil amendment and also as alternate raw material for making building material. The target for coming years is to commercialize these technologies.

TSL is also working on Novel Coal Beneficiation Technology to reduce ash content from 25-40% ash content to 8% content at 75% yield. The technology has 15 patents and once commercialized, will help Tata Steel to put a check on foreign import of coal to a big extent.

TATA Power Company Ltd.:
Ballistic Systems for Multi-Weapon Platform

ABOUT

For close to four decades, The Tata Power Company Limited through its Strategic Engineering Division ("Tata Power SED") has been a leading private-sector player in the indigenous Design, Development, Production, Integration, Supply and Life-cycle Support of mission-critical Defence Systems of Strategic importance. During this period, the division has partnered the Ministry of Defence (MoD), the Armed Forces, DPSUs and DRDO in the development & supply of state-of-the-art systems and emerged as a prime contractor to MoD for indigenous defence production when it secured orders for Pinaka Multi Barrel Rocket Launcher, Akash Army Launcher, Integrated EW System, Akash Air Force Launcher, COTS-based Automatic Data Handling System for Air Defence and Modernization of Airfield Infrastructure (MAFI).

Tata Power SED has a dedicated R&D Centre at Mumbai, a production and R&D facility at Bengaluru, is now globally recognized for harnessing its "Systems and Engineering" capabilities and has been appraised at CMMI® Level 5, Development v1.3. In recognition of its pioneering capabilities in design, development, manufacturing and system integration, Tata Power SED was nominated by MoD as a Major Work Centre for the Samyukta EW Program.

The Innovation

Ballistic Systems for multi-weapon platforms provide a means for accurately computing the trajectory of a projectile in real-time by considering both internal factors such as barrel length, type of the projectile, charge and its temperature, barrel rifling, etc. and external factors such as wind vector, atmospheric conditions, self and target profiles, muzzle velocity, azimuth and elevation angles of fire.

The system incorporates complex iterative ballistic algorithms that have been developed for use across multiple weapon platforms and a wide variety of projectiles covering sub-sonic to super-sonic velocities using shock-wave propagation models.

The Approach

Information relating to ballistics for weapon systems, being a critical and classified technology, was neither available in the open domain nor was available for transfer of technology from reputed players in the field. Therefore, it was for Tata Power SED to develop innovative techniques to realize a ballistics system for use by the Indian Armed Forces across multiple weapon platforms.

Indian Army possesses a large number of T-90 tanks which have been programmed by the OEM to fire only OEM Ammunition. Support for Indian Ammunition was best done indigenously. The desire to add support for Indian Ammunition to T-90 tank was the driving force behind the idea.

Various steps were followed from idea to implementation, which included understanding the approach for Ballistics in T-90 Tanks and deriving the Ballistics Algorithm for ammunition in tanks & guns. Modeling the Ballistics Algorithm in MATLAB and validating it. The ballistics models were generated using concepts from the Modified Point Mass Trajectory (MPMT) techniques. Subsequently, selection of the hardware with the right SWaP (Size, Weight and Power) to fit in as a "drop in replacement" for the original hardware. {For this we selected a TI DSP-F28335 (C28x+FPU). It is a very efficient C/C++ engine, enabling users to develop their system control software in a high-level language. It also enables maths algorithms to be developed using C/C++. The DSP is as efficient in maths as it is in system control tasks that typically are handled by a micro controller devices.} Implementing the Ballistics & Control Logic on the selected hardware as a real time mission critical software. Adding support for Indian Ammunition and Testing the solution with the original Test Jig of choice. Original Test cases as provided by OEM with the original test jig of choice.

The Benefits

The hardware platform for the Ballistic System viz. the Fire Control Computer (FCC) was developed by Tata Power SED for the Indian Army. Subsequent to successful firing trials by the Indian Army, MoD placed a production order for 130 Nos. of FCC valued at approx Rs. 20 Cr. for MBT Arjun.

The upgraded version (FCC-MkII) was developed and successfully test fired.

Tata Power SED has received an order for 50 Nos. of the Indigenous Ballistic System for T-90 Battle Tank from MoD.

The Ballistic System for the upgraded 40mm L-70 Air Defence (AD) Gun was developed and successfully cleared the user trials.

Tata Power SED has already developed the 155/52mm Mounted Gun System (MGS) and has successfully completed the engineering trials. Additionally, GUIs and interlinking software for 155mm MGS have already been tested during the firing trials in South Africa.

Fire Control System- 155 Mtd Gun Sys

The Future

Tata Power SED is now in the process of developing an Indigenous Ballistic System for the MGS which will also undergo field trials in the near future. Additionally, Tata Power SED is in discussions with DRDO for development of Advanced Towed Artillery Gun System (ATAGS) and other howitzers. As a result of the above, Tata Power SED's Ballistic System will be tuned and deployed across multiple weapon platforms. The Ballistic System thus, developed will also be offered to international customers.

The Ballistic System will be a requirement on all howitzers and will be developed to suit various configurations of Muzzle, Ammunition and types of Guns. In view of companies past experience with the 40mm AD Gun and T-90 MBT Ballistics, MBRL Pinaka and 105 mm MGS, company is confident of its ability to sell the benefits of this competency across multiple programs.

Wipro-GE: Healthymagination Providing Better Health to People

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ABOUT

Headquartered in the UK, GE Healthcare is a unit of General Electric Company. GE Healthcare employees are serving healthcare professionals & patients in more than 100 countries. GE healthcare provides transformative medical technologies & services that are shaping a new age of patient care. The broad expertise in medical imaging & information technologies, medical diagnostics, patient monitoring systems, drug discovery, bio pharmaceutical manufacturing technologies, performance improvement & performance solutions services are helping customers to deliver better healthcare to patients around the world at a minimal cost. In 2009, GE was committed to tackling global health care challenges through an initiative called 'Healthymagination', where the company innovated to provide better health for more people by improving quality, access and affordability. Healthymagination is a $6 billion strategy to revolutionize the world's health by improving the quality, access and affordability of care. Healthymagination applies GE scale to transform healthcare by incubating disruptive and scalable solutions. The company spends billions of dollars on product development in its eight R&D labs around the world, which employs more than 7,000 scientists and engineers. Healthymagination is committed to helping real people for achieving real results. The company has touched over 500 million lives and it is just getting started.

The Innovation

Around 6 million children under the age of 5 years die every year, out of which 40% deaths occur in infants (age < 12months). Infant deaths can primarily be attributed to hypothermia, asphyxia, and infection-majority of them preventable with the right & timely care. Nearly 2/3 of all newborn deaths occur in 10 countries - India being the largest (absolute) contributor. Due to high-cost of investment, access to primary clinical care is a challenge in emerging countries, where the need is also the most acutest. GE's infant care product suite provides a comprehensive & affordable solution to the challenges enumerated above. GE Healthcare's Lullaby range of products bring together key benefits of simplicity/ease of use, affordability, reliability & clinical effectiveness-attributes found most needed in our market research across countries like India. The company has developed 3 products in India to add low-cost neonatal warmer & resuscitation products to their Neonatal ICU portfolio. These are intended for use in resource constrained environments, thereby enabling the reach to underdeveloped/developing markets. Lullaby warmer Prime: An outcome of an extensive customer-focused innovation to design and develop an affordable radiant warmer, that provides thermo regulation for the neonates in low resource settings that is most prevalent in India/Africa/ASEAN.

The Approach

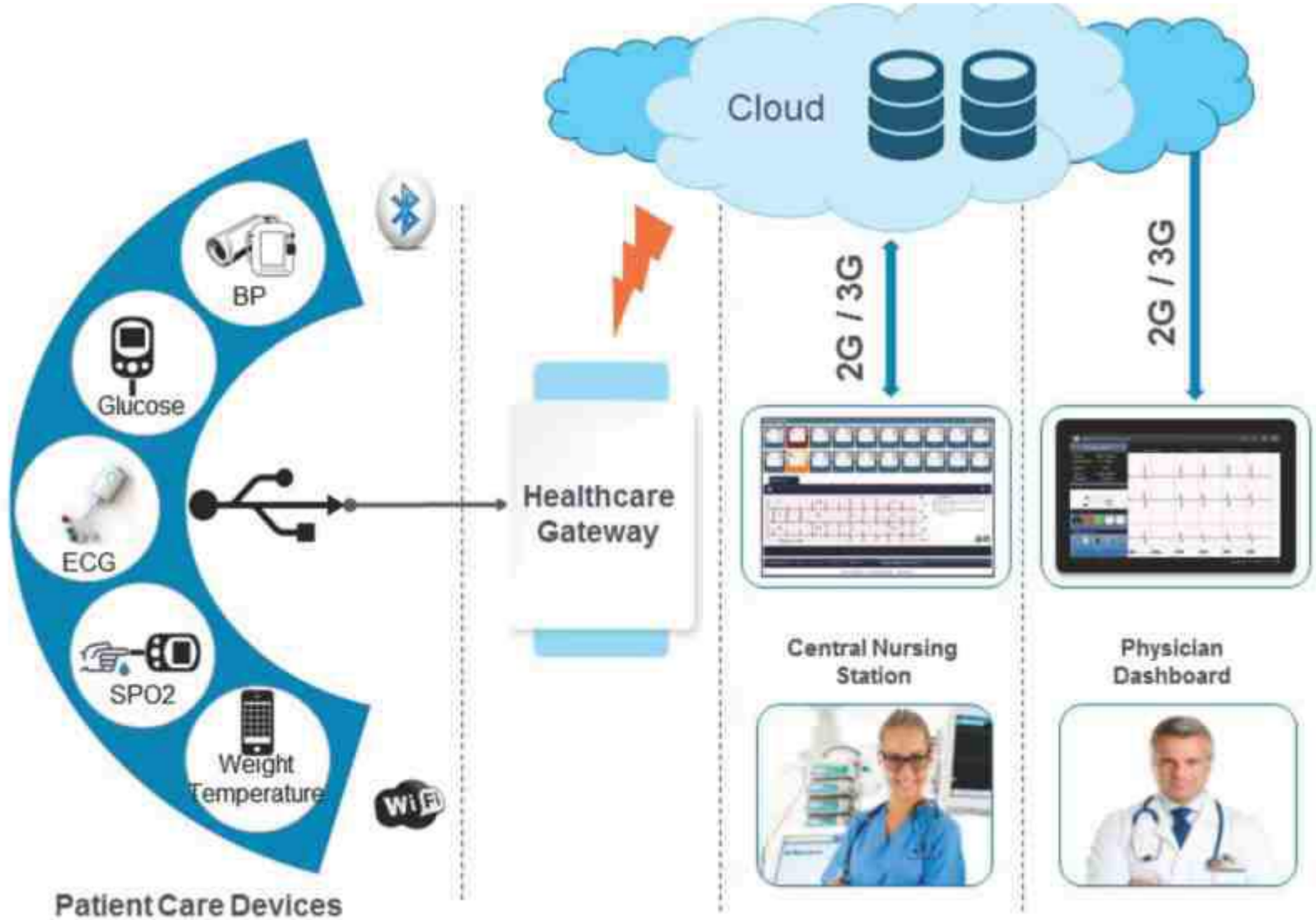
They work to transform how doctors treat diseases, empower communities to get healthier, and build a healthcare system that helps people live better lives. In 2009, GE was committed to tackling global health care challenges through an initiative called 'healthymagination', to provide better health for more people by improving quality, access and affordability. GE Healthcare is investing into R&D to help reduce cost of diagnosis, while maintaining the necessary level of diagnostic quality for clinical outcome. They are investing into 'Disruptive Innovation's', that bring the right level of care delivery to emerging markets where it is most needed.

The Benefits

First full year sales across the globe are now planned at 2100 units ($22Mn), and expected to grow at a CAGR of 20% for the next three years. Considering 35 unique scans per day per device, working six days a week, about 10,000 lives are affected positively by every LOGIQ Vision device. Thus, over the next 4 years, >250million lives will be positively impacted by this product, with strong known correlation in saving millions of the associated lives.

The Future

At GE, they have evolved a structured process to map customer problems in emerging countries, then use iterative design & testing cycles to create bottoms-up solutions customized for these markets, which are clinically relevant, effective & affordable. They call it the 'FastWorks' methodology. Besides product innovation, they are also successfully applying 'FastWorks' methodology to services as well as their processes that deliver these products and services to their customers in emerging markets, thus creating new business models here.



Wipro Ltd.: Wipro Assure Health for Remote Health Monitoring & Diagnosis

ABOUT

Wipro Limited is a global leader in providing IT Services, Outsourced R&D, Infrastructure services, business process services and business consulting. With a track record of over 25 years, Wipro is the first to perfect a unique quality methodology, the Wipro way – a combination of six sigma, lean manufacturing, Kaizen and CMM practices – to provide unmatched business value and predictability to clients. The industry aligned customer facing business model gives a deep understanding to customers' needs to build domain specific solutions, with 55+dedicated emerging technologies'. The company has a work force of over 140,000 serving over 950 clients, including a number of fortune 500 and global 500 corporations across 57 countries. In the 1990s, company leveraged hardware R&D design and software development expertise and began offering software services to global clients. The company is, also, one of the pioneers of the Offshore Development Centre (ODC) model that propelled the growth of the Indian IT services business to a global scale. It believes that to succeed and be more customer centric, enterprises must embrace the benefits of technology to 'Differentiate at the Front' and 'Standardize at the Core'. Helix, Fixomatic and Wipro HOLMES are some examples of IP that the company has built on the infrastructure side of the business to eliminate human intervention, thereby increasing productivity. Wipro was recently recognized with the prestigious Golden Peacock Award 2014, in the category of 'innovative product/service' for Wipro's Assure Health™ solution. For the third successive yearWipro was named as a World's most ethical company by Ethisphere institute 2014.

The Innovation

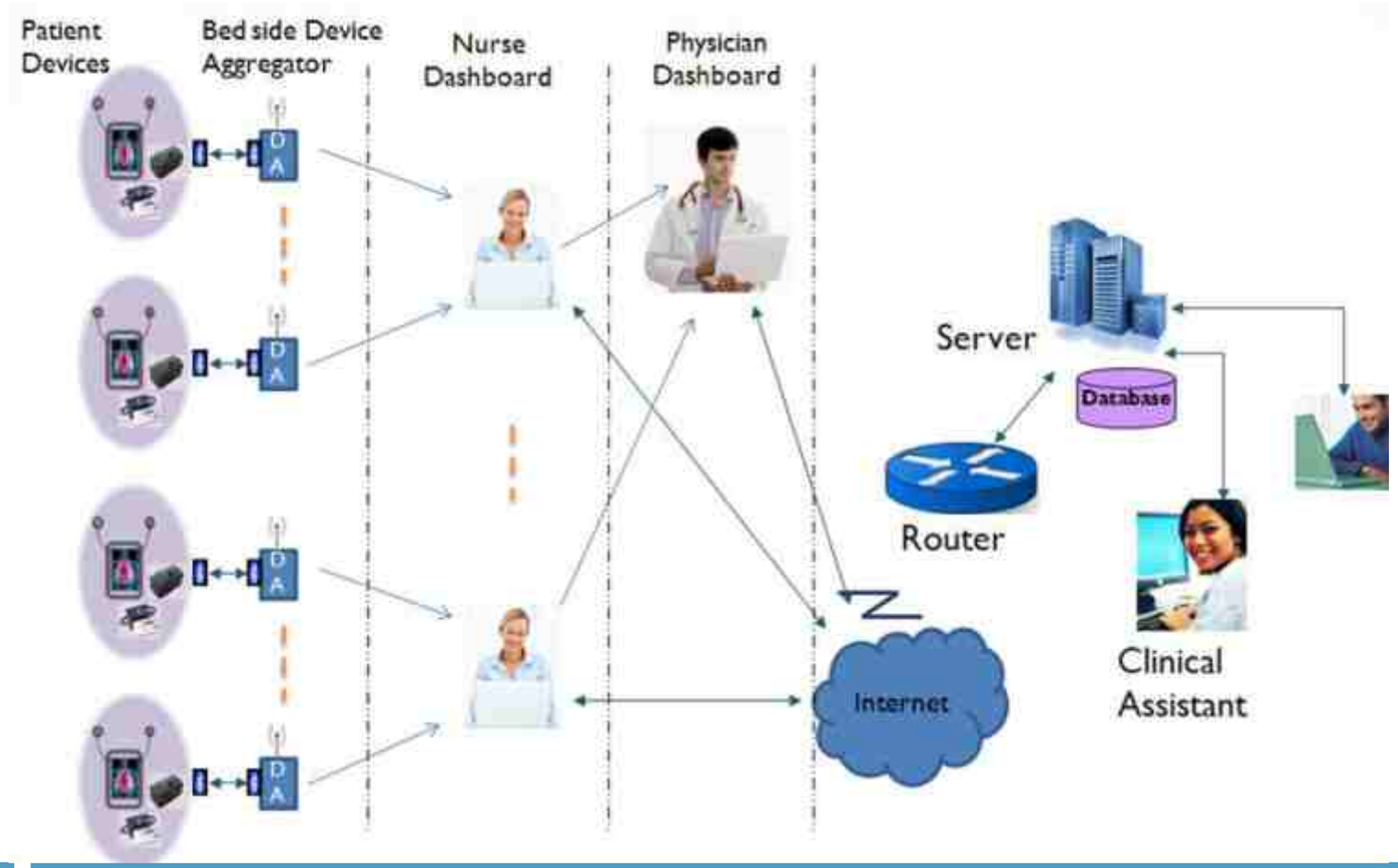
Wipro's indigenously developed 'Wipro Assure Health' is a holistic platform for remote health monitoring & diagnosis using disruptive, next-gen, non-invasive wearable medical devices, advanced based mobility, ubiquitous cloud based clinical decision support system and innovative business models to deliver affordable patient centric healthcare. Maternity and cardiac care are two of the solutions built on this platform. The advantages are unprecedented comfort and freedom for the women, accuracy, and minimal user intervention, with the additional benefits of on-screen help and support, easy to use touch screen operation, auto catch up when patient goes out of wireless range. This technology innovation enables monitoring of fetal as well as mother's heart rate. It uses a unique wearable electronic fetal monitoring device and the data that can be assessed by obstetricians remotely any time, giving assurance to pregnant mothers. The rich analytics triages with better accuracy for the incoming records into abnormal CTG, borderline & normal CTG. Wipro Assure Health Cardiac care solution enables patient mobility with a light weight, easy to wear medical grade ECG device, inbuilt algorithms to monitor real time patient vitals suitable for both step down care and home care at affordable prices. Wipro Assure Health enabled patient assurance through home monitoring, reduced hospital re-admissions and improved productivity across nations.

The Approach

The concept of non-intrusive wireless fetal monitoring for pregnant women was originally discussed with key opinion leaders and maternity centres across the country. Specially trained multi discipline software developers were deployed to create this platform and its re-usable components. Once the platform was ready, a maternity care solution was the first by-product. During the incubation and creation of Assure Health platform, the concept of affordable patient centric health care for low and middle income group countries, where there is severe shortage of health professionals was seeded into the team. The result is a low-cost medical grade device for such a solution has been thoughtfully crafted, designed and developed.

The Benefits

Total 40 installations of maternity care solution are deployed across multiple hospitals. Solution has been well received by the gynecologists and testimonials from the pregnant women who availed this service captures 'many moments of relief from the anxiety' of going to the hospitals. Successful pilots at primary health centres in rural Karnataka have been done and the solution will transform maternity care in rural India. Cardiac solution has been piloted in two major hospitals and is undergoing deployment this year. This was also well received by cardiologists from reputed hospitals.



The Future

Wipro Assure Health is a generic platform that includes disruptive, next-gen, non-invasive wearable medical devices, advanced BAN based mobility, ubiquitous cloud based clinical decision support system and innovative business models to deliver affordable patient-centric healthcare. While the maternity care solution is successfully deployed across various hospitals in major cities, it is also being tested in PHCs of rural India. They wish to deploy this solution in rural parts of the world at an affordable pricing. With this the company plans to increase both the productivity of the doctors as well as encourage more and more mothers to switch to this convenient method of testing. On the other hand, cardiac care solution is being deployed in large hospitals. Over the next 3 years, Wipro wishes to develop solutions to address the increasing number of people with diabetes. The reusable components of the Assure Health can also be used to build quick elderly monitoring and drug adherence platforms. These solutions will positively impact lives, especially in the developing world.

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Aundh, Pune 411007 (India)
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Fax: +91 20-25887428
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Web: www.hitechroboticsystemz.com

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Tel: +91-2827-287046
E-mail: hub@iskbearings.com
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M/S Jyoti cero Rubber

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Larsen & Toubro Limited

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P.O. Box 278, Mumbai 400 001, India
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Web: www.lntebg.com

Manhattan Associates Development

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