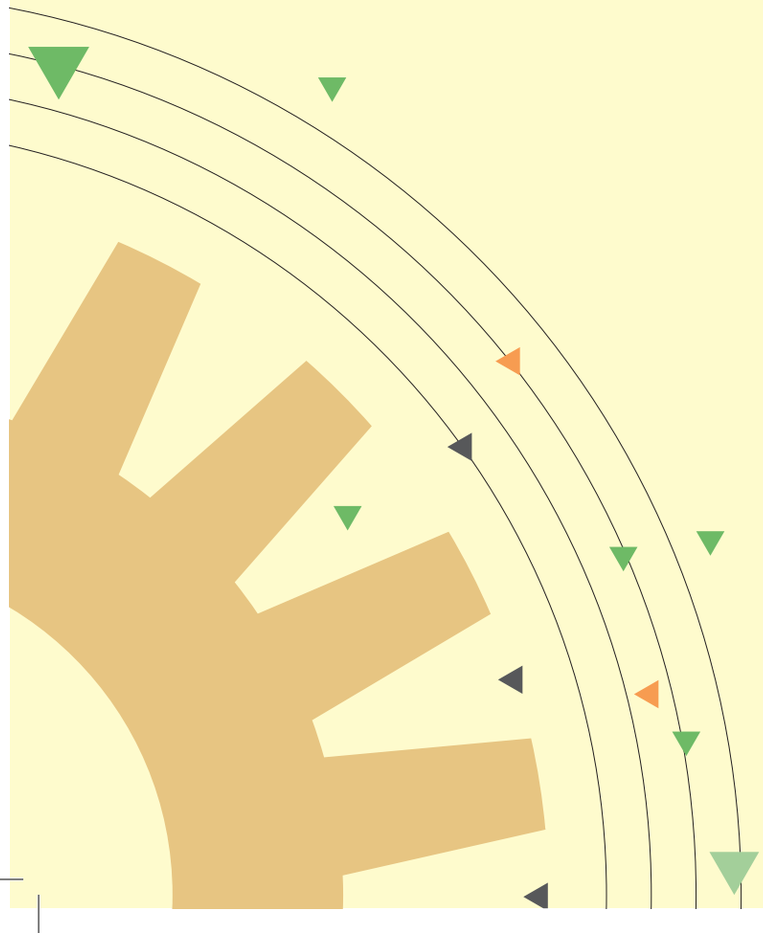
Confederation of Indian Industry

INDUSTRIAL INNOVATION AWARDS 2017 & 2018

Top innovative companies



CII

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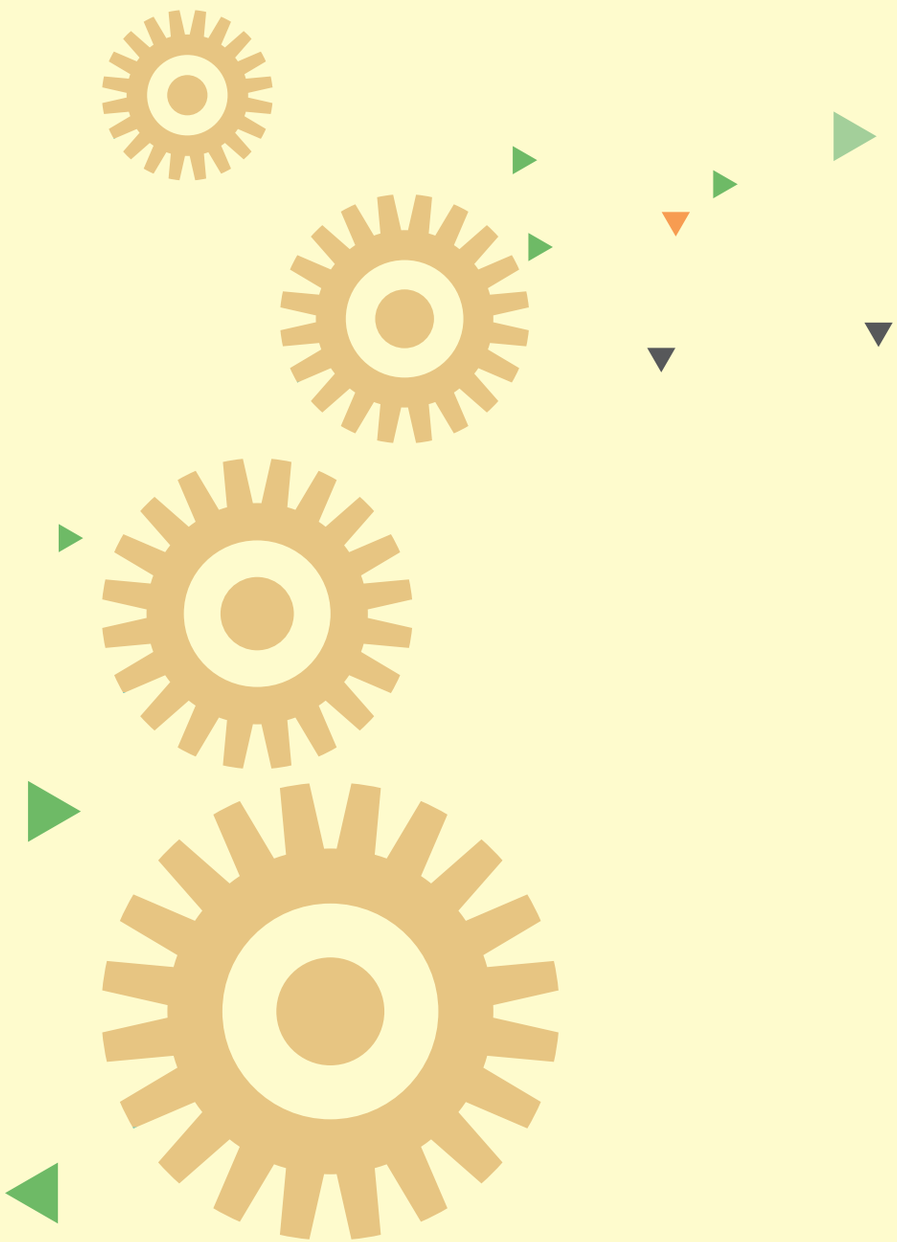
Top innovative companies



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Disclaimer: This Compendium has been prepared based on the information provided by top applicants identified/screened during the evaluation process of CII Industrial Innovation Awards 2017 & 18. While an attempt has been made to ascertain the authenticity of information submitted by these applicants during the award evaluation process and compilation of case studies for the compendium; CII at no point will be responsible for the accuracy or correctness of such data or any consequential loss arising thereof.

FOREWORD

Chandrajit Banerjee
Director General, CII

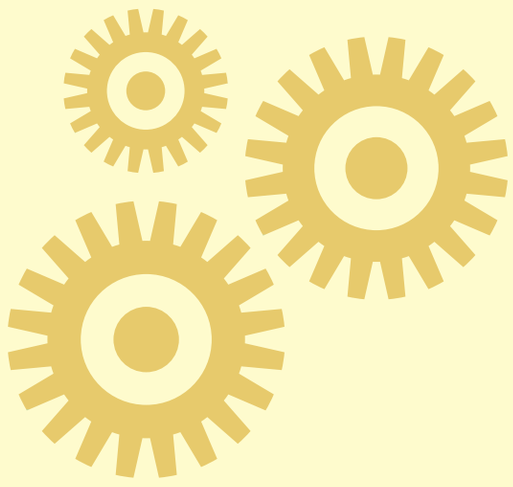
Innovation in technology, design and quality of services can script the saga of success for Indian industry, leading to economic progress and prosperity. It is indeed noteworthy that India further improved its position in the Global Innovation Index 2018 to 57. The steady rise in ranking is testimony to a thriving innovation ecosystem being nurtured with care for a vibrant and dynamic knowledge economy.

The CII Industrial Innovation Awards, launched in 2014, recognize leading innovations among various industry segments of India and provide an opportunity for companies to showcase their successes. The Innovation Awards have contributed to opening new business potential for the winners at the national and global levels.

The Awards evaluate novelties in processes, products and delivery of services, that can fuel growth for the industry. They also assess new ideas and approaches along with tangible results.

Over the years, CII has formulated an Enterprise Innovation Maturity Framework, based on which the firms applying for the CII Industrial Innovation Awards are assessed. The framework has four 'pillars', which focus on assuring sustained innovation capability of an enterprise. With this framework in place, firms learn about innovation best practices by taking part in various stages of the award process.

This publication presents case-studies of winning companies, which were recognized for their innovation and best practices in 2017 and 2018. While sharing CII's initiatives in promoting innovation as a business mission, the publication also provides a ready reference to inspire firms to imbibe innovation. I am confident that the publication will greatly contribute to industry's understanding of the impact of innovation and its strong positives for growth and sustenance.



S. Gopalakrishnan
Chairman,
CII Start-up Council

"In Indian industry's journey to be globally innovative, CII's focus and advocacy on firm level Innovation capability building has remained outstanding, which is truly reflected through its Industrial Innovation Awards Initiative. The Award Framework has encouraged many Indian firms to remain competitive in domestic as well as in global markets. This year the participation in SME category has increased with many globally competitive and disruptive innovations being filed for the Awards. I truly believe that this presents an excellent opportunity for large and medium firms to encourage the companies in their supply chain to measure the excellence and competitiveness of all its businesses through Industrial Innovation Awards. And, I feel that large firms participation in this coveted Awards would be instrumental in building an excellent and a sustainable supply chain driven with innovation."

Rajan Navani
Chairman, CII Future
Business Council

"Firms participating in various stages of the award process of the CII Industrial Innovation Award get detailed feedback on their maturity level on various innovation indicators, giving them an edge over their competitors and others to embrace/explore new business opportunities/ endeavors. I am very confident that firms getting the Innovation Award will be recognised as innovation driven companies among the business community giving them a holistic advantage and a unique positioning."

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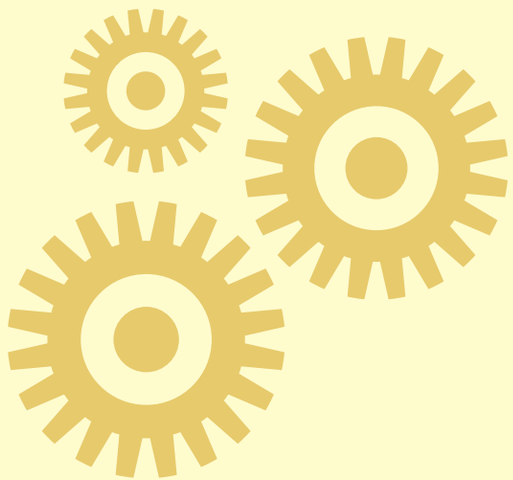
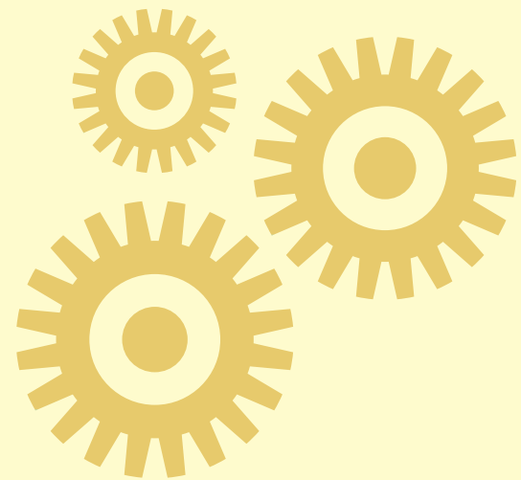
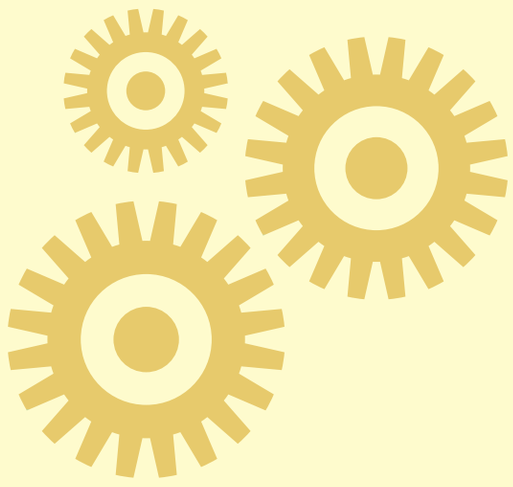
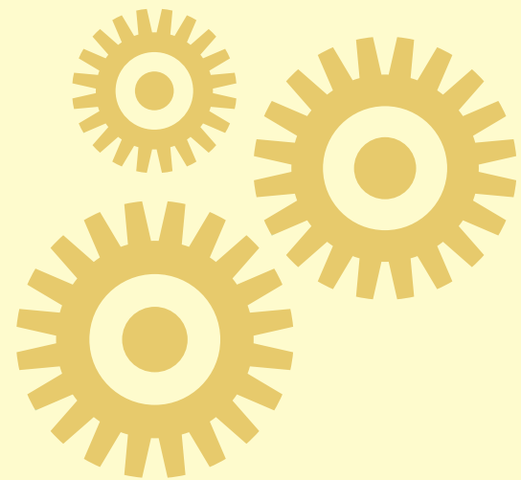


Top 25 Innovative Companies 2018





Top 26 Innovative Companies 2017



The Hi-Tech Robotic Systemz Ltd

The Hi-Tech Robotic Systemz Ltd. (THRSL) is an Indian tech company, with its deep roots in Artificial Intelligence, machine learning, computer vision, multi sensor fusion and autonomous navigation tech. The core to the company is its leadership team, who are alumni of Carnegie Mellon University, Harvard Business School and IITs along with strong technology advisory assistance from Carnegie Mellon University. The company designs and develops underlying technology for autonomous vehicles and driver assistive systems with its implementation in commercial vehicles (trucks, busses, cars, etc.) and industrial vehicles (forklifts, pallet trucks, etc.). They also cater to a diverse blue-chip list of clients, which includes companies like Volvo-Eicher, Ford, Tata Motors among others.

The Innovation

Innovation 1

24x7 manual indoor material handling in high throughput or high loads is a challenging problem. As humans are subject to fatigue, loss of concentration over an extended period, especially during odd hours, making it unsafe and some cases even lead to loss of life.

Their Natural Navigation KIT enables the existing fleet of electric forklifts, reach trucks and pallet jacks to be converted into driverless vehicle offering safe, synchronized 24x7 material handling operations.

Innovation 2

Their Mobile Robot model can carry max 1500kg and tug 3000kg loads from A-B at max 2 m/s using natural environment features for navigation, thus eliminating the task of manually pushing trolleys and optimizing indoor material movement traffic by central fleet manager.

Innovation 3

Driving for long hours at times could be quite tiring and due to the dynamic nature of road traffic, it may not be possible for the driver to be alert every moment resulting in accidents, loss of property and life.

THRSL has developed 'Advanced Driver Assistance' [ADAS] Systems with a camera installed facing the road. Its safety features are designed to avoid collisions and lane departure. Their 'Driver state Monitoring' [DSM] analyzes drivers state while he/she is driving. It measures fatigue with a camera facing the driver. Both these systems add to safe driving practices.

Benefits

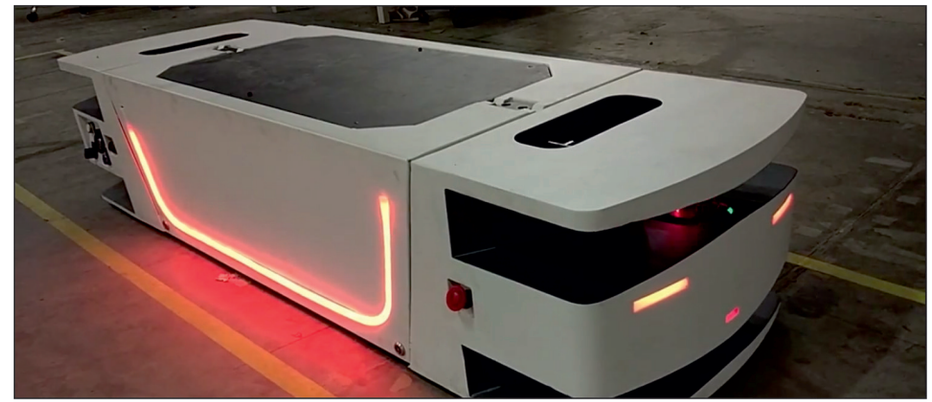
Innovation 1: 'Natural Navigation KIT' has improved uptime and enables cloud connectivity of forklifts utilizing them up to 99.99% of the operating time over 24 hours.

Their Mobile robots (Innovation 2) are green as they are 100% electrically driven.

ADAS (Innovation 3) can work in ZERO light condition with 360 degree coverage including blind spots.

The Future

The company is focused towards global expansion and is in very strong position to deliver scalable, smart, autonomous and assistive systems to global customers through disruptive business models.



CII INDUSTRIAL INNOVATION AWARDS 2017
Grand Winner
(Most Innovative Company)

CK BIRLA GROUP | nbc flexible solutions

National Engineering Industries Limited

Manufacturing more than 150 million bearings annually in more than 1000 sizes, National Engineering Industries Limited (NEI) is the flagship company of CK Birla Group that has a turnover US$ 1.6 Billion.

NEI was founded by the renowned industrialist, Shri B M Birla, in 1946 under the name of 'National Bearing Company Limited' and commenced manufacturing operations in 1950. In 1958, the name of the company was changed to National Engineering Industries Limited (NEI) owing to its rapid expansion in engineering expertise, but it chose to retain its original trademark NBC.

NEI has four state of the art manufacturing plants in Jaipur, Newai (Rajasthan), Manesar (Haryana) and Savli (Gujarat). The company manufactures a wide range of bearings for automotive, industrial and railways applications. NEI's product range includes ball bearing, taper roller bearing, double row angular contact (DRAC) bearing, cylindrical roller bearing, spherical roller bearings, special bearings for the railways, steel mills, heavy industries and power generation plants.

The Innovation

Innovation 1

There is problem of early pre-load loss in pinion support bearing in tractors. Due to early preload loss, rigidity of the system deteriorates and subsequently pinion or ring gear gets damaged during service.

The problem is addressed with an innovative 'Pinion Bearing Solution', where preload losses are controlled by replacing taper roller bearings by two angular contact ball bearings and one cylindrical roller bearing.

Innovation 2

Automotive OEM's are looking for compact, high load capable, lightweight and reliable solutions for its new models. Traditional wheel bearings used more parts, consumed more sub-assembly time and were difficult to mount.

NEI developed a 3rd Generation wheel bearing, which are highly integrated units with a brake disc mounting flange, bearing and wheel mount flange that guarantee highest running accuracy. The bearing clamping force (Preload) is applied and controlled via a specially formed shoulder, resulting in a maintenance free design.

Innovation 3

There is a problem of grease drip in idler pulley bearing of timing belt of an automobile engine. Due to grease drainage metal to metal contact leads to heat generation and subsequently premature failure of the bearing.

NEI developed a special bearing seal of four lip and unique stiffener design. The new design gives higher stiffness, which allows the light contact at sealing lip for the desired sealing at high rpm with less torque.

Benefits

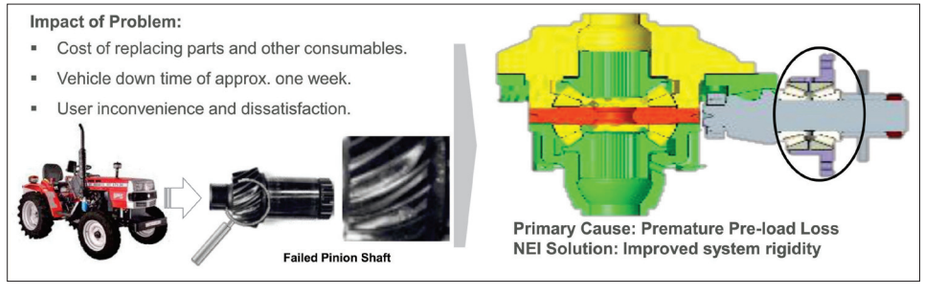
Pinion bearing solution (Innovation 1) does not require any maintenance during its service thereby eliminating/reducing maintenance cost. It has also improved the load carrying capacity and given NEI a first mover's advantage in the market

With its (Innovation 2) double flange design and integration, total cost and mounting time of the assembly in the vehicle have reduced.

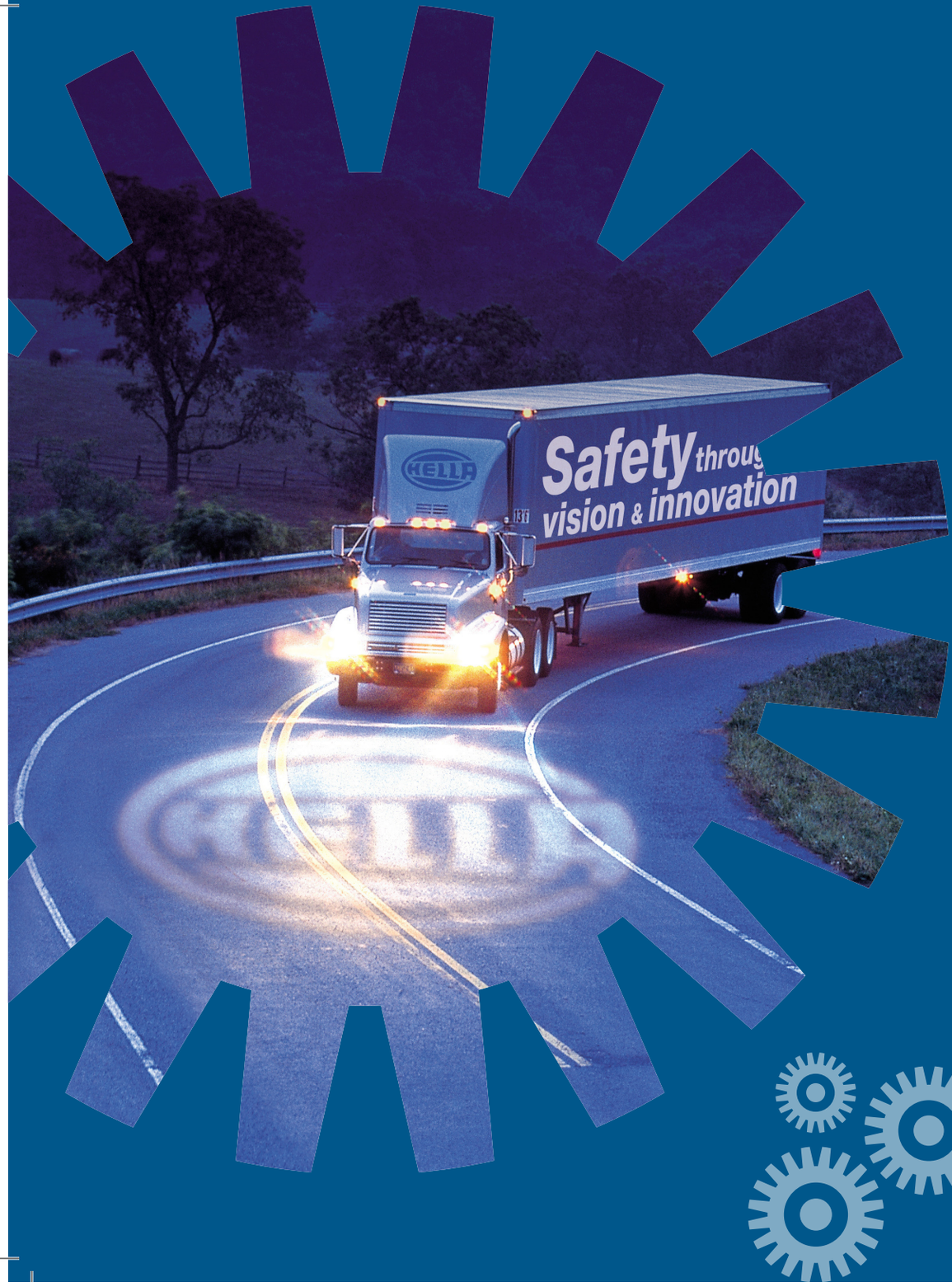
Unique sealing lip profile (Innovation 3) prevents leakage of lubricant from the bearing and at the same time prevents infiltration of foreign particles inside the bearing thus enhancing bearing life in demanding operating conditions.

The Future

NEI aims to grow in the business of anti-friction bearings, other allied engineering products and services by delivering superior value to their customers, suppliers, shareholders, employees and society at large. They also look forward to attaining a gross turnover of INR 50 billion by 2020.



CII INDUSTRIAL INNOVATION AWARDS 2017
Manufacturing
Large Enterprise



Hella India lighting Ltd

HELLA is a global, family-owned company with a rich history spanning over 100 years. It is one among the 100 largest German industrial companies. Known for its automotive lighting & electronics product portfolio, HELLA is a highly innovation driven firm. It employs 40,000 members of staff at over 125 locations in 35 Countries.

Hella India Lighting Ltd. is developing and producing innovative visibility and signalling solutions to arrest alarming road deaths in the country. Company is one of the leading automotive lighting suppliers to OEMs for commercial vehicle, bus & coach and serves to all special OE segment including tractors, 2 wheelers & off-highway equipment in the country. The company also distributes and markets its safety products to fleet owners and technicians through its countrywide retail network.

The Innovation

Innovation 1

It is very important “to see” and “to be seen” to avoid road fatality, while driving on Indian roads.

Hella India Lighting innovated an affordable localised signalling solution for trucks. A ‘Fit & Forget’, ‘Always On’, affordable full LED truck stop-tail lamps which gives 4 metres extra braking distance to safeguard from accidents on highways, saves 80% of energy and results in lower total cost of operation for truck owner. The system is water and dust proof, has high impact resistant lens, a bolt retention system for Indian conditions, a distinctive night signature and has a 5-year warranty against any manufacturing defect.

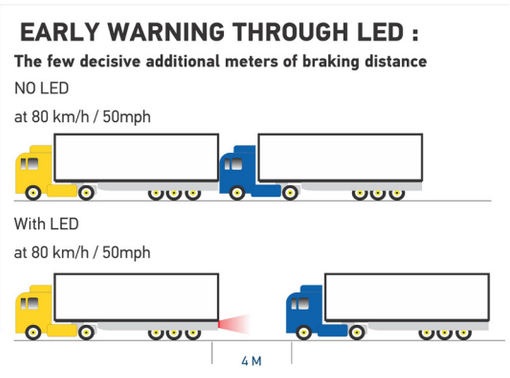
Innovation 2

This Signalling device was then followed up with another visibility solution, an ultra-durable, precision light pattern projector with light modules for longer front visibility, enhancing the braking distance without causing dangerous glare on road. These modular projector lamps allow the light to be focused more on the road with less scatter or glare; this prevents blinding other drivers while adding more light on the road. These are produced in state of the art metalizing machine with top coat protection for longer life to reduce total cost of operation over life time. Due to modularisation, it offers variety of styling for different models of vehicles with least possible time and minimum investments per model/per OEM customers. Hella came up with these projector modules for front lighting, which involves diffusion and scattering of light by the reflector directly. This results in the higher output of useful light (45% as compared to conventional paraboloid systems with 27% of useful light).

Benefits

For Innovation 1: For their Innovative LED stop-tail lamps, biggest benefit is improved visibility and signalling on Indian highways. This is a fully sealed unit with high ingress protection rating. It uses superior materials for true fit and forget durability. The system consumes ~ 80 % lower power costs cheaper over its lifetime as compared to bulb based rear lamps.

For Innovation 2: Despite 60mm light aperture, it produces excellent light output with homogeneous illumination. It can be quickly developed at lesser tooling investment. Development time majorly involves customization as basic projector modules remain the same. It has more styling options and meets Economic Commission for Europe (ECE) and Indian Homologation. 90-mm Module, has an enhanced light output (~60% more light than conventional systems). The advanced reflector geometry and use of the sturdy H1 bulb (H7 in 90 mm Fog) correspond to the technical standards of lighting in the current headlights for the automotive industry. The system brings optimized illumination like increased beam width, longer range, better homogeneity and intensity.

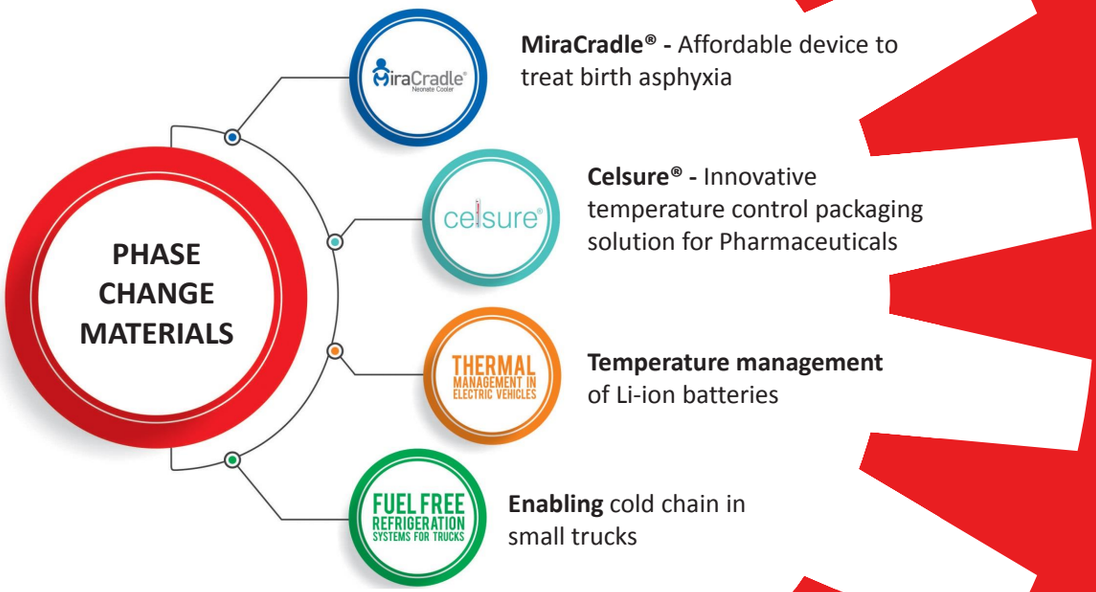


The Future

There is an urgent need to protect the 2-wheeler riders who are involved in most of the accidents due to reasons of not being noticed and not having required visibility. HELLA engineers are presently working on ideas in this domain and are poised to come up with another novel solution to prevent accident for these riders.

CII INDUSTRIAL INNOVATION AWARDS 2017
Manufacturing
Medium Enterprise

PLUSS®
TECHNOLOGY FOR
A BETTER WORLD



MiraCradle® - Affordable device to treat birth asphyxia

Celsure® - Innovative temperature control packaging solution for Pharmaceuticals

Temperature management of Li-ion batteries

Enabling cold chain in small trucks

Pluss Advanced Technologies Pvt. Ltd.

Pluss Advanced Technologies Pvt Ltd. (PLUSS®) is a materials research and manufacturing company involved in the field of specialty polymeric additives for enhancing polymer properties and phase change materials (PCMs) for thermal energy storage.

Founded in 1994, the company has seen tremendous growth in the recent past. Research and innovation have been the cornerstone of the company since its inception and are at the very core of their DNA. The organization welcomes and motivates young minds and helps them successfully implement their ideas. The company believes in developing products, which are meaningful and relevant to the country and the world at large. They feel pride in developing technologies in-house with indigenous processes; this has enabled them to put PLUSS® on the world's innovation map.

The equity infusion in PLUSS® from Tata Capital Innovations Fund in 2012, has enabled them to expand their team and further augment their pursuit of consistent innovation.

In line with the brand purpose, they contribute significantly towards innovative solutions that create a definitive change in the polymers and thermal energy storage industry, and developing breakthrough products to meet the current and future needs of the society.

The Innovation

More than 25% of the vaccines go waste globally primarily because of a broken cold chain. The product Celsure addresses the following problems of the current cold chain packaging solutions:

temperature excursions in extreme ambient of 40°C, complex conditioning of the coolants and temperatures observed below 2°C with current coolants.

Celsure uses the save phase change material technology to ensure precise temperature control for more than 120 hours irrespective of the ambient conditions (40°C or -5°C). Celsure has simplified the conditioning and packaging reducing the assembly time from 30 minutes to only 5 minutes. Celsure has been tested as per the Indian ambient conditions of 40°C and higher. It gives a backup of more than 70 hours' event when ambient temperatures are 43°C.

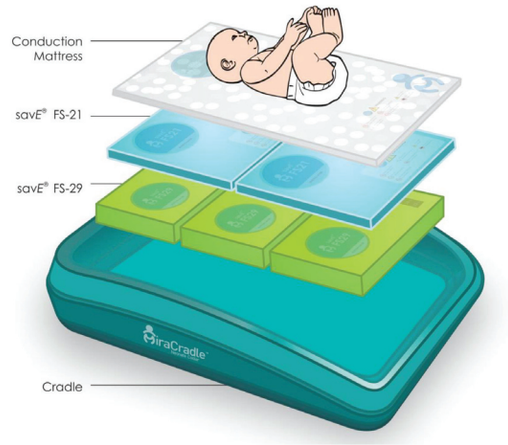
Benefits

Celsure has the potential to reduce the vaccine wastages significantly. This could have far reaching impact especially for the child vaccination and immunization programs. The product has already been adopted by certain pharmaceutical and logistics companies.

In Celsure no thawing of coolants (PCMs) is required before packing the box. The PCMs can be placed directly from the freezer, thereby reducing any chances of human error. It has reduced the assembly time to 5 minutes from 30 minutes.

The Future

The vision of the company is to develop innovative products for a better world. The idea behind every product they develop is to improve the society at large. The mission of the company is to develop innovative temperature control solutions across sectors including healthcare, logistics, refrigeration, HVAC, building/construction and retail.



CII INDUSTRIAL INNOVATION AWARDS 2017
Manufacturing
Micro & Small Enterprise

KFC
It's finger lickin' good

KFC, YUM! Restaurants India Pvt. Ltd.

Yum! Restaurants (India) Private Limited operates as a subsidiary of Yum! Brands Inc., which is an American fast food company. A Fortune 500 corporation, Yum! Offers a bouquet of brands Taco Bell, KFC, Pizza Hut, and WingStreet worldwide.

Yum! India believes strongly in giving back to local communities, where its business operates, making a positive difference in the lives of all its customers, associates, franchisees and their families which is evident from their initiatives like 'World Hunger Relief', Specially-Abled Restaurants, Green Restaurants etc. Their India business has been making incredible progress, laying the foundation for similar emerging markets, where the consumers are likely to increase manifold in coming years.

The Innovation

Yum! has witnessed successes due to innovation through various initiatives across food, activations, processes, and internal practices such as:

- Chizza- a breakthrough twist for pizza, Smoky Grilled Chicken – an innovation, which leveraged on the familiarity of grilled, as well as the novelty of smoky, yet spicy flavours
- Watt-a-box, Gamer's Box – both innovations involving packaging ultimately engaging the fast, young audience.
- More recently they became the pioneers of 'one-click ordering' in the quick service restaurants (QSR) space.

The Approach

In many of their consumer interactions, they encourage their R&D to facilitate on the spot customization of the products. This allows their consumers to get a first-hand feel of how the product would come across if it were re-designed based on their inputs – many a times consumers come back realizing the original build was better or there can be further tweaks. This dynamic method is typically used for easier to assemble and modify items such as Krushers, which require a modification of only the flavour syrup.

Gamer's Box

9.4 bn

Impressions

Watt- a-box

87 bn

Impressions

CII INDUSTRIAL INNOVATION AWARDS 2017
Service
Large Enterprise

ENVISION® SCIENTIFIC
ADVANCING INNOVATION

Envision Scientific Pvt. Ltd.

Envision Scientific (ES) is a company involved in research, development and manufacturing of innovative products and methods for treatment of cardiovascular disease. ES has been pioneering in the development of nanotechnology based applications. They have developed a novel polymer free nanocarrier based drug delivery system.

Their novel technology works in the best interests of their patients, the treating physicians, and the investors who are attracted by the promise of further innovation. The essence lies in their working hard to stimulate a continual stream of innovation in the medical device industry. The intangible value of their innovation lies in the improved health of their patients.

The Innovation

Innovation 1

Due to poor diffusion of drug in drug eluting stents, drug is not properly transferred in tiny pores of artery. This may be due to the size of drug particle and its lipophilic properties.

To address this, ES created a drug in nanocrystal and encapsulated with a unique polymer-free nano-carrier delivering the drug in short time to prevent restenosis.

Innovation 2

Current biodegradable stents are made of polymers and degrades with unpredicted time. Stents made with other non-polymeric biocompatible materials also degrades very fast and fails to provide radial strength to artery. ES have developed a unique coating material which can protect both polymeric or non-polymeric stent while maintaining its radial strength.

Note: All the aforesaid innovations have been patented by the company.

Benefits

No stents are available in market which can treat diabetic patients, who are at high risk after angioplasty. Due to novel coating pattern the product has ultra-high potential to treat diabetic patients with acute myocardial infraction.

The Future

ES is committed to study, research, innovate and develop novel products in life-saving devices towards enhancing quality of life for the patients. With their mission of 'Advancing Innovation' ES leads with best innovation practices with protection of IPR, advancement and improvement of technologies.

CII INDUSTRIAL INNOVATION AWARDS 2017
Service
Medium Enterprise

Apollo Tele Health Services Pvt. Ltd.

Apollo Hospitals with close to 17 years of experience in the field of telemedicine has created the largest and oldest multi-specialty telemedicine network in South Asia. As one of the pioneers of telemedicine across the world, Apollo has always striven to enhance the access to quality healthcare for communities both in urban and rural geographies

With the vision of bringing healthcare of international standards within the reach of every individual, Dr Prathap C Reddy in 1999 established Apollo Telemedicine Networking Foundation (ATNF) and Apollo Telehealth Services (ATHS). On March 24, 2000, Bill Clinton, the then US president, commissioned the world's first VSAT enabled village hospital at Aragonda in Chitoor District of Andhra Pradesh. This marked the formal introduction of telehealth services in India. Indian Medical Association (IMA) has declared March 24 as IMA's National Telemedicine Day to acknowledge telehealth as the most promising solution to bridge the urban-rural health divide.

The Innovation

Innovation 1

Apollo's new telemedicine programme aims to cater to the healthcare need of population residing in Kaza and Keylong situated at 14000 feet above sea level in the Himalayan mountain range.

The objective of their new telemedicine program was to create a conducive health care environment and stabilize patients requiring emergency services before moving them to secondary or tertiary health care services. With this project Apollo Remote Healthcare has completed a total of 4801 OP consultations in Kaza and 4071 in Keylong till date and 534 emergency cases were stabilized through tele-emergency services. 51 patients were screened under tele-cervical cancer screening, and above 9000 lab tests were provided through tele-laboratory services.

Innovation 2

Common Service Centres (CSC): CSC scheme has been one of the key pillars of the ambitious National e-Governance Plan (NeGP) of Government of India. A CSC is essentially a kiosk with a personal computer, a wireless connection and other equipment.

Apollo Remote Healthcare signed a partnership agreement with the CSCs to enable 'Primary, Preventive and Promotive health care services through teleconsultations and telemedicine platform'. The primary objective of this collaborative partnership is to provide grass root level access points for health literacy among the communities, develop health seeking behavior and to promote preventive healthcare services among the rural population.

Innovation 3

e-UPHC – Electronic Urban Primary Healthcare Centre: With this project Apollo Remote Healthcare, have empowered 164 Urban Primary health centres with on-site Medical Officer along with Paramedical and IT staff; there is also a provision for Specialist tele-consultations & laboratory services.

e-UPHC MAK Project is one of its kind formed by the alliance of best resources from the Government's end with Apollo Hospitals.

Benefits

For Innovation 1: This programme has reduced, difficult travel for patients to distant locations seeking health care, saving effort, time and money.

For Innovation 2: Apollo has been able to quickly connect to 60,000 rural endpoints through the Digital India programme and help them become Rural TeleClinics, thereby delivering quality healthcare to the population seamlessly from their neighborhoods. By enabling remote doctor access through telemedicine at CSCs, Apollo Hospitals has been able to penetrate geographies, which remained disconnected over a long time.

For Innovation 3: They have touched lives of close to a million people with more than 2 million footfalls so far. More than 1 lakh people have utilized their speciality tele-consultations in General medicine, Orthopaedics, Cardiology and Endocrinology. 2 lakh people have utilized their lab services that offer more than 30 different investigations. 2 lakh Children have been registered for immunization and 40 thousand pregnant women have registered for ante-natal services.

The Future

They aim at increasing not only the general consultation but also the specialist's consultations by four folds soon. With CSC they aspire to reach every nook and corner of India providing primary healthcare for rural population.

CII INDUSTRIAL INNOVATION AWARDS 2017
Service
Micro & Small Enterprise

AGAPPE

Agappe Diagnostics Ltd

Agappe Diagnostics Ltd is one of the rapidly growing company in IVD (in vitro diagnostic) industry in India with a turnover of over INR 125 Cr.

In India, they have the know-how of making immunoturbidimetry and nephelometry reagents and their reagent range includes Biochemistry kits, Serology kits, Immuno-turbidometry kits, Specialized kits, Coagulation reagents, Haematology reagents and System Reagents for Closed and Open Systems. They have about 250 different reagent kits in their product portfolio.

They are being counted as one of the fastest growing and reliable equipment manufacturer from India for Semi Automated Clinical Chemistry Analyzer and nephelometry analyser which are exported globally. These systems are designed, developed and manufactured in India. Mispa-i3 is the new entrant to their product portfolio.

They are currently exporting to over 55 countries including Africa, Asia, Middle East, Far East as well as regions in Europe.

They are an ISO 9001- 2008 and ISO 13485:2003 certified Company under UL. They conform to GMP standards and have an FDA approved most modern manufacturing facility spread over 120,000 sq. ft. of built up area, which has become the biggest set-up in IVD manufacturing in India.

The Innovation

MISPA I3: Specific protein testing is one of the fastest growing segment in the IVD industry; because of the specificity, diagnosis is easy and accurate. Conventionally the testing is performed mainly by photometry analysers or turbidometry analysers where the sensitivity is one of the major issues. The gold standard for specific protein estimation is nephelometry. Automated Nephelometry platforms are huge systems marketed by the multinational Companies with huge investment and recurring cost. In Indian scenario, the highest number of testing is performed in the Class B, C laboratories, which number more than 15,000, one third of the total laboratories in India. Due to high investment cost, most laboratories in India cannot afford an automated nephelometry platform. The test packs are also large eluding the common laboratories for an automation.

To address the Indian IVD demand, Agappe designed Mispa -i3, a cartridge based specific protein analyser using the nephelometry. Mispa i3 uses specially designed cartridge for performing tests and thus reduces sampling error. Because of the cartridge based testing, customer has the flexibility for a single test. Sampling, mixing, incubation and reading are automated. Mispa -i3 is having smart card calibration to eliminate calibration error and this reduces the recurring cost for calibration. The size of Mispa -i3 is very small that can well fit in all laboratory segments in India. Mispa -i3 is also having battery backup to take care of the power issues in the rural areas and can be taken to field for tests.

Benefits

- Accurate results.
- Possibility to perform rare parameters.
- Very low recurring and maintenance cost.
- Affordable system for B, C Class laboratories, where highest number of testing performed.
- Requires less space and suitable even for small laboratories in rural area and metro cities.
- Simple to use software.
- Export possibilities because of price advantage.

The Future

Cartridge based testing is the new trend, which is revolutionising the IVD industry. Because of the simplicity in operation, flexibility in testing and high accuracy, these kinds of systems are getting wider acceptance in the industry. At present, cartridge-based systems are mainly present in the specific protein testing and soon, it is expected to expand to other common testing segments also.

CII INDUSTRIAL INNOVATION AWARDS 2017

Ankur Scientific Energy Technologies Pvt. Ltd.

Ankur Scientific has been a global leader in the field of Biomass to Energy solutions since the last 31 years. Ankur Gasifier Systems use the biomass and agri-waste to produce combustible gas for thermal applications and power generation. Its equipments are marketed in more than 40 Countries. In the developing countries, they help provide energy that is cheap and on-demand, while in the developed countries, they help make the energy mix greener.

After creating a niche in this segment, Ankur is moving forward as an innovative leader in the 'Waste to Energy Solutions'. Ankur has developed systems for converting various wastes like empty fruit bunch, palm waste, poultry, tyres, waste currencies, etc. to energy. It has now launched a unique technology for converting Municipal Solid Waste (MSW) to energy with minimum separation. The technology is ideal for distributed approach, small cities & towns, where no comprehensive solutions are available today. Ankur is also working with the Bill and Melinda Gates Foundation for converting faecal sludge to energy and setting up the first pilot project shortly.

The Innovation

Municipal Solid waste (MSW) poses the major challenge in our urban and partially, even rural landscapes. MSW collection and management are the most difficult and expensive tasks for Municipal Corporations across the world and in India. MSW disposal involves centralized landfills calling for huge transport of waste from various parts of the city. This leads to increased environmental and social degradation. There are hazardous gas emissions resulting in explosions in landfills thus adversely affecting the ozone layer.

To address this, Ankur has introduced a promising gasification technology, which uses all fractions of MSW without extensive segregation. The process coupled with composting (biogas plants), ensures that very little goes to landfills. The systems are designed to meet all emissions norms and made in India.

The Approach

Their innovation converts MSW to energy almost online, with minimum segregation. Ideally the bigger inerts like stones, glass metals, that can be seen by the naked eye are removed and the small pieces that cannot be seen goes along with the waste into the gasifier after a trommeling process to remove fines / soil. The waste then gets converted to a gas, which is cooled, cleaned and fed to a gas engine to generate electricity or can also be used for various thermal / process heat applications.

The Technology would bring multiple benefits like eliminating landfilling, revenue generation through power, reduced transportation costs for collection and transfer of MSW to the landfill etc.

Benefits

- Substantially reduces the waste volume – system ideally results in almost all waste being processed.
- The process generates fertilizer, gas, power etc.
- The solution would be usable in small towns as well as large cities.
- Even for large cities, the solution would allow decentralised waste processing to minimise transportation and related costs.
- It is a very financially viable solution.

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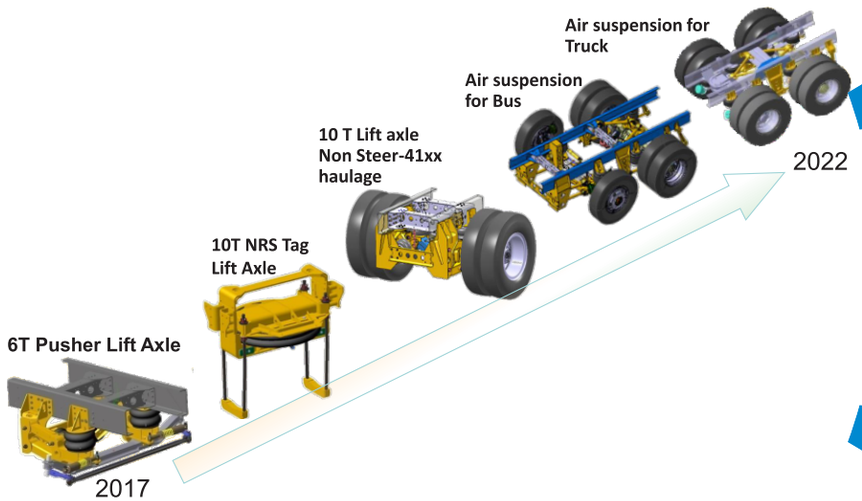


ASHOK LEYLAND
Aapki Jeet. Hamari Jeet.

Ashok Leyland Ltd.

Ashok Leyland is the 2nd largest manufacturer of commercial vehicles in India, the 4th largest manufacturer of buses, and the 12th largest manufacturers of trucks in the world. Headquartered in Chennai, its 9 manufacturing plants give them an international footprint - 7 in India, a bus manufacturing facility in Ras Al Khaimah (UAE), one at Leeds (UK) and a joint venture with the Alteams Group for manufacture of high-pressure die-casting and extruded aluminium components for automotive and telecommunications sectors. With a well-diversified portfolio across the automobile industry, Ashok Leyland has recently been ranked as 38th best brand in India.

While millions of passengers use Ashok Leyland buses to get to their destinations every day, 7,00,000 trucks from their stable keep the wheels of the economy moving. With the largest fleet of logistics vehicles deployed in the Indian Army and significant partnerships with armed forces across the globe, Ashok Leyland helps keep the borders secure.

The Innovation

Innovation 1

Their first innovation is indigenous axle mechanisms for lifting auxiliary axles (i.e. CLASSIK-6T pusher) for a multi-axle truck having leaf-spring suspension, to increase the load carrying capacity of the commercial vehicle, improve its fuel efficiency and enhance the tire life for reducing carbon foot print.

Innovation 2

They have developed an axle mechanism (CLASSIK -NRS) for lifting tag axle of a multi-axle truck having leaf-spring suspensions. This innovation has resulted in increased fuel efficiency and enhanced tire life for reducing carbon foot print.

Note: All the aforesaid innovations have been patented by the company.

CII INDUSTRIAL INNOVATION AWARDS 2017

Chola
Enter a better life

Cholamandalam Investment and Finance Company Ltd.

Cholamandalam Investment and Finance Company Limited (Chola) was incorporated in 1978 as the financial services arm of the Murugappa Group. Chola commenced business as an equipment financing company and has today emerged as the provider of a bouquet of comprehensive financial services offering vehicle finance, home loans, home equity loans, SME loans, investment advisory services, stock broking etc.

Chola operates from 873 branches across India with assets under management above INR 42,900 Crores. The subsidiaries of Chola are Cholamandalam Securities Limited (CSEC), Cholamandalam Home Finance Limited (CHFL) and White Data Systems India Private Limited (WDSI).

The vision of Chola is to enable its customers lead a better life. Chola has a growing clientele of over 8 lakh happy customers across the nation. Ever since its inception and all through its growth, the company has kept a clear sight of its values. The basic tenet of these values is a strict adherence to ethics and a responsibility to all those, who come within its corporate ambit - customers, shareholders, employees and society.

The Innovation

Innovation 1

Trucks contribute to 57% of India's freight traffic. However, the trucking business is affected by unpredictable pricing model with multiple levels of middle-men aiming at consolidation, lack of working capital to start trips leading to delays in delivery, high rate of interest and under-utilization of vehicle capacity.

To address these issues, iLoads and Trip-credit as a service were introduced to the market. iLoads offer demand supply aggregation between the load providers and truckers in a fragmented and technologically under-penetrated road transport industry. Further, through trip-credit, it provides credit-limit based on freight distance rather than asset value.

Innovation 2

From data-entry at customer's place to instant credit decisions based on scoring model to disbursement of loan and collections using contact recording module, LEAP is their second innovation which is an end-to-end integrated platform empowering the feet-on-street workforce, enhancing their productivity, reducing their time and efforts, delighting the customers by reducing physical process.

Innovation 3

Technology gives even the quietest user a voice. Being perceived as bottom-of-pyramid, the trucking community has always had limited technological solutions to their needs. Meeting most of their requirements involve physical processes and efforts. The Customer-Facing-App (CFA) loaded with Gaadi Bazaar and Vishesh facilitates their customers and brokers to transact at the press of a button. PayNow button eases customers from walking to their branches, e-auction enables selling broker's stock at higher prices and Vishesh enables transfer of pre-approved funds.

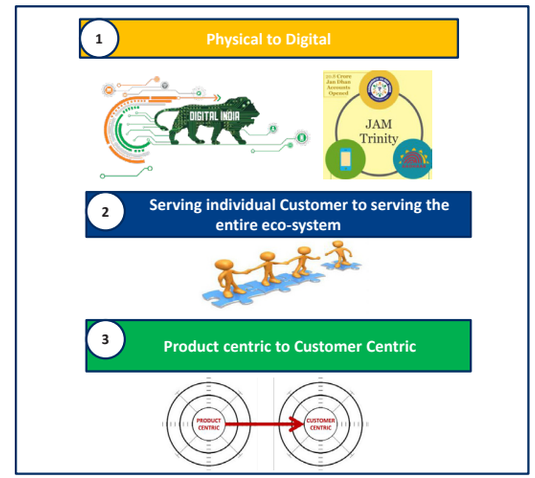
Benefits

With App based E-POD, and reducing the idle-time of the vehicles on the road, they have helped the truckers, who are typically from the bottom-of-the-pyramid enter a better life. The increase in their earnings will help them save and invest more, and more importantly improvise their standard of living.

Vishesh is a game changer in the market that operates out of top-up loans given to customers, who seek a loan.

Instant payment and receipting in CFA to any time instant pre-approved credit to one touch for participation in an auction conducted pan India, all these features significantly reduce the time taken by a customer.

They had an increase in the market share across products because of the improvement in the productivity and having a quicker turnaround time.



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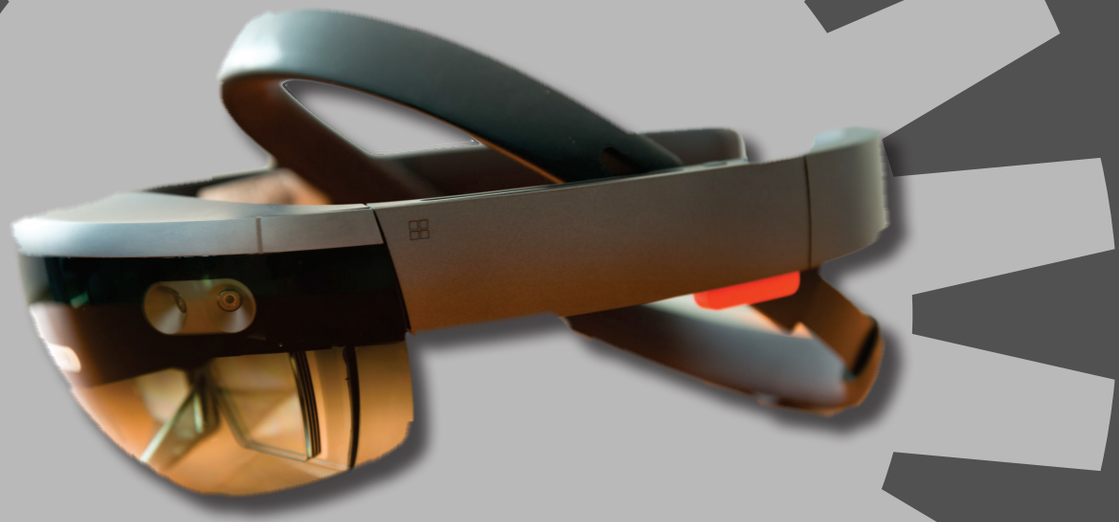


CYIENT

Cyient Ltd.

Founded in 1991, Cyient provides engineering, manufacturing, geospatial network and operations management services to global industry leaders. They deliver innovative solutions that add value to businesses through the deployment of robust processes and state-of-the-art technology. Their high-quality products and services help clients leverage market opportunities and gain the competitive advantage.

From quieter flights and safer train rides to more reliable energy supply, they strive to provide comprehensive solutions that help their clients achieve their operational and business goals. To them, problems are an opportunity to use their extensive global experience and industry knowledge creatively to help their clients do more.

The Innovation

Innovation 1

Unmanned aerial vehicle (UAV): With the changing city infrastructures, the existing applications used by the government departments are not enabled geospatially and are not automated for general city administrative operations like Property tax, building permissions, traffic, security, streetlights etc. This results in loss of revenue for the department and increasing unauthorized constructions. Unique feature of the UAV system is the 3D view of the entire area of interest with different level of details which gives integrated information for efficient decision support. The model provides details in thematic layers such as Buildings, Parks, Parking Lots, Poles and Roads and enables to build an efficient decision.

Innovation 2

Holo Eye: The 'Holo Eye Anatomy' is a mixed reality application made for Hololens device exclusively. It showcases the mixed reality environment which is a combination of both augmented reality and virtual reality. It clearly illustrates the Anatomy of the Human Eye and its inner details with added virtual reality supportability feature.

Innovation 3

One Stop Data Source: Aircraft engine is a complex system with large number of unique parts. Most of information related to specific part or a sub-assembly stays in multiple database servers and it takes lot of time to collect the required data. Cyient has developed a web based, cutting edge 3D visual framework for accessing and managing data from multiple data sources used in aircraft engine product life cycle, called Visual Engine – One stop data source. This is an active 3D visual tool.

The Approach

For Innovation 1: The innovation 1 talks about an Integrated 3D City GIS Solution, a web based decision support system that has the Geospatial, IoT and decision Support capabilities at one place. This solution will Integrate all the departments with one common platform for effective management of the information and resources.

For Innovation 2: Holo eye anatomy is a Universal Windows Platform application that uses the holographic rendering, gaze, gesture and Voice API's. Interacting with the holograms in mixed reality enables the user to visualize and work with the digital content as part of the real world.

Benefits

Their Unmanned Aerial Vehicles (UAV/drones) can be used to optimize consumption of fertilizers and pesticides in farming.

The integrated system has a framework to capture direct feeds from the traffic servers and cameras with live streaming. This helps officials managing the information in an infrastructure like Command & Control Centre based on the live data feeds and system intelligence

Visual engine is helping them in saving time for data search, data pulling as well as single source for training and knowledge management repository.

CII INDUSTRIAL INNOVATION AWARDS 2017

GMR Hyderabad International Airport Ltd

GMR Hyderabad International Airport Limited (GHIAL) is the first Greenfield Airport project in India under Public Private Partnership model of governance. As a JV company, GHIAL was entrusted to develop, finance, build, operate and maintain Rajiv Gandhi International Airport-(RGIA at Shamshabad. The airport was commissioned in a record time of 31 months and commenced commercial operations in March, 2008. The airport is currently one of the fastest growing major airports in the country, handling around 18 million passengers and over 1,35,000 MT of cargo every year. RGIA is strategically located 25 km from the twin cities of Hyderabad-Secunderabad on the Bangalore Highway.

The entire airport was constructed with a vision to be environment friendly. The airport was conceptualized as a world-class facility benchmarked against the best airports in the world, bringing in several industry firsts such as integrated airport operations control center (AOCC), inline baggage screening systems (ILBS), modern flight information display systems (FIDS), integrated cargo facilities and many others as first time in the country. Various industry-first innovations viz. introduction of end-to-end e-boarding, doing away with hand-baggage stamping, express security check and stamping free travel for domestic passengers, conversion of taxiway into runway, Airline Route Profitability Algorithms(ARPA) to increase cargo revenue etc. – these have become the benchmarks not only for the airports in India but also across the world.

The Innovation

Innovation 1

End to End E-Boarding solution: This automated process promises better environment by going paperless; better operational efficiency and convenient journey for passengers at RGIA – all these at no additional cost to the passengers. Passenger needs only a smart phone and an Aadhar number to avail this facility; there would be no need to carry any ID proof at the airport.

Innovation 2

Conversion of Taxiway into Secondary Runway: At Hyderabad Airport, Rwy 09R/27L is the primary runway. In case of the non-availability of the main runway, there is no alternative for the aircraft to land and they need to be diverted to the next airport either at Bengaluru or Nagpur. Hence, maintenance of the main runway leads to the revenue losses and discomfort to the passengers.

Taking these into the consideration Twy 09l/27R, primarily a taxiway has been converted in to the alternative runway in a phased manner with the innovative approach. Now the aircraft can operate on the secondary runway in the VFR conditions and recently Hyderabad airport got approvals for the installation of the Instrument Landing System (ILS) for the secondary runway. This enables Hyderabad airport as a nonstop runway operations with the optimal resource management.

Innovation 3

Airline Route Profitability Algorithm: Historically, freighter connectivity at RGIA has been low (nil till 2010). GHIAL took up the challenge to transform RGIA into logistics hub for India and South-Asia by improving freighter connectivity with the objective to Increase the international freighter frequency at RGIA by 60% over previous year. The following have been the innovation milestones:

- Proposals were sent to airlines based on scientific approach on potential routings with a unique airline route profitability algorithm (ARPA).
- Possibly world's 1st airport to prepare such an algorithm as part of airline proposal

Benefits

For Innovation 1: Automation has improved efficiency and led to more throughput and better utilization of airline & security manpower and infrastructure. This project has been developed with only internal technology/ resource utilization. Had it been outsourced (software), it would have cost around Rs.2.00 crores. The indirect cost saving benefit to airlines would be approx.. Rs.65.00 lakhs (staff reduction for airlines)

For Innovation 2:

- Reduction of Capex investment by approximately Rs.1500 crores.
- No diversion of flights for the airlines and passengers.
- Reduction of holding fuel for airline.

For Innovation 3:

- Moving heavy, oversized and special cargo made possible with the introduction of freighters.
- Cargo volumes at RGIA grew at 10.3% CAGR in the last 9 years, higher than country's CAGR in same period.
- International exports grew at 15% YoY in FY17 and currently growing at 21% YTD July 2017.

CII INDUSTRIAL INNOVATION AWARDS 2017

Godrej | CONSUMER PRODUCTS

Godrej Consumer Products Ltd.

Godrej Consumer Products Ltd. (GPCL) is a leading emerging markets company. As part of the over 120-year young Godrej Group, they have a proud legacy built on the strong values of trust, integrity and respect for others. At the same time, they are growing fast and have exciting, ambitious aspirations.

Today, Godrej group enjoys the patronage of 1.15 billion consumers globally, across different businesses. In line with their 3 x 3 approach to international expansion at Godrej Consumer Products, they are building a presence in 3 emerging markets (Asia, Africa, Latin America) across 3 categories (home care, personal care, hair care). They rank among the largest household insecticide and hair care players in emerging markets. In household insecticides, they are the leader in India and Indonesia and are expanding their footprint in Africa. They are the leader in serving the hair care needs of women of African descent, the number one player in hair colour in India and Sub-Saharan Africa, and among the leading players in Latin America.

Approximately 23 per cent of the promoter's holding in the Godrej Group is held in trusts that invest in the environment, health and education. They are also bringing together their passion and purpose to make a difference through their 'Good & Green' approach to create a more inclusive and greener India.

At the heart of all of this, is their talented team. They take much pride in fostering an inspiring workplace, with an agile and high-performance culture. They are also deeply committed to recognizing and valuing diversity across their teams.

The Innovation

Innovation 1

In bathrooms, the whole category was operating in odour elimination space. There was a need for a differentiated format and improved fragrance solution that works towards experience enhancement in bathroom space. Aer pocket is a first-of-its-kind format in the category. It is a paper membrane-based perfume diffusion solution, with differentiated, improved, fragrance options and convenient usage.

The new innovative format utilizes a gel based technology that is far superior to the products currently available in the market. More than 85% of the people who tried the product, end up repeating their purchase, due to the efficacy of the fragrance release (internal third party research)

Innovation 2

According to an A.C. Nielsen study, 85% Indians are aware of dengue, 90% are unaware that dengue-causing mosquitos bite during the day. Only 8% use repellents during the day and only 1.1% use outdoor solutions. Existing products were perceived to be ineffective, had bad odor, and a tedious skin application process.

A 100% natural mosquito repellent applicable on fabrics that provides 8 hours of protection, pediatrician certified, and at a disruptive price of Rs75. It is quick and easy to use – only 4 dots on clothes, enabling habit creation for use of personal repellents, especially for children.

Innovation 3

India has 986 variants from over 500 deodorant brands. Penetration for the category, however, stayed stagnant despite substantial advertising spends. Research suggested that consumers felt the fragrance did not last long, was not gentle on skin, and costly. A long-lasting, cost-effective, and skin-friendly deo solution was required.

DeoStick is an all-new cream-based deodorant to be applied directly on the body or clothes. It was 3x longer lasting fragrance, gentle on skin, which is quickly absorbed, and non-staining. It is priced at an extremely low-cost of Rs.60 compared to other leading brands.

Benefits

For Innovation 1: The launch of the format doubled the gross profit of the brand within a year and the company's gross contribution on the brand more than doubled in this financial year. Within 1 year, brand gained 13% market share in the home air care segment.

For Innovation 2: Children spend a lot of their time out of the home, while playing in the evening or at school in the morning, they are vulnerable to mosquito-borne diseases. The ease of use of mosquito repellants applicable on fabric protects children against the mosquitoes outdoor and the communication encourages children to play outside without their mothers worrying about deadly mosquito-borne diseases.

For Innovation 3: The company has gained 2.9 % of the market share after 9 months of its third innovation launch. This product has won the Best Deo award on Amazon Beauty Awards 2016.

The Future

In 2020, the company aims to reach 10 times the size they were in 2010. They are making steady progress towards this through international expansion, innovation, and growing market share. By the year 2020, they are committed to generate considerably higher size of the workforce, building a greener India and innovating 'good' and 'green' products that cater to the bottom-of-the-pyramid users.

L&T Technology Services

L&T Technology Services Ltd.

L&T Technology Services Limited (LTTS) is a publicly listed subsidiary of Larsen & Toubro Limited focusing on Engineering and R&D Services (ER&D) and addressing global customers including 52 Fortune 500 companies and 48 of the world's top ER&D spenders.

LTTS offers consultancy, design, development and testing services for the industrial products, medical devices, transportation, telecom & hi-tech, and the process industries. Digital Engineering portfolio of LTTS helps build smart products & services and offers smart manufacturing services and solutions to customers. The company also offers services and solutions in software engineering, embedded systems, mechanical & manufacturing engineering, value engineering and plant & process engineering. Headquartered in India, LTTS has around 11,000 employees, 12 global delivery centres in India and overseas, 27 sales offices in India, North America, Europe, the Middle East and Asia and 34 labs in India as on March 31, 2017.

The Innovation

Innovation 1

Design of a motion activated, bi-directional and variable speed screwdriver. Unique aspects of the screwdriver include:

- Innovative adjustable spring clutch
- Unique spindle lock & latch mechanism

Innovation 2

Optical microscopes: For imaging of large 3-D specimens, capturing the entire object in focus is usually impossible. To solve the limitation of shallow depth of field of microscopy, LTTS' novel technology with extended depth of field includes parallax & illumination corrections and a robust focus selection algorithm. The in-focus segmentation component ensures good quality images across a large variety of specimens.

Innovation 3

A complete end-to-end development of smart meters, gateway module, communication protocol and analytics engine for monitoring energy distribution performance at all levels.

Note: All the aforesaid innovations have been patented by the company.

Benefits

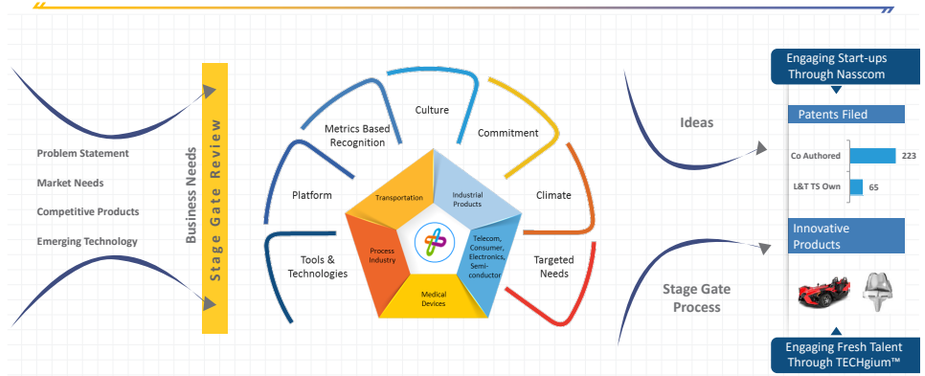
Innovation 1, LTTS has enabled its customers save design and development time.

Innovation 2 has helped increase profit for the company.

Innovation 3 has given real-time insights into the operations, which enable reduced theft and downtime enabling significant improvement in revenue collection. The automatic data collection and reporting have reduced manhours and the company has also bagged tenders worth US$ 2 -3 billion globally.

The Future

LTTS aims to be among the top 10 global engineering services companies in the world. Their mission is to foster customer delight through a creative and innovative culture with technology leadership and delivery excellence, while enhancing value for all the stakeholders.



एन बी सी सी
NBCC
A Navratna CPSE

NBCC (India) Ltd.

NBCC (India) Limited, formerly known as National Buildings Construction Corporation Ltd., is a blue-chip Government of India Navratna enterprise under the Ministry of Housing and Urban Affairs.

The company's present areas of operations are categorized into three main segments, i.e. Project Management Consultancy (PMC), Real Estate Development and EPC Contracting. NBCC has been executing many landmark projects as a PMC which contributes to about 90% of its annual revenue. The segment being the company's core strength, the areas covered under its umbrella include re-development of government properties, roads, hospitals & medical colleges, institutions, offices, airports, bridges, industrial & environmental structures etc.

The real estate segment of the company which came into being in 1988, mainly executing commercial real estate projects, today has undergone a sea change operation wise. keeping pace with the changing business scenario. The present Real Estate Business of the Company could be distinctively viewed falling in two categories based on origin of the projects i.e. one is internally originated & conceptualized projects wherein the company buys land from private and government agencies alike, develops the land and sells it off; while others are sourced from Government wherein, NBCC carries out re-development of Government properties on a model i.e. self-sustaining and does not call for any government funding. The New Motibagh complex, New Delhi under general pool residential accommodation (GPRA) scheme of the Govt. of India is one of the finest examples of such a re-development work in recent times. The project today is certified largest green home complex of its kind in the country.

The Innovation

Innovation 1

A huge quantity of construction and demolition waste (C&D) is generated in the demolition process. The usual practice is to dispose of such wastes to unauthorized sites. In order to prevent this unhealthy construction practice, C&D waste was required to be transformed into recycled products such as bricks, concrete blocks, pavement blocks etc.

For this C&D waste was crushed with jaw crusher and material was sieved to achieve fine sand of less than 4.75 micron. Post mixing this material with cement, water and enzymes it was sent to brick moulding machine. Moulded bricks were cured for 28 days to gain strength.

Innovation 2

This innovation was to reduce the fresh water consumption for construction process by utilizing treated domestic effluents from urban sewage treatment plant for concrete production. This also helped reducing CO2 emissions and contributed towards green environment.

The application of treated domestic effluent is an alternative to fresh water for curing of concrete mix production of high water-cement ratio. The improved process, attributed to the pore filling effect concomitant to the deposition of suspended and dissolved solids present in effluent water for evolution of enhanced construction practices.

Benefits

For Innovation 1: Zero requirement for the disposal of construction and demolition wastes without any initial financial investment by NBCC (India) Limited. This process ensures less wastes ending up in landfills, increased longevity and reduced costs. Hence, a saving of transportation and processing fees approximately amounting to Rs.7 Crore was achieved.

For Innovation 2: The use of treated effluent (TE) curing compound helped enhancing performance in terms of strength development and surface imperviousness.

The Future

Their mission is to be a leading company, with high brand equity in construction business, offering sustainable, innovative and cost effective construction products and services contributing to national wealth, upholding responsibility for the environment, and promoting well-being of all stakeholders including employees, customers, shareholders and society.

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RAMANI
We bring ideas into reality

Ramani Precision Machines Pvt. Ltd.

Ramani Precision Machines (P) Ltd., a Punjab based business entity is the recipient of prestigious National Award from the Prime Minister of India, as an outstanding small scale industry, for the year 1998. The company is primarily engaged in the manufacturing, supplying and exporting of industrial machines like automatic fillet rolling machines, automatic caulking machines, automatic wire winding machines, spring coiling machines, gang drilling machines and many more. In addition to this, the company has set a strong foothold in the regions of India, Germany, United Kingdom, Dubai etc. Recently, they have become a channel partner of Yaskawa Robots, Japan.

The projects, undertaken by them, are implemented with efficiency, speed & economy adhering to the time schedule. Their products and services are widely supplied to automotive industry, air conditioning industry, lighting industry, mass production machining, materials testing, material handling and transfer systems engineering. They are working for the development of special purpose machines for American as well as Japanese organizations, who are setting up their new projects in India. They are constantly striving to establish and maintain long-term relationship with their esteemed clients.

The Innovation

They work towards developing machines for various manufacturing processes. Every machine they developed is packed with several new technologies, ensuring high output, fool proofing, consistency of quality and with economical costing.

The Approach

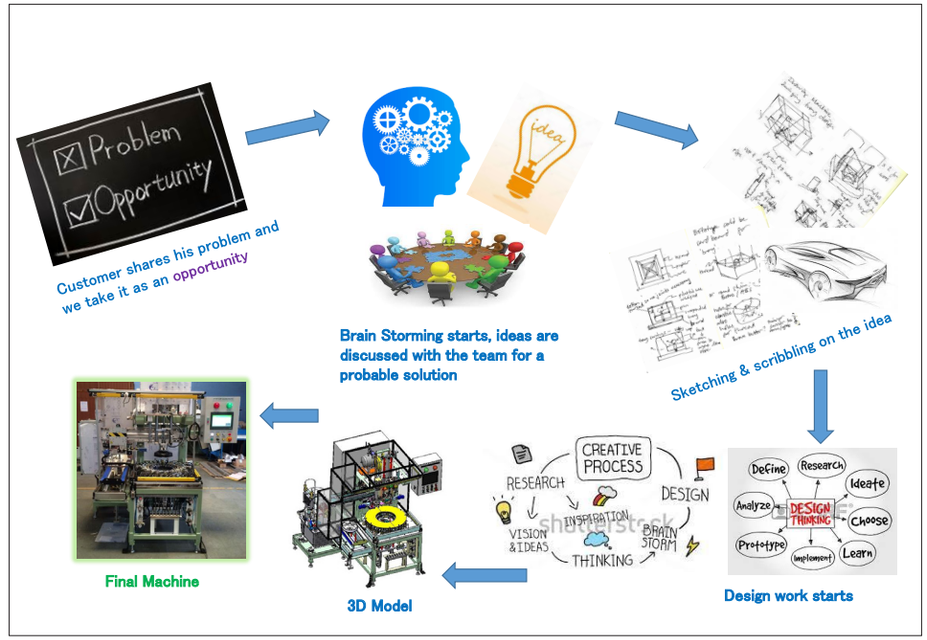
The company is providing customized solutions for their customers. They indulge in discussions with their customers and then design the solutions, and manufacture and supply to them.

With their own developed technologies, they are not required to pay any royalty / fees to any technology provider. This makes their profitability quite sound. Many multinational companies are purchasing special equipment's developed from them.

Benefits

Their special equipments are for fast production. They have developed certain machines, which have cycle time of 2.5 seconds only.

With their attributes of high quality designs & manufacturing, they have earned a good reputation in India & abroad. Their company has seen increase in their market share compared to others.



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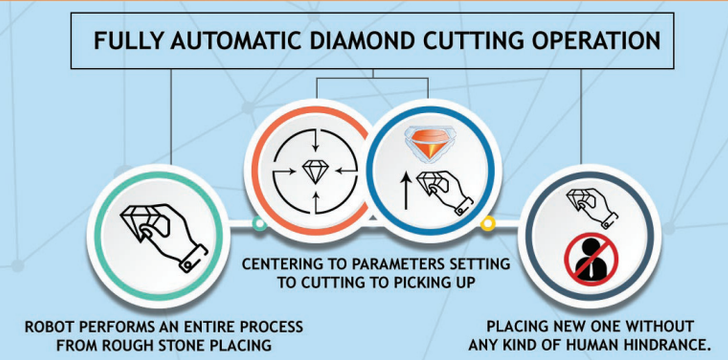
ROBOMATIC

WORLD'S FIRST DIAMOND PROCESSING ROBOT

ONLY ONE OF ITS KIND.



Sahajanand Technologies Pvt. Ltd.

Sahajanand Technologies Pvt. Ltd. (STPL) is engaged in developing cutting edge technological solutions for the diamond industry. STPL is one of the very few global companies that offer total technology solutions for diamond manufacturing, including diamond analysis and planning, laser processing, laser blocking and polishing and safe diamond trading.

As a trendsetter of the industry, STPL pioneered the laser diamond cutting technology in India. Today, the advanced technological solutions offered by STPL leverage the promising laser technology, vision technology and ensure higher productivity at lesser costs. The solutions focus on optimizing automation and eliminating the resource consuming & less reliable finishing operations. The company also offers wide range of variants of its product to suite diverse needs and budgets. Sound technological competence and value driven approach have put STPL on the global map of diamond processing industry. At STPL, engineering excellence is merged with core values of quality, safety, integrity and responsibility.

The Innovation

Innovation 1

Laser Blocking System -Rough gemstone are processed through various stages of operations for obtaining polished diamond. Previously, laser was used to cut the gemstone for obtaining round shape and facets were made on the gemstone by using polishing wheels. One polishing wheel was consumed for processing 100 diamonds, moreover it was less precise and suffered poor productivity.

STPL started using laser for both the processes. Hence, their production improved and process time was reduced. They automated their entire process by working on CAD-CAM, therefore increasing accuracy and yield.

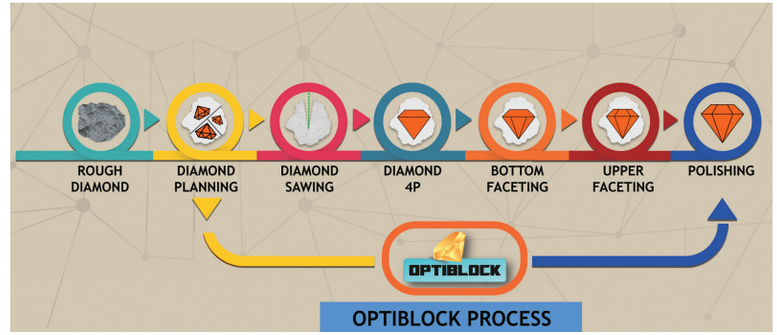
Innovation 2

OptiCent System- The gemstone is mounted manually on a holder by the operator by repetitive hammering at the required position. This reduced the value of polished diamond and had more process errors. Their innovation is the amalgamation of mechanical with image processing techniques as well as artificial intelligence, wherein the gemstone gets robotically positioned to its required place so that further processing on it can be started quicker. Also, the positional accuracy is much better than conventional techniques.

Innovation 3

Accurate parametric values are required to extract high-quality polished diamond from a rough gemstone. While setting these values into a laser cutting machine, human error significantly reduces the quality and size of the processed diamond. Also, the topographical data, which are not available to the operator, results into inaccurate guessing of process parameters in conventional techniques

Their third innovation addresses the process of measuring the actual topographical data of the rough diamond and the cutting process itself. This eliminates wastage of time and diamonds. The planer data i.e. the coordinates are automatically transferred from planer machine to laser machine without any human intervention.



Benefits

- The error rate reduced to 5% (maximum) with the use of the new process. Hence, the accuracy improved.
- Due to process improvements at the initial stages, production throughput has increased by up to 40%.
- By their continuous efforts in innovation, they are able to reduce material loss by more than 4%. (i.e. several thousand carats of diamonds saving).

The Future

STPL continues its journey towards the vision set for itself by its founder. Soon, robotic automation is likely to move the Indian diamond industry swiftly setting new benchmark for methodologies, especially for cutting processes.

CII INDUSTRIAL INNOVATION AWARDS 2017

Siemens Healthcare Pvt. Ltd.

Siemens Healthcare's (SH) aims to increase value for the healthcare providers by developing precision medical devices, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

An estimated five million patients globally benefit every day from their innovative technologies and services in the areas of diagnostics and therapeutic imaging, laboratory diagnostics and molecular medicine, as well as digital health and enterprise services.

They are a leading medical technology company with over 170 years of experience and 18,000 patents globally. With more than 48,000 dedicated colleagues in over 70 countries, they are poised to innovate and shape the future of healthcare.

The Innovation

High-cost medical imaging systems break down if the environmental conditions (such as temperature, humidity, power supply) are not maintained within specified levels. Presently, customers of these systems find it difficult to ensure the environmental conditions at desired levels. This results in increased downtime of equipment and costs for spare parts.

SH's environment monitoring system uses IoT and cloud technologies to monitor different subsystems of medical equipment such as HVAC, helium compressor, chiller, power, humidity, battery back-up. Alerts are sent to their customers when environmental conditions go out of range. Advanced analytics help proactively identify effective steps to ensure minimal breakdowns.

Benefits

The environment monitoring system has resulted in reduction in onsite efforts of service engineers. The environmental data collected are used to help healthcare provider optimize air-conditioning within the hospital/clinic/diagnostic centre to reduce power consumption while improving conformance to recommended environmental conditions.

The reduction in downtime and associated requirement of spares grossly improve the customer satisfaction and patient throughput thus adding to the bottom line for the healthcare providers.

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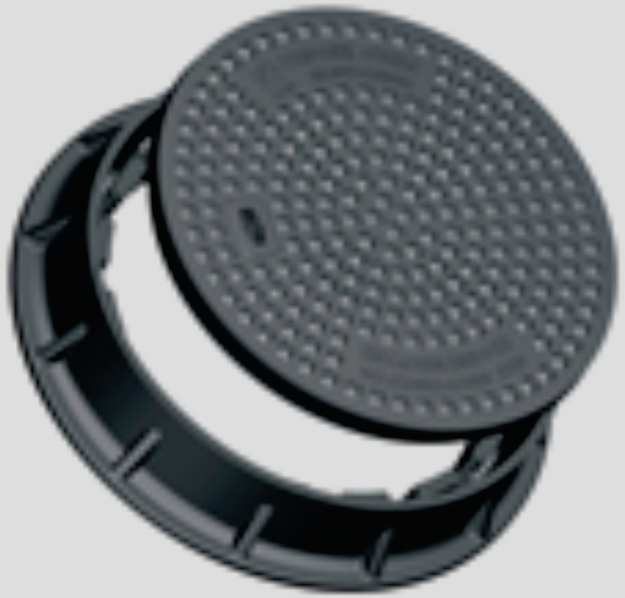


Man Hole cover

SKYi Composites Pvt. Ltd.

Established in 2015, SKYi is a polymeric raw material manufacturer founded by technocrats on two important pillars of innovation and sustainability. The vision of the company is to become a global technology leader and a solution provider for polymeric materials for a greener planet. They have over 10 patents specifically in the field of long fiber thermoplastics (LFT) manufacturing and products, die-manifold and preheating systems, which are covered under individual patents of Dr. Sachin Jain, MD. They also have flexi-line with patented die design to produce long carbon fiber composites. Globally, they have one of the largest fully functional and automatized LFT production line. SKYi has the capability to produce LFT with various sizes & continuous strands for different applications.

Average age of people at SKYi is 27 years thus resulting in young and energetic workforce. They have 25% women in R&D, HR and other departments with over 100 years of combined experience and 20% workforce in R&D with PhD and M.Tech/MS focusing on innovation. They also received ‘Excellence Award’ as ‘Fastest growing company’ by the International Achievers Conference and Gold Trophy by PLASTINDIA foundation for ‘Innovative Polymer Materials’.

The Innovation

LFT composites are 5 times lighter than steel, 2.5 times lighter than aluminium and up to 30% lighter than conventional engineering plastics, while offering same or even better mechanical, thermal, dimensional stability and extremely high creep resistance. This makes it a unique class of material to be used in light-weight applications for automotive and other industries such as building & construction, white goods appliances etc. This innovative material is not only light-weight, but has high corrosion resistance along with extremely high chemical and environmental stress resistance. The material is easily recyclable, and more environmentally friendly than conventional materials such as metals or thermoset polymer based FRPs. Component manufacturing process is easy to scale and quick; hence, having high energy efficiency and low emission compared to FRP, BMC and metal off course. Due to EMI shielding ability and electrically insulating properties, thermoplastic composites are becoming popular in electric vehicles.

SKYi LFT is the 3rd generation of LFT's which overcomes the limitations of the previous generations by ensuring every single fibre is impregnated by polymer, providing uniform mechanical properties and dimensional stability viz. less warpage, better creep, uniform shrinkage etc. It also ensures that the screws and barrels are protected from direct contact with the abrasive glass fibre.

Their proprietary manufacturing process makes them the only company in India with the ability to produce LFT thermoplastic composites without any dependencies. Their patents on die design enable them produce consistent and superior quality products at high speeds. Their product patent portfolio also enables them to make customized products and provide specific need based solutions.

The Approach

SKYi's innovation aims at developing highly light weight and cost effective alternative material which would cater to the needs of latest vehicle manufacturing norms (e.g.: Euro 6 norms) as well as potential replacement for metals. It will help meet various regulations on emissions, safety and crash worthiness, NVH, fuel economy etc. in the design and development of new generation vehicles.

LFT, in the form of granules or tapes are becoming popular:

- to replace high performance and highly expensive polymers
- to replace metals or thermoset composites by improving thermal as well as mechanical performance
- in all crash relevant applications, where traditionally plastics were not considered

Their customer centric innovation strategy works on 3 fronts:

Customer requirements and applications based	Market trends and futuristic developments	Fundamental research
Joint development with >70% of our customers	Joint activity with 20+ global brands	Conductive hybrids, drug delivery

Benefits

- More than 50% weight reduction in metal to plastics and 20% further weight reduction potential by replacing conventional engineering plastics.
- 25% improvement in production efficiency and lower carbon footprint during production and use.
- Resistance to corrosion and chemicals, making it durable in applications such as consumer appliance, construction and plumbing specially in aggressive environment.
- Possibility of 3R's (recycle, reuse and reduce the waste) at the end of life cycle.
- Lower manufacturing cost of parts as it uses simple and fast injection moulding process, which is very efficient in terms of time, energy (electricity and heat), and low/no emission compared to thermoset curing.

The Future

There is an urgent need to reduce weight in transportation mode (electric vehicles, fossil fuel based) to improve fuel efficiency, reduce emission and lower the carbon footprint. Safety in every aspect requires materials, which are human friendly and can be embedded with digital mediums. Metal being thermally and electrically conductive cannot be used. LFT composites offers freedom of design and flexibility to product designers to come up with affordable solutions to counter the challenges.

Sohan Lal Commodity Management Pvt Ltd.

An ISO 9001:2008 Certified Company & An ISO 22000 : 2005 Certified Company

Sohan Lal Commodity Management Pvt. Ltd.

Sohan Lal Commodity Management Pvt Ltd (SLCM) is a global post harvest Agri-Logistics Group. It is an ISO 9001: 2015, ISO 22000: 2005, ISO 33000, ISO 14001:2015 & OHSAS 18001:2007 certified company. The Group provides one-stop solution to the end user with diversified portfolio of services ranging from Warehouse Management, Agriculture Financing, and Collateral Management to Procurement. SLCM warehouse management is equipped with technology to offer storage and protection services for the entire range of agri-commodities. SLCM has been handling more than 873 agri commodities including Cotton, Barley, Bajra, Castor Seeds, Wheat, Pulses, Maize, Spices, Aloe Vera, etc. across India. As on 30th June 2018, SLCM manages a technology enabled network of more than 2850 warehouses and 19 cold storages pan India with a total capacity of over 9.33 million MT spread over 48.86 million sq. ft. and throughput of more than 675.41 million MT.

The Innovation

Innovation 1

AGRI REACH (patent pending) is as an algorithm which combines series of processes, audits and Real-Time tracking of facilities to give error free results with reduced risks of crop damage. It results in saving losses by 9.5 percent of INR 1,00,000 crore as per industry standards.

Innovation 2

KISSANDHAN: Post the slowdown of 2008, there has been a significant decline in agriculture sector. The government has laid down plans and taken initiatives to sustain development wherein ensuring institutional credit to farmers is of utmost importance. This is the problem, which Kissandhan, (SLCM)'S Non-Banking Financial Company wants to address through collateral financing. SLCM has developed methods that help farmers avail a loan against their crop through their wholly owned subsidiary Kissandhan. This not only ensures improved incomes to the farmers, but also provides them the facilities of crop storage till they are ready to sell off their products.

Innovation 3

SLCM LTD. Myanmar: Company changed the paradigm of Warehousing & Financing in Myanmar, where collateral based lending was limited to mostly land holdings. Myanmar Banks have now included key agricultural goods as collaterals; this has been a landmark achievement for a foreign company entering an international domain. In comparison to India, Myanmar experiences a post-harvest loss of 30-35% of its total agri-produce annually. SLCM Ltd. aims to provide innovative and affordable range of services to agri & warehousing sector in Myanmar while substantially reducing the food wastage.

The Approach

SLCM manages all their warehouses without investing in infrastructure. They have developed processes that enable farmers reduce agri-wastage by 9.5 per cent of during the post-harvest period and tied up with farmers, intermediaries, joint liability groups, SMEs, processors, traders, commodity exchanges to government.

Benefits

SLCM has devised a SOP, which amalgamates technology with agri domain expertise and allows SLCM to operate any warehouse agnostic to infrastructure, location, weather pattern across any kind of agriculture crop. It has also applied for patenting this scientific technology of storage under the name of "AGRI REACH".

The Group also has a wholly owned NBFC in India christened as "Kissandhan" which has changed the paradigm of collateral financing by financing across diversified agri products whilst being agnostic to balance sheet or net worth of the borrower yet complying with the prudential norms of RBI.

The Future

SLCM envisions being the preferred agro service provider across all agriculture value chains with a presence in every geo-climatic region of the world. SLCM Group has strong plans to foray into ASEAN countries like Cambodia, Vietnam and Laos. Also, the company is rigorously looking at the African commodity market. The post harvest losses in all these countries are more than 25%. Moreover, these countries face the same systematic agriculture problems as India does.

CII INDUSTRIAL INNOVATION AWARDS 2017

TATA HITACHI

Reliable solutions

Tata Hitachi Construction Machinery Company Pvt. Ltd.

Tata Hitachi Construction Machinery Company Private Limited, the leader in construction equipment in India, aims to enhance the operational performance of its customers, leading to improved profitability and competitiveness by offering constructive solutions.

Tata Hitachi is a subsidiary company of Hitachi Construction Machinery Co. Ltd., which holds 60% share and Tata Motors Ltd. holding 40%.

Tata Hitachi is focused on capitalizing the opportunity in the domestic arena for which the key market segments are excavators, wheeled products, cranes and others. Tata Hitachi's consistent growth and success have been built on the foundation of the company's ability to understand customers' needs and provide equipment alongside support solutions that increase profitability and competitiveness.

The Innovation

Innovation 1

The gear manufacturing shop of their company had difficulty meeting the production demand. The bottleneck was the gear grinding capacity, augmenting, which meant additional investments of approximately Rs.10.5 crore. A solution needed to be worked out to increase the production volumes with maximum additional investments of approximately Rs.4.00 crore.

A new process, “Fast Finish Hobbing” for gear manufacture was innovated through major modifications of the existing processes. The new process yielded better quality gears with shorter manufacturing lead time. With an additional investment of about Rs.4.00 crore in the gear shop, the higher production target could be met. In the new process, cutting speed up to 500 m/minute could be attained. This reduced the hobbing time by 60% while still maintaining the required gear accuracy and surface finish. This also eliminated the gear grinding process, which has reduced the man-hours requirement in the gear manufacturing shop by 25%.

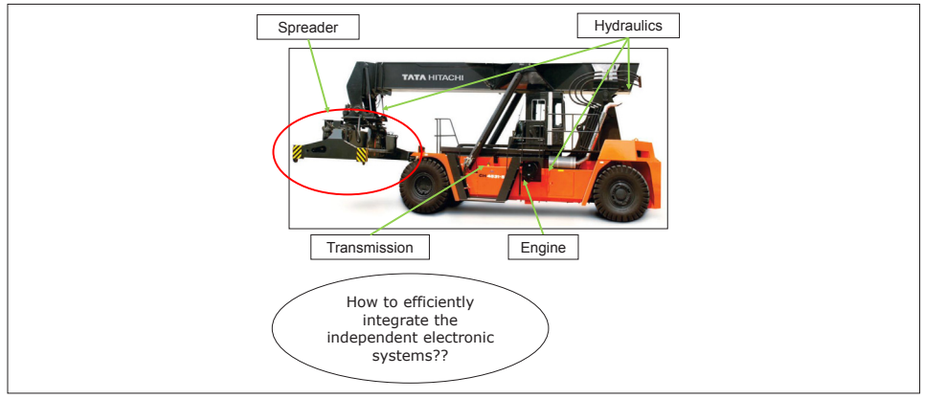
Innovation 2

In Reach Stacker machine (container handler), fault diagnostics is a challenging activity since functioning of many critical aggregates are interlinked electronically. In case of machine breakdown, pinpointing the error and reducing downtime is the main objective of service staff. A user-friendly electronic system was required for easy diagnosis. A diagnostic system has been designed by the company with a master controller communicating with all major aggregates through CAN bus system. It includes load measurement, load sensing and data logging and it is displayed on a single touch-screen monitor; no other reach stacker manufacturer in India offers such systems controlled from a single monitor.

Innovation 3

Their market share in 37-ton class excavators fell mainly for poorer durability of undercarriage parts (mainly track chain) in hard applications like granite quarries. Design modifications and quality improvements in the undercarriage parts helped to a limited extent. A major idea was needed to improve undercarriage life.

Rather than improving the individual components of the undercarriage, the company innovated a different solution by creating a “hybrid” machine. A new excavator was designed by combining the upper structure and attachments



of a 37-ton class excavator and the undercarriage of a 47-ton class excavator. The new model is named “Zaxis400MTH”.

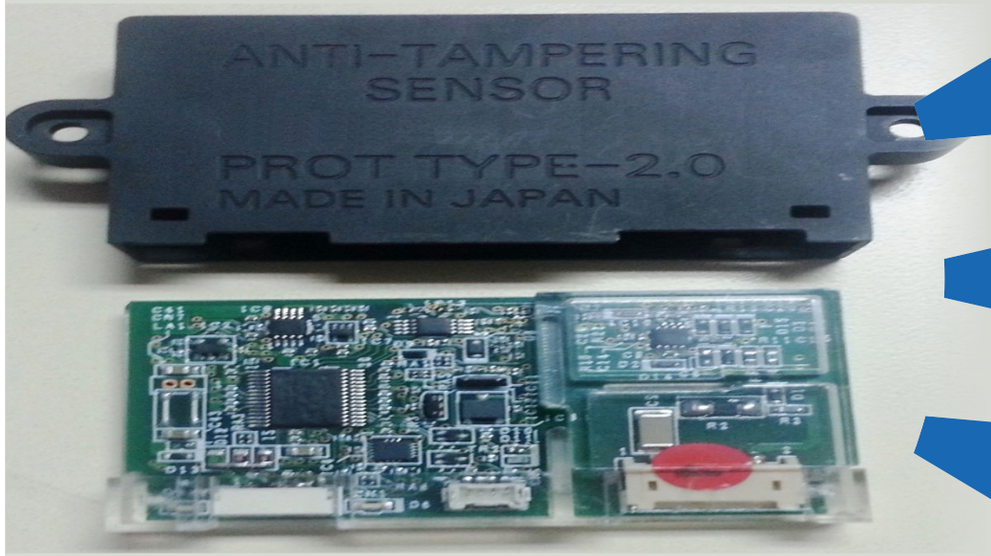
Benefits

For Innovation 1: Due to enhanced productivity achieved with the new process, there has been a saving in production cost of gears to the tune of Rs.3.7 million per year, which has increased the profit margin of the company. Operators find it more convenient and comfortable to operate a machine without coolant than a machine with coolant since the liquid coolant sometimes spills and splashes, causing inconvenience.

For Innovation 2: Load sensing technology and CAN bus technology ensure that each aggregate of the machine functions optimally with respect to the load, resulting in optimum fuel consumption. While fuel consumption of their machine is 16 to 17 LPH, for competitors’ machines it is 19 to 20 LPH.

For Innovation 3: Sale of Zaxis400MTH is likely to push their market share up by about 3% in the 30 to 40-ton class excavators. The increase in profit is expected to be up to 20%.

CII INDUSTRIAL INNOVATION AWARDS 2017



Tata Power Delhi Distribution Ltd.

Tata Power Delhi Distribution Limited (Tata Power-DDL) is a joint venture between Tata Power and the Government of NCT of Delhi with the majority stake being held by Tata Power Company (51%). Tata Power-DDL distributes electricity in North & North West parts of Delhi and serves a populace of 7 million. The company started operations on July 1, 2002 post the unbundling of the erstwhile Delhi Electricity Supply Undertaking (DESU). With a registered consumer base of 1.6 million and a peak load of around 1852 MW (June 2017), the company's operations span across an area of 510 sq kms.

Tata Power-DDL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its consumer-friendly practices. Since privatization, the Aggregate Technical & Commercial (AT&C) losses in Tata Power-DDL areas show an impressive reduction of around 84% from an opening loss level of 53% in July 2002.

The Innovation

In an environment where power distribution utilities across the country are reeling under heavy losses and experiencing acute power shortages, Tata Power-DDL has consistently over achieved its targets and scripted an unprecedented turnaround story.

Innovation 1

In this digital world, power thefts are carried out using advanced instruments, which either disturb accurate energy measurement or damage meters permanently without leaving any physical evidence of tampering resulting revenue losses. Faced with such a scenario, Tata Power-DDL in collaboration with Omron Corp., Japan has developed multifunctional sensor, which is capable of capturing events for all tampering with energy meters.

Innovation 2

Lack of dedicated corridor for utility network resulted in external damages and untimely failure in Tata Power-DDL cable network. These damages led to moisture ingress and further failure reducing cable life by 8-10 years. Tata Power-DDL has developed product and process based on extensive research and experimentation for life enhancement of installed cable at highly economical cost. They utilized in-house domain knowledge and developed chemical solution for cable treatment by silicone resulting in cable life enhancement.

Innovation 3

Reducing Aggregate Technical and Commercial (AT&C) losses in slums was extremely difficult with challenges like theft, non-co-operative attitude, political intervention etc. Hence, it was considered essential to maintain close connect with entire consumer base (1.7 million) of slum clusters in Tata Power-DDL licensed area. Tata Power-DDL designed a unique program where 741 women (Abha) from slums were identified, groomed and made their brand ambassadors. These Abhas were then engaged as intermediaries, who work to curb electricity theft, help the residents file complaints, and resolve other electricity connection related issues. This social and financial empowerment has helped them gain huge respect from family and society.

Benefits

For Innovation 1: Multifunctional sensor developed for energy meters has helped in curbing the menace of electricity theft and led to generation of additional revenues of INR 7.00 Crores per annum. It has also resulted in savings of man-hours lost on account of identifying and booking theft cases including collection of evidence tenable in legal forums.

For Innovation 2: Cable life enhancement by silicone has helped the organization in recurring capital saving of INR 9.00 Crores per annum. The operational efficiency has increased improving the reliability indices.

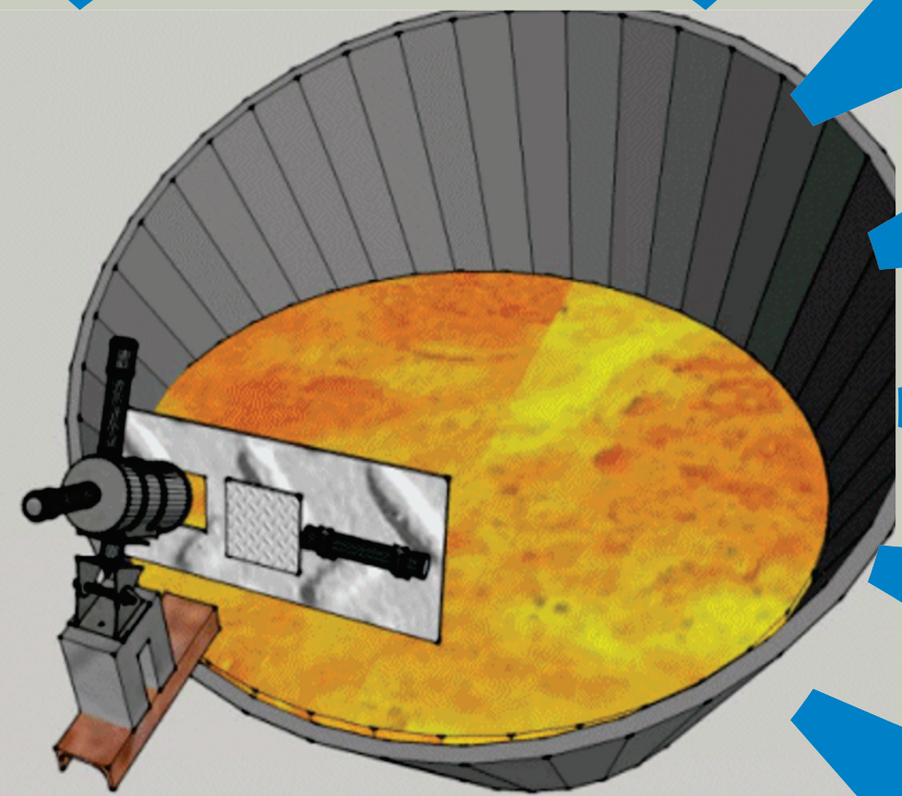
For Innovation 3: Abha has been a social innovation model, which not only resulted in financial savings (reduction of AT&C loss, enhanced billing & collection efficiency, and creating safe environment for the public) to the organization but also impacted the lives of women from the slum clusters.

The Future

The cable life enhancement technique has the potential of replication across power distribution utilities in the country resulting in national savings of INR 500 Crores per annum.

A team from World Bank visited Tata Power-DDL to study the social innovation model with a view to implement the same in a few countries facing similar problems.

CII INDUSTRIAL INNOVATION AWARDS 2017



TATA
TATA STEEL

Tata Steel Ltd.

Tata Steel Group is among the top global steel companies with an annual crude steel capacity of 27 million tonnes per annum (MTPA) as on March 31, 2018. It is the world's second-most geographically-diversified steel producer, with operations in 26 countries and a commercial presence in over 50 countries. The Group recorded a consolidated turnover of US $20.41 billion (INR 133,016 crore) in FY18. Tata Steel Group is spread across five continents with an employee base of nearly 74,000.

Tata Steel was felicitated with several awards including the Prime Minister’s Trophy for the best performing integrated steel plant for 2014-15 and 2015-16, Best Risk Management by CNBC TV18 (2018) and ‘Corrporate Strategy Award’ by Mint (2018). The Company also received the ‘Most Ethical Company’ award from Ethisphere Institute for the sixth time (2018), Steel Sustainability Champions (2017) by the World Steel Association, Dun & Bradstreet Corporate Awards (2017 & 2018), Golden Peacock HR Excellence Award by Institute of Directors (2017) as well as 'Asia's Best Integrated Report' award by the Asia Sustainability Reporting Awards (2017), among several others.

The Innovation

The innovation is centred on the design, development, installation and commissioning of an intelligent “Smart Raking System”. The system uses Infrared camera with image processing capability that could cut down the losses and optimized amount of slag that could be skimmed away. This has been implemented in the Steel Making Shop of Tata Steel and is the “first of its kind’” in India.

During steel making, a thick layer of floating slag is formed on the surface of the steel meniscus. This layer, if left alone, would adversely affect properties of the final product. The conventional practice involved a manual process to rake (skim) the slag. While the manual practice led to losses, the innovative raking system has overcome this limitation.

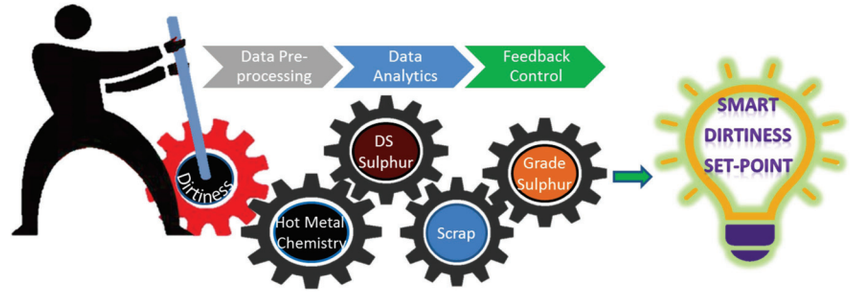
The Approach

Various challenges and the approach to overcome them are enumerated below:

- Environment Heat: It was resolved by utilizing direct and indirect cooling. This has been tried for the first time.
- Dust: A pneumatic shutter installed in in-front of the camera, preventing the dust to settle on the win-dow. A pressurized horn is installed in front of the enclosure window to prevent dust emanating due to the raking process.
- Unhindered view: During skimming, undesirably, boom came within view of the camera, giving wrong result. This was overcome by installing an encoder to track movement of the boom, and to know when the boom was out of the view of the camera.

Benefits

After implementation, this system has been able to generate savings through reduction in iron yield loss. This has enabled improve productivity and raking time, and reduced heat loss to the environment. One of the major benefits has been the improvement in quality of the high strength steel grades for the automotive sector. The number of complaints that were attributed to the slag entrapment in steel has reduced drasti-cally. For the first time in India, a smart raking system has been designed, developed and implemented. The novelty lies in the use of Artificial Intelligence and Image Processing techniques to separate the slag and steel. The yield went up by 21%.



The Future

The system can be deployed in other steel making shops existing in India and abroad. The concept can also be used in industries beyond Steel making e.g. Aluminium, Copper and Zinc. In the long term, the raking system could be upgraded to an automated raking installation.

CII INDUSTRIAL INNOVATION AWARDS 2017

WINDCARE
INDIA PVT. LTD
Praise the Lord | Touching you with Special Technology!

Windcare India Pvt. Ltd.

Windcare India Private Ltd is a pioneer in delivering innovative service solutions to the wind power industry. Started in the year 2001, Windcare has been a one-stop solution for any intriguing technical challenge faced by the wind power industry in India and abroad.

Mr. S. Anthonyraj Prem Kumar, its founder and Managing Director has been instrumental in the design, development and hands-on execution of an exclusive technology for de-erection and re-erection of wind turbine components without the use of heavy-duty cranes. Before Windcare's Innovation, the conventional method for de-erection and re-erection of wind turbines components involved use of expensive heavy-duty cranes.

Their extensive research brought a revolution in the industry by pushing down the maintenance cost of turbines by about 50%, a boon for wind farm owners. They are well positioned to handle complete operation and maintenance services for wind parks.

The Innovation

Their innovation arose from the pressing need to greatly reduce the cost of the conventional method involved in the operation & maintenance cost of wind turbine generators (WTG)s such as mobilization, transportation of counterweights, overhead power lines, huge fuel consumption due to the large numbers of trucks involved, time for execution, hill station pathway, road traffic etc.

Their innovative technology includes the method of removing and lifting a single blade from a rotor hub of the wind turbine. This technology lessens the problems associated with the conventional method of using large cranes.

The Approach

Windcare has indigenously designed and manufactured lifting tools and its respective processes for replacement of WTG accessories without the use of heavy duty cranes. This is done based on calculated and proven technical reviews, design guidelines pertaining to international engineering standards and specific customer requirements and is validated by competent academic institutes/engineers.

Quality assurance, environmental protection and safety control measures are the parameters, which have made their ideas a great success. Regular experience sharing as well as basic and on-going training promotes the awareness of their employees at all levels allowing them to act competently and responsibly.

Benefits

- More than 85% savings in the project cost.
- 80% reduction in process execution time.
- Carbon emission reduced by 97% in terms of transportation fuel consumption and pollution.
- Deterioration of the cultivated area near wind turbine reduced.
- Reduced the customer's compliance formalities for pathway and transportation.
- Suitable for any terrain and any capacity of wind turbines.

The Future

They are working to enhance their standards and improve their technology consistently to suit the requirements of various countries to capture the overseas markets, where they have not yet penetrated with their technology.

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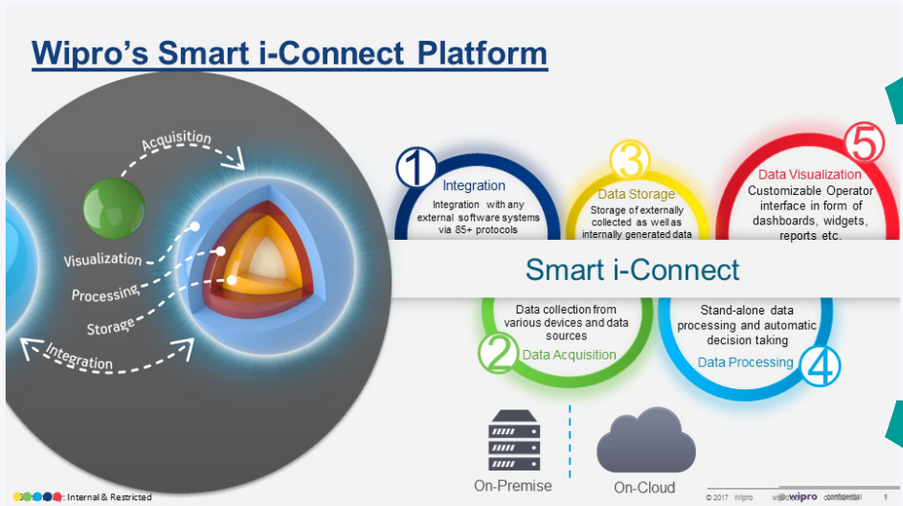


Wipro Ltd.

Wipro Limited has been a leading global information technology, consulting and business process services company. They have been working in the areas of cognitive computing, hyper-automation, robotics, cloud, analytics and emerging technologies to help their clients adapt to the digital world. As a company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, they have over 1,60,000 dedicated employees serving clients across six continents.

The Innovation

Innovation 1

Data Discovery Platform: A full-stack analytics platform, which consumes analytics in service model and supports data-driven culture in organizations.

– Comprises 20+ pre-built Data Models, 100+ re-usable KPIs, 45+ clients globally.

Innovation 2

Smart i-Connect Platform: An IoT data aggregation and integration platform, which manages/monitors OT/IT devices, networks & applications end-to-end for smart cities, mining, seaports, airports, agriculture, logistics and more.

– Comprises over 87 built-in industrial protocols, 3000+ customer devices monitored in real-time and 100% customizable modules.

Innovation 3

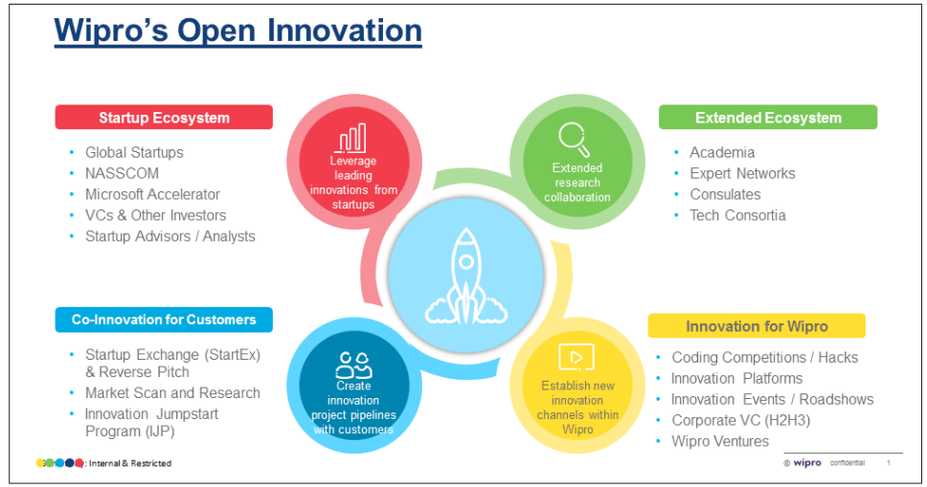
Open Innovation Process: This involves working with stakeholders [startups, academia, Wipro Ventures, Horizon Program, Crowdsourcing Models (Topcoder), Expert Networks and M&A].

The Approach

For Innovation 1: Wipro's approach to innovation is across business units and is broad-based and decentralized. The Data Discovery Platform is developed as an end-to-end analytics platform which enables reusability, flexibility and modularity across industries.

For Innovation 2: The operations of the cities and campuses are fragmented with various independent functions. This calls for a platform to collect seamless data timely decision making. The Smart i-Connect platform integrates various independent systems through a data aggregation layer on a scalable and modular basis.

For Innovation 3: The approach harnesses innovation within the ecosystem and the organization and delivers impactful solutions to customers. The processes have been evolved through various engagements and experience gained over time.



Benefits

Innovation 1 (Data Discovery Platform) has supported company's clients with reduced total cost of ownership (TCO) and development efforts. It also supports citizen services for customers in healthcare, transportation and utilities.

Innovation 2 (Smart i-Connect Platform) has resulted in increased profitability for the company and increased service satisfaction level of the company's clients and helped them reduce cost of operations. Operation & maintenance cost reduction to the tune of 30% could be achieved for smart cities/ campuses. The system would cost 20-30% lower as it is based on Open Source & Open Architecture compared to the prevalent systems based on proprietary technology.

Innovation 3 (Open Innovation Process) has empowered company's clients with improved time to production, access to emerging tech, de-risked adaption. It has also increased company's customer & ecosystem engagements.

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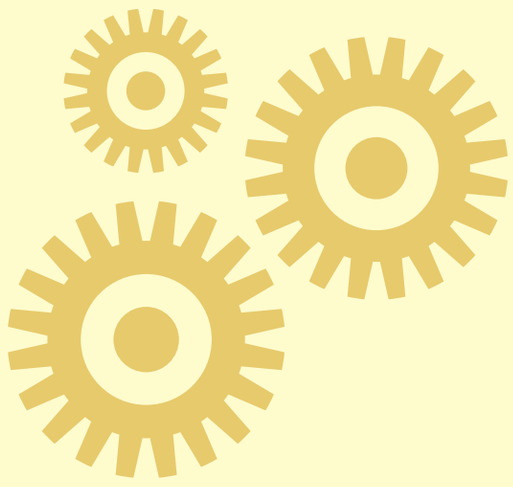
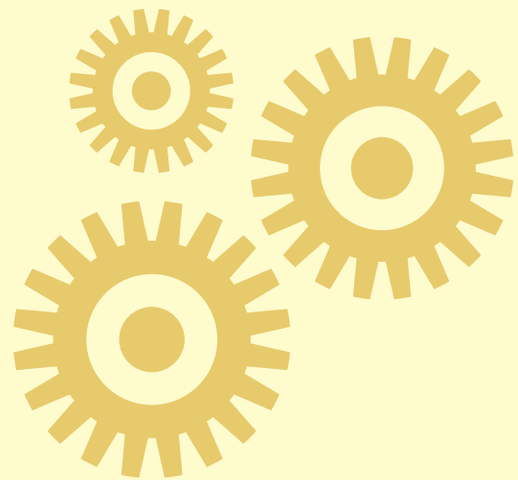


Top 25 Innovative Companies 2018



Mahindra
Rise.

Mahindra & Mahindra Ltd.

The Mahindra Group is a USD20.7 billion federation of companies that provide innovative mobility solutions for driving rural prosperity, enhancing urban living, nurturing new businesses and fostering communities. It enjoys a leadership position in utility vehicles, information technology, financial services and vacation ownership in India and is the world's largest tractor company, by volume. The group also enjoys a strong presence in agribusiness, aerospace, commercial vehicles, components, defense, logistics, real estate, renewable energy, speedboats and steel, amongst other businesses. Headquartered in India, Mahindra employs over 2,40,000 people across 100 countries.

> *"Innovation is the lifeline of Indian industry which is heavily reliant on the ability to create evolving solutions for customers. At Mahindra, innovation is guided by our Rise philosophy. Our products and services have always been designed with innovation at its core. I would like to thank CII for Innovation Awards platform which will help nurture and encourage a culture of innovation within India".*
>
> ***Dr Pawan Kumar Goenka,***
> *Managing Director, Mahindra & Mahindra*

The Innovation

Innovation 1

Jivo Compact Tractor: 80% of Indian farmers own less than 5 acres of land and lack access to affordable mechanization (penetration is <5%). India had no affordable tractor catering to the challenging needs of this diverse segment. JIVO was developed to address the problem of multi-application suitability and single tractor across crop cycle.

The team questioned orthodox beliefs of tractor design, balanced value for money with value for many and addressed complex requirements of bottom of pyramid farmers. The market was segmented, and common requirements were identified. There was in-depth farmer research, robust QFD and contribution from Mahindra's New Product Development division.

Innovation 2

Mahindra Big Boss: M&M leads the tractor market with 25 lakh operational units. Despite a strong network of authorised workshops and on-site services, servicing customers in fastest time with least travel is always a challenge in rural markets. Therefore, customers prefer the nearest local mechanics for repairs and maintenance. Rather than competing with local mechanics, M&M launched a collaboration named Big Boss to develop their skills and invest in their infrastructure. The existing ecosystem of relationships was leveraged to benefit customers. The extended feet on street sourced leads for spares and new tractor purchases. Mechanics benefitted from the upgraded knowledge and recognition.

Innovation 3

Mahindra MDura Engine: Majority of the customers for Indian Small Commercial Vehicles (SCV) are owners-cum-drivers and their purchase is strongly influenced by the fuel economy. Minimizing any cost has significant impact on business economics. The challenge was to a create a breakthrough, emission friendly product to help customers' increased earning potential. Mahindra developed mDURA 625cc engine with a single cylinder architecture offering same power+ torque as the nearest competitor with 700cc- two-cylinder architecture yet giving 30% better fuel economy.

The following approaches realized their third innovation:

- Implementation of common rail injection system at an affordable cost
- Implementation of ECU controlled fuel feed pump to further enhance fuel economy
- Innovations in base engine for low cost and high-power density

Benefits

For Innovation 1: The result was a versatile tractor suitable for the full, multi-crop agri-cycle.

- 20% lesser cost to farmer than competition.
- 3 times cheaper service & maintenance.
- 12 - 15% better productivity.
- 16 - 20 % better fuel efficiency.
- 45% reduction in material weight.
- Most effective power utilization.

For Innovation 2: Improved skills of local mechanics lead to better WOM for their products. The program enhanced lifestyle of local mechanics through respect and scholarship for their children. The program started in FY15 with around 3000 Local mechanics (Techmasters) enrolment and today the base stands at 13000+. Business of parts from Techmasters has increased by 7x times in FY18.

For Innovation 3: After the launch of mDURA in JEETO, Mahindra has jumped to top slot in the small commercial vehicle segment overtaking competition. While reducing turn-around time, it has recorded 30% better performance. The available time can be used to make additional trips, which dramatically increase the owners earning potential.

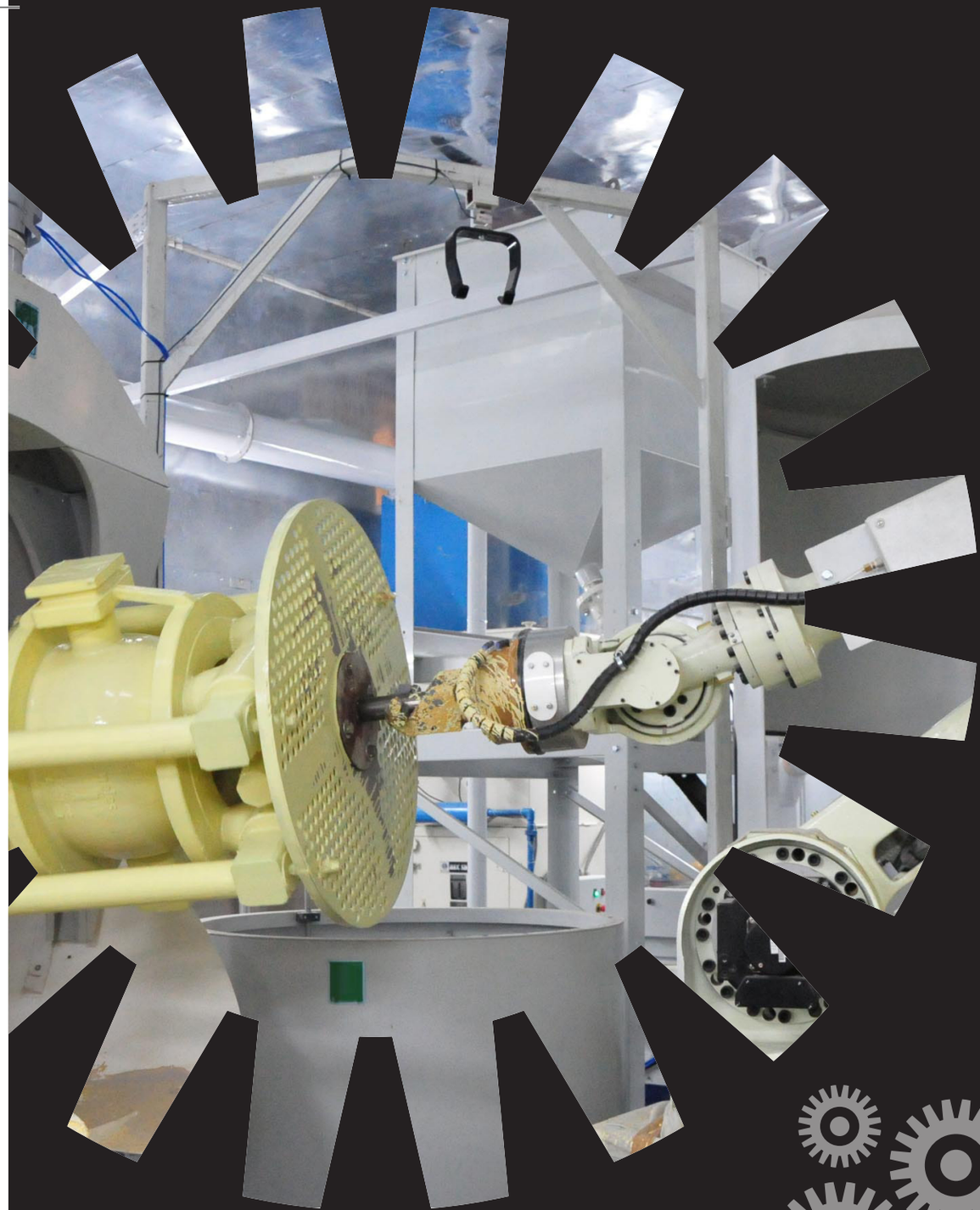
The Future

Innovation 1: Use of 'Digisense' smart technology to offer tractor owners complete control of their tractors via smartphone

Innovation 2: Expand this program to more locations across the states

Innovation 3: The learnings will be applied to related vehicles in the portfolio.

CII INDUSTRIAL INNOVATION AWARDS 2018
Grand Winner
(Most Innovative Company)
Manufacturing
Large Enterprise



PTC INDUSTRIES
Aspire. Innovate. Achieve.

PTC Industries

PTC Industries is one of the world's leading suppliers of high-precision cast components for critical and super-critical applications for their clients like Rolls Royce, GE, Siemens, Alstom etc. and to India's space programme. PTC manufactures products for a wide spectrum of industries including Aerospace, Oil & Gas, Ships & Marine, Flow control, Power plants, etc. in a vast range of materials including alloy steel, stainless steel, duplex and super duplex, nickel alloys, cobalt alloys, NAB along with titanium parts for the first time ever in India.

PTC has introduced over 20 unique and advanced technologies like Replicast®, RapidCast™, Printcast™ and forgeCAST™ in the country to reduce and eliminate various constraints and defects associated with the conventional sand molding process and to enable manufacture of much larger castings with a much higher accuracy and substantially improved quality, consistency and reliability than any other process.

> *"This prestigious recognition shall further strengthen our determination to realise our vision, which is to become the number one choice in the markets we serve, creating value for all our stakeholders through innovative solutions. PTC's pioneering work on introduction of technologies like forgeCAST™ and RapidCast ULTRA™ is ushering in a new era of disruptive innovation in the metal component industry. For far too long, the casting industry has remained reliant on conventional methodologies, but with the near-net-shape manufacturing solutions that PTC offers for producing large size, complex metal parts in higher and exotic alloys, it delivers a unique competitive advantage for its customers, partners and also the future of manufacturing in the country."*
>
> ***Sachin Agarwal***
> *Chairman & Managing Director, PTC Industries Ltd*

The Innovation

PTC's capabilities and innovation philosophy yield benefit both for its customers and stakeholders; a brief overview of three of its most far reaching recent innovations are as follows:

Innovation 1

Traditionally, casting is preferred where the parts required are of near-net-shape or of complex forms. The forgings are generally heavier; they require far more machining and metal removal than cast parts. These characteristics make the forging process more cost-prohibitive for producing complex, net-shape parts in medium to large sizes, especially in expensive and exotic materials like Stainless Steel, Duplex, Super-Duplex, Inconel and Titanium. PTC's new technology, forgeCAST™ brought the best of both worlds of casting and forging together. Intensive research and extensive trials on imported equipment led to the creation of a process, where various techniques were combined, and equipment was modified leading to a densification of the part and resulting in smaller grains or microstructure equivalent to that of forgings.

Innovation 2

Creating large, complex near-net-shape parts, in stainless steel or difficult-to-cast metals like Duplex, Super Duplex, Inconel, Hastelloy or other exotic alloys, with weight ranges up to 6,000 kgs with exceptional surface finish, high integrity, reduced weight and a significant reduction in lead times posed great challenges. RapidCast Ultra™ is PTC's innovation for producing extremely large, high precision, metallic components with reduced final weight, higher performance with a 30-40% reduction in lead times using virtual tooling and process automation.

Innovation 3

Utilising the power of PTC's existing technologies, 3D modelling software, casting simulation techniques, volumetric solidification, machining simulation software, finite element analysis, 3D scanning and computerised measuring capabilities for meeting the defined parameters, significantly leaner and defect free components were produced. With its knowledge, expertise and experience, the whole set of parts was 'value re-engineered' resulting in increased performance, efficiency and reduced cost of the product itself while eliminating risk of defects and failure.

The Approach

PTC has succeeded in re-inventing the age-old casting process bringing about a paradigm shift in the way they view core technologies for the manufacture of critical metal components. While leaps in technology caused evident advancement across other industry spectra in the world, the casting industry remained reliant on conventional methodologies and rooted in age-old processes. PTC's innovation through the development of technology, process improvements and use of robotics and automation has created path breaking possibilities.

PTC does not offer merely better price, superior technology, higher efficiency but also seeks to deliver enhanced value to all its stakeholders by economising, optimising, re-designing, re-engineering, reclaiming and recycling and offering sustainable manufacturing by imbibing the best manufacturing practices in the industry.

Benefits

PTC's innovations have led to the creation of a unique capability, enabling it to manufacture any size, near-net-shape, complex parts in exotic and higher metallurgies with mechanical properties, strength, reliability and quality far superior to those in a conventional casting process. Using its unique technologies and processes, PTC is in a position to deliver parts with high dimensional accuracies, excellent surface finish, no gas porosity and no sand inclusions in a highly consistent and repeatable manner. Further, majority of the materials used in these technologies are reclaimed and recycled and the process uses only a fraction of the materials, resources and energy as compared to conventional technologies.

The Future

PTC brought all the latest, most advanced and best-in-class technologies and equipment under a single roof to create unprecedented synergies and opportunities for manufacture of metal parts. This aggregation will initiate cross-pollination among these technologies, processes and equipment, and this would grossly improve the manufacturing of metal components in the future.

CII INDUSTRIAL INNOVATION AWARDS 2018
Manufacturing
Medium Enterprise

stellapps®
Smart Systems, Stellar Applications.

Stellapps Technologies Pvt. Ltd.

Stellapps is an end-to-end dairy technology solutions company, the first of its kind in India. It is an IIT-Madras incubated company founded by a group of IITians and technologists with a strong industry background and rich experience including IIT-Madras, IIT-Kharagpur and IIM-Ahmedabad alumni, with over 18 years of industry experience across Wipro, Nortel, Ericsson, Alcatel-Lucent, AT&T, Vodafone, Telstra, Bharti-Airtel, Aircel, Avaya, Cisco etc. The team has vast experience in design, development and deployment of large scale, cloud and embedded platforms supporting over 100 million subscribers. Stellapps provides digitised dairy supply chain solutions, which helps dairy farmers, consumers, cooperatives and private companies to maximise the value realisations. IIT-Madras, IndusAge, Bill & Melinda Gates Foundation, Qualcomm, ABB Ventures, Omnivore Partners are their partners.

Currently Stellapps innovations handle 3 Billion litres of milk with 50,000 registered agents, 1.2 Million farmers and 4,50,000 cattle through 25,000+ points of presence, and already enable USD750 Milion of direct farmer payments.

> *"Stellapps sincerely thanks the CII Industrial Innovation Awards committee and the Jury for this recognition and further inspiring us to do better."*
>
> ***Ranjith Mukundan,***
> *CEO & Co-founder, Stellapps Technologies*

The Innovation

Stellapps' innovative applications and digital dairy solutions leverage Internet of Things (IoT), Big Data, Cloud, Mobility, and Data Analytics to improve dairy supply-chain parameters, including milk production, milk procurement, cold chain, animal insurance and farmer payments. SmartMoo™ IoT router and in-premise IoT Controller acquire data via sensors that are embedded in Milking Systems, Animal Wearables, Milk Chilling Equipment & Milk Procurement Peripherals, and transmit the same to the Stellapps SmartMoo™ Big Data Cloud Service Delivery Platform (SDP), where the SmartMoo™ suite of applications analyse and crunch the received data before disseminating the Analytics & Data Science outcome to various stakeholders over low-end and smart mobile devices.

SmartMoo™ smartAMCU™ is an interconnected network of sensors connected to a cloud server with the help of IoT enabled android device. The system is integrated to multiple sensors capturing farmer and cattle level data including milk quality, milk quantity, adulteration, feed/ fodder intake, cattle activity, cattle health, artificial insemination and veterinary services, farmer payments, cattle insurances, credit worthiness etc and disseminate through multiple output devices like android devices, display unit, printer, cloud computing-based web portal etc.

If the first innovation was helping farmers to earn more, the other two innovations SmartMoo™ smartCC and SmartMoo™ ConTrak™ are to improve the cold chain efficiency and hence improve the quality of milk. These two innovations for digitising chilling centres in the dairy supply chain are again a network of IoT enabled sensors capturing and controlling parameters like milk quality, milk-can traceability, milk quantity, dynamic route management, chilling temperature, pilferages, quantity & quality mismatches, age of the milk, power and fuel consumption etc to ensure efficient cold chain operations and enhanced milk quality. SmartMoo™ smartCC is installed at procurement section of chilling centres where as SmartMoo™ ConTrak™ is installed in integration with chilling units in the cold chain.

The Approach

Presently, the dairy industry and dairy farmers are facing multiple challenges including adulterations and inferior milk quality, fluctuating farmer incomes, lack of transparency and efficiency in procurement activities, lack of milk traceability and lack of data at each stage of the supply chain. Already, there is a good understanding of possibilities of leveraging technology for solving these challenges among the various stakeholders in the dairy industry. Stellapps is adding momentum to it, with the marketing efforts and increased clientele, who come forward to implement these innovations. Their core team has the capacity to address dynamic requirements with proactive and customized product/feature releases.

Benefits

The milk consumers and the milk producers (both the cattle and dairy farmers) are the primary beneficiaries of this digital innovation with enhanced milk quality and increased farmer incomes. Milk traceability, improved milk quality, MBRT and shelf life, increased farmer incomes, increased supply chain efficiency, improved transparency, informed business decision making based on real time data are the various benefits that different stakeholders can directly avail with the implementation of these innovations. The data captured, helps the farmer in various ways other than increased income and transparency by improving the access to credit, access to cattle insurance, value-added services etc.

The Future

In future, data is the currency and all the supply chain operations are the sources of critical business data. Most of the agriculture supply chains face same kinds of challenges. Digitising the dairy supply-chain completely from the farmer to consumer is the near future, and the real future is replicating these innovations to other similar supply-chains.

CII INDUSTRIAL INNOVATION AWARDS 2018
Manufacturing
Micro & Small Enterprise

Indus Towers

Indus Towers Ltd. has been offering passive telecom infrastructure to all telecom operators and is headquartered in the National Capital Region. Founded in 2007, Indus Towers has been promoted as a joint venture company amongst (i) Bharti Infratel Ltd. (group company of Bharti Airtel limited, rendering telecom services in India under the brand name Airtel), (ii) Vodafone India Limited (group company of Vodafone Group- UK) rendering telecom services in India under the brand name Vodafone, since merged with Idea Cellular Ltd. and (iii) Aditya Birla Telecom Ltd. (group company of Idea Cellular Limited, now re-named as Vodafone Idea Ltd.) for sharing telecom towers & infrastructure.

Indus has presence in 15 telecom circles of India and has achieved over 2,78,408 tenancies (as on 31st March 2018). With the current count of over 1,23,639 towers (as on 31st March 2018), Indus has the widest coverage in India and is also the largest telecom tower company in the world (outside China).

> *It is indeed an honour to be selected in this category and I thank CII for this recognition. Innovation really has been the DNA of Indus Towers right from its inception. Our recent win of the prestigious Deming Prize reiterates our unflinching commitment towards innovation; which isn't just limited to our products and technologies but spans across our systems and processes.*
>
> ***Bimal Dayal**,*
> *CEO, Indus Towers*

The Innovation

Innovation 1

Indus developed an innovative portfolio of 'Nextgen Towers' designed to meet the demands of aesthetic cityscapes, premium city locations and smart cities.

Explosive voice and data demands for providing seamless coverage to mobile subscribers require building telecom towers across cityscape including densely congested urban and premium locations. Conventional latticed towers with cluttered aesthetics and higher footprint posed potential challenges for city rollout due to resistance from the municipal authorities, land owners and community.

Innovation 2

A new product solution called SPS (Simple Power Solution) got added to their equipment portfolio; this is a cost effective EB (Grid) panel, developed to utilize 1/2/3 phase EB (Grid). This panel works on extended voltage range with 99% efficiency as well.

Very high efficiency Site Automation Panel has been developed to maximize EB utilization resulting in the reduction in diesel generator operations and site energy cost. High diesel generator running on the sites due to frequent phase tripping and voltage fluctuation results in 6-10% EB (Grid) losses and high EB (Grid) panel cost.

Innovation 3

The USP of this product is all about storing energy for DG triggering purpose from the existing site DC (Direct Current) source. This innovation is first in the industry as a new product benefiting Indus, manufacturers and the tower fraternity.

The innovation addresses automation failure, frequent break down of DG battery and charging system, which has a high replacement cost. Telecom site technician does not need to carry DG battery from one site to another resulting in safe practices and fewer site visits. This also results in reduction of site outages and high uptime.

Benefits

For Innovation 1: The towers featured with aesthetic designs, lower footprint and provisioned for hosting public services like street lights, Wifi, city surveillance garnered enhanced social acceptance from community and municipal bodies. These designs have zero visual, noise and air pollution.

For Innovation 2: SPS (Simple Power Solution) has brought in 60% BOM/BOQ reduction and 70% reduction in equipment cost. The enhancement of EB (Grid) utilization on sites with single phase, resulted in lower DG usage. The innovation has improved automation with its tamper proof design. The innovation resulted in high alarm compliance and reduction in operations and maintenance costs.

For Innovation 3: This innovation has assured automation, high service life and a very low replacement cost. Removing the DG battery from sites has a positive impact towards environment including acid spillage.

The Future

For Innovation 1: Highly scalable, next generation tower portfolio has resulted in building telecom towers at more than 1000 strategic locations in last 2 years across the country. Indus has also won the contracts for two smart cities (New Delhi Municipal Corporation and Vadodara Municipal Corporation) with this innovative tower portfolio.

For Innovation 2: Highly scalable product and Indus has already implemented the SPS solution in over 40,000 sites so far out of a total 123000 sites.

For Innovation 3: Highly Scalable product, which will cover the entire site portfolio. It is already deployed on more than 25 sites and growing further.

CII INDUSTRIAL INNOVATION AWARDS 2018
Service
Large Enterprise

BARC India

Broadcast Audience Research Council (BARC) India is a joint industry company founded by the stakeholder bodies that represent Broadcasters, Advertisers, and Advertising and Media Agencies.

Built upon a robust and future-ready technology backbone, BARC India owns and manages a transparent, accurate, and inclusive TV audience measurement system. Apart from the currency products to the TV industry, BARC India also provides a suite of insight products designed for Broadcasters, Advertisers and Agencies. The Big Data and insights generated by BARC India powers efficient media spends and content decisions in a highly dynamic and growing television sector.

With a panel that is currently being scaled up to 180,000 individuals, BARC India is also the largest measurement company of its kind in the world.

> *Constant Innovation is indispensable to the growth and success of any business entity. Technology is at the core of BARC India, and innovation is critical to us in maintaining a credible and robust measurement system. Especially, in the Media & Entertainment sector, where technology is evolving rapidly, innovation is an imperative. The CII Industrial Innovation Framework is a great platform to encourage and facilitate innovation among Indian firms, and we hope to make the best out of this association.*
>
> ***Partho Dasgupta***
> *Chief Executive Officer, BARC India*

The Innovation

Innovation 1

BAR-O-Meter: In keeping with Government's 'Make in India' campaign, BARC India has created an indigenous BAR-O-Meter, which is used to collect data from TV viewing panel homes. These meters have 7 days of battery backup to send data at any given point in time. The meters are dual telecom network enabled and is a complete smart solution. BARC India's indigenously created BAR-O-Meter addresses the issue of importing all materials to create the meter which measures TV viewership. Also, the innovation ensures timely delivery of the meters, keeping in mind the Indian condition of electricity and telecom network in rural areas.

Innovation 2

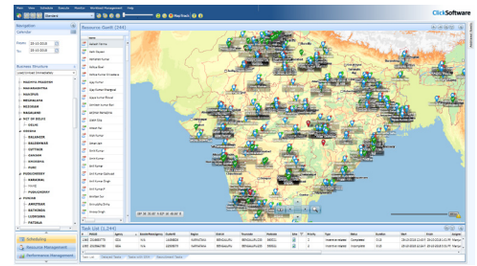
Panel Management System: The state of art Panel Management System is a combination of 2 world class enterprise solutions, which are capable to meet the complete requirement of Field Force Team. Automated task creation and flow, basis device feedback and 210 ways to schedule task makes this solution unique. BARC India manages world's largest TV panel for viewership measurement. Around ~500 people manage 40000 meters spread across India. Increasing the productivity of the team managing meters under the given circumstances was the biggest challenge that BARC India took to resolve through this innovation.

Innovation 3

BIO Products: TV Viewership Data is complicated. Most of the time copious amount of data is sliced and diced in all possible combinations but no real 'insight' is mined. The end users need 'actionable insights' which can help the decision maker take the right content decisions for his business. BARC India with BIO Products has successfully travelled the journey from 'data' to 'insights'. BIO is a visualisation tool which makes data available at a click of a button. BIO NEWS, which is focused towards 'news channels' show modules like 'Anchor Performance', 'Story Performance' & 'Personality Performance' among other features.

The Approach

BARC India's mission is to "Measure What India Watches" and their goal is to provide accurate & representative TV viewership data and insights to Indian Media & Entertainment Industry. Keeping this approach intact, BARC India seeks to constantly improve its products and services based on evolving and emerging needs of the industry. At BARC India, cross-functional teams are built to ensure success of any project. Before starting a project a significant amount of time and resources are invested in learning about the requirements of the project. They also adopt global best practices by involving international experts/ expertise.



Benefits

For Innovation 1: Panel Management System gives flexibility to plan, implement, collect the data and modify the process based on feedback and re-implement the changes. The technical capabilities of the solution can be utilized by most of the Research Firms.

For Innovation 2: BAR-O-Meters are being made at 1/12th the cost of imported meters. This allows for scalability. Any attempt of tampering the meter can be escalated to the back office in real time. The meters can be tracked real time through GSM.

For Innovation 3: BIO Products gives specific output to users on click of a button. It helps customers by reducing the time spent on culling out data.

The Future

BARC India seeks to constantly improve its products and services based on evolving and emerging needs of industry. BARC India is currently working on:

- BAR-o-Meter 2.0 which will replace current meter.
- Yumi Analytical software to replace existing tool.
- Expanding BIO suits of products for more genres.

CII INDUSTRIAL INNOVATION AWARDS 2018
Service
Medium Enterprise

Kale Logistics
Technology that Transforms

Kale Logistics Solutions

Kale Logistics Solutions is a trusted IT solutions partner for several Fortune 500 companies worldwide, offering a comprehensive suite of IT solutions for the Logistics Industry. With in-depth domain knowledge and technical expertise, Kale has created a suite of comprehensive IT enterprise systems and Cargo Community Platforms, which offer a single electronic window capable of supporting operational flows, percolating data to various stakeholders and facilitating paperless exchange of trade-related information between stakeholders. Kale's community and enterprise solutions cater to a wide network of Logistics Service Providers (LSPs) and help strengthen and improve their operational and business capabilities. With offices in Thane, Mumbai, Delhi, Dubai and Mauritius, and 4500+ clients across 20 countries, Kale Logistics Solutions is a major player in the Industry.

It has been awarded the best IT solution provider for logistics industry for the last 8 years and the prestigious 'eProject of the Year' at United Nations, Geneva for its community systems.

> *"Our innovations on Cargo Community Platforms are truly path-breaking which are enabling trade facilitation across the globe. And the recognitions like CII innovation awards are important as they reinforce that we are making a big difference to the logistics world through our digital platforms."*
>
> ***Amar More**,*
> *CEO, Kale Logistics Solutions*

The Innovation

Innovation at Kale Logistics Solutions is deep-rooted with its mission statement, "To passionately create innovative digital technology platforms that help the stakeholders of the logistics industry interact with each other digitally and automate their own businesses. They accomplish this through their deep and focused understanding of the global logistics industry and a strong empathy towards the customer."

The firm has developed the first digital air freight corridor between India and Netherlands. This freight corridor between the two countries aims to enhance shipment visibility and optimize flow of cargo data. This is powered by Blockchain technology for data security and improved traceability.

Kale Logistics Solutions has launched a specialized e-Booking platform, 'RIGEL'. The platform is one of Kale's Trade Facilitation initiative, focused on driving ease in cargo booking for the air cargo industry. This one-stop e-marketplace is India's first comprehensive online platform to assist 'air cargo rates' discovery and booking procedures.

Container Digital Exchange (CODEX) platform, a comprehensive Port Community System (PCS), is providing the maritime industry to perform digital operations on a common platform thereby reducing the number of documents required in the trade process, reducing the overall dwell time of cargo at the port and eliminating manual operations. It has been presented to the Honorable Prime Minister of India as one of the innovations around Trade Facilitation by Ministry of Finance and has been mentioned in Indian Customs dossier called 'Journey Towards Excellence.' CODEX is the first and only platform which has helped the IGST Tax Refund process for the Indian exporter from a high of 6 months+ to less than a week.

UPLIFT, a Universal Platform for Logistics and Integrated Freight Transport is a pioneering initiative to connect all stakeholders of the logistics value chain. It has been recognized by KPMG as one of India's top 10 logistics innovations and features in Kellogg Business School's supply chain management book.

The Approach

With an innovation-centric approach, Kale Logistics Solutions is on a constant journey to innovate the solutions it develops, the services it offers and the customer experiences it creates to fuel future growth. Innovation is encouraged by taking a comprehensive and systematic approach:

- Collaboration between people to build and improve ideas.
- Assess business opportunities and problems to improve solutions.
- Manage complex innovations with greater governance and rigor.
- Industry collaboration and partnerships.
- Set up processes which are agile and embrace experimentation.
- Use innovative technology to simplify operations, processes and improve returns.

Benefits

These Trade Facilitation platforms offer a plethora of benefits like:

- Improvement in India's rank in electronic Air Way Bill adoption from 170 to 6th in a span of 3 years.
- Contribution towards improving the 'Ease of doing business' ranking in a country in the parameter of Trading across Borders.
- Improvement in a country's Logistics Performance Index ranking (World Bank LPI ranking).
- Compliance with United Nations guidelines on Trade Facilitation.
- Trade visibility and transparency for a nation.
- Support with paperless transactions, minimal manual intervention, error-free operations.
- Improvement in efficiency, productivity, competitiveness and returns.

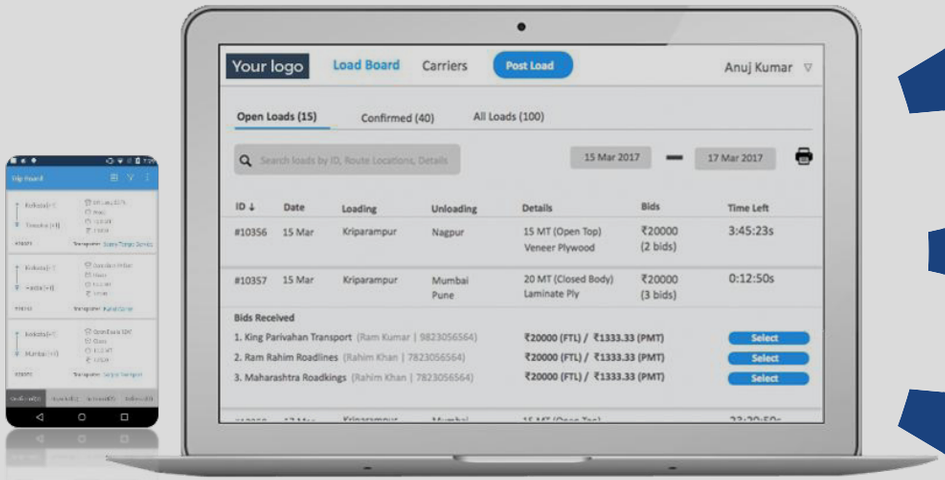
The Future

The journey to excellence and transformation will continue with more innovation as the fuel. In the future Kale Logistics plans to set up a Logistics Innovation Lab, promote employee training and entrepreneurship with its association with Bhau Institute of Entrepreneurship, anchor innovation awards in Logistics, and scale its thought leadership summit, CLEAR VIEW for global knowledge exchange.

CII INDUSTRIAL INNOVATION AWARDS 2018
Service
Micro & Small Enterprise (Joint winner)

SuperProcure
making logistics efficient

Truckhall Pvt. Ltd.



SuperProcure aims to bring efficiency in the logistics operations. The solution is designed for manufacturing, construction and logistics companies to reduce cost by improving business efficiency and simplifying logistics workflow.

SuperProcure provides a single window (web/mobile) to manufacturers and transporters to carry out their daily operations. It aims to intervene in the traditional system of logistics management and reduce the use and dependency of manual processes. The platform covers key business processes such as floating requirements to transporters, taking quotes, allocating load, recording vehicle details, in-plant /in-transit tracking and maintaining audit trail for seamless freight bill processing. The platform comes with an in-built reverse auction engine which is intelligently designed to gamify the day to day logistics management at a manufacturing/distribution site.

> *"CII Industrial Innovation Framework is helping in increasing focus towards innovation and creating an ecosystem for faster learning. Thus, help Indian companies improve cost competitiveness."*
>
> ***Anup Kumar Agarwal,***
> *Co-Founder, Truckhall Pvt Ltd*

The Innovation

Digitization of business functions such as accounting, marketing & sales and human resource etc. have become part of corporate day to day working. However, logistics operations continue to be disjointed and manual in nature. This is mainly driven by fragmented demand & supply and unskilled manpower. Drawing out simple data points such as daily tracking status of all truckloads, measuring how many truckloads are delayed in transit, tracking transporter invoices, proof of deliveries etc. can involve going through multiple email threads or channels.

SuperProcure digitizes the complete cycle of truckload movement from requisition of truckload orders to the final delivery of goods. It automates freight negotiation and reduced logistics team-efforts to only 30 seconds per truckload order. This helps in saving a lot of manhours and makes operations completely transparent and audit proof.

SuperProcure provides a single window to the logistics team and transporters to collaborate and participate in the day-to-day activities.

SuperProcure addresses the following:

1. Quick fulfillment of truckload orders as they move from email/manual operations to tech driven operations
2. Increasing reach to more suppliers in less time and making things collaborative.
3. Making operations transparent with feedback mechanism to build trust, improve supplier relations and facilitates fair participation
4. Saving freight cost by rules driven based automated transparent negotiation & increasing capability to handle large number of supply partners.
5. Set and measure KRA for internal processes create single record of data and information for decision making. Automate daily workflow and improve employee productivity.
6. Gather insights about the freight trends and measure transporter performance against key metrics.

The Approach

The approach used by SuperProcure was primary market research wherein they understood the focused interactions happening between transporters and manufacturers. They addressed their pain points and ensure that system is usable by the workforce, which is not very tech savvy. So, they designed SuperProcure with the sole aim of easing the daily mundane work of the manufacturers and transporters and push digitization in the logistics vertical.

Their key focus areas were:

1. A very simple and easy to use UI & UX
2. 24x7 support over phone and email
3. Smooth on-boarding of key stakeholders
4. Making data speak-out and provide key insights to the stakeholders

Benefits

1. 2-8% Freight cost saving by improving vehicle utilization and reach more suppliers in less time
2. 60% drop in processing time and improving productivity driven by digitalization and automation of communication, emails, records & reports
3. 10-15% Cost saving from visibility, date driven decision-making coordination, approvals, data, planning and optimization
4. 100% audit compliance with historical records
5. Improved trust and human interactions

The Future

One of the major milestones which SuperProcure wants to achieve is to make sure that every key workflow in the logistics industry is captured so that the users can automate their day-to-day operations and don't have to maintain separate systems to answer basic questions about the movement of goods. They also focused on providing reports and data on dashboards so that meaningful analytics can be derived.

SuperProcure aims to build on to the analysis derived by the data captured and build on India's first real-time freight index, which can present the past and predict the future freight rates between any two points in India. They also envision breaking the fragmentation in the logistics industry by build a strong pool of transportation service providers across India and presenting that data to the industry in a manner so that the service providers (transporters) can get good qualified leads and enhance their business footprint.

accesshealthcare™

Access Healthcare Services Pvt. Ltd.

Access Healthcare provides business process outsourcing, applications services, and robotic process automation tools to healthcare providers, and payers based in the United States. They operate from 19 delivery centers in the US, India and the Philippines, and their team of 11,000+ staffs is committed to bringing revenue cycle excellence to their customers by leveraging technology, emerging best practices, and global delivery. They support over 300,000 physicians, serve 80+ specialities, process over $70 billion of A/R annually, and ascribe medical codes to over 30 million charts annually.

The company enables their customers to cultivate growth by unlocking value, better productivity, and higher quality through.

1. Best-in-class business processes (focus on business results).
2. Proprietary business process management suite (arc.in) and robotic process automation platform called echo (efficiency and effectiveness in execution).
3. Recruit, train, retain, reward, and retrain people.

The Innovation

The company has a dedicated innovation arm led by the Vice President of IT Services to set the innovation agenda and to accelerate with development, realization, and ROI measurement.

The DNA of Access Healthcare's Innovation practice comprises the following:

1. Commitment of the top management to monitor and provide directions to drive the innovation agenda of the organization
2. Dedicated innovation team that has developed over 15 business process management tools and over 10 intelligent robotic process automation (RPA) solutions
3. Collaboration at every level – primarily driven by the practitioner, enabled by the IT team in partnership with the operations and functional leaders for the successful realization of business benefits
4. Industry's first automation platform built by a BPO Service Provider – echobot
5. Built on the core themes – Scalability, Automation, and Transparency

Access Healthcare has developed 2 comprehensive innovative solutions:

Innovation 1

arc.in: This is a proprietary, integrated suite of 16 applications including Workflow, Reporting, Operations Dashboard, Knowledge Management, Employee Management and Engagement, etc. In effect, an ERP engine for BPO providers, arc.in enables the company to operationalize best practices in service delivery and equips all stakeholders in the delivery team to collaborate and get the right information at the right time.

Innovation 2

echo, a proprietary robotic process automation (RPA) suite, utilizes machine learning, and artificial intelligence that converge into a set of configurable microservices using a drag and drop functionality. echo has enabled Access Healthcare to compete with industry's best RPA platforms while allowing for industry-specific solutions echopay (payment automation), echorev (accounts receivable automation), echocode (medical coding automation) and echosmrt (smart dashboards).

The Approach

Access Healthcare has created a scalable model that includes identification of automation opportunity, assessment of feasibility, and development and deployment of the solution to derive expected results. At Access Healthcare, the innovation value chain is supported by a combination of best practices that include:

- arc. Ideas tool to facilitate the idea generation and management processes.
- Creation of focus groups comprising cross-functional team members from operations, quality, analytics, innovation, business transformation, and applications development.
- Partnering with industry bodies and academia to gain external market insights and knowledge.
- Executive commitment with the company's President and Managing Director championing the innovation agenda.

Benefits

- Improved productivity by 40% through an ecosystem of rapidly configurable industry-specific bots focused on healthcare revenue cycle management processes.
- Improved accuracy over 95% by reducing billing and coding errors and reduced the overall AR days by 20.
- Operating margin grew by 10% by reducing the overtime, buffer resources, and improved productivity.
- Reduction in idle time and non-productive work by utilizing system scanning and productivity reporting tools to drive operational rigour and improve utilization by as much as 40%.
- Implementation time reduced to 45 days empowering users to self-configure automation tools and reduce IT dependency.

The Future

The company aims to create a more connected ecosystem to drive seamless, secure information flows enabled by intelligent automation technologies to accelerate healthcare revenue cycle. Further, their focus is on enhancing their RPA platform echo's capabilities to bring in more efficiency, smartness, and better ROI for their customers across industries.

agzon agro

Agzon Agro Pvt. Ltd.

Agzon Agro is a private limited company selling wide range of products in Agri-input sector especially Specialty Fertilizers, Micro Nutrient Fertilizers, Bio Fertilizers, Bio-Stimulants, Plant Growth Regulators and Adjuvants etc. The company has four flagship brands; Ichor, Pro-Essen, Pentatonic and Pentaspread apart from proprietary speciality fertilizers business, which is sold under Agzon brand.

The company strives to provide timely and consistent supply of best quality Agri-input products to farmers to avoid demand supply mismatch. They provide reliable and cost-effective solutions in plant protection and plant nutrition to farmers to enhance productivity. They also provide guidance and support to farmers to maximize utilization of available resources and increase profitability. They wish to be trusted partner for farmers by equipping them with innovative and new technology products towards sustainable agriculture. They wish to contribute to nation building through agriculture.

They wish to maximize value on investment for stakeholders with novel ideas on profit sharing. They plan to develop strong R&D wing to provide increased product mix for farmers and to tackle latest challenges in agriculture.

They believe in quality and innovation to provide service to their customer. They uphold values of honesty, integrity and transparency in their approach to stakeholders. They are committed to professional ethics and restrain themselves from any activity that adversely affects their customers or stakeholders or agriculture and thus conservation of nature.

The Innovation

Innovation 1

Ichor Technology is an exclusive technology to synthesize amino acids through pro-biotic mechanism.

Ichor Uno is the first product in the Ichor technology, which has L-Glycine amino acid and organic potash which helps ensure proper enzymatic action in the crops resulting in better quality and quantity of produce.

Innovation 2

Pro-Essen technology is a first of its kind technology which chelates micro-nutrients through pro-biotic process. A range of solo and combination micro-nutrient products have been introduced under the Pro-Essen parent brand for stage wise requirement of the crops.

Innovation 3

SKU for small and marginal farmer:

Optimum Utilization - Marginal farmers of vegetables and many other commodities require less quantities of speciality fertilizers; fertilizers of 25kg packing remain unused.

Reduced losses - Moisture damages the actual quality of speciality fertilizers and fertilizer exposed to moisture may not have the same impact on the actual crop.

Fast Moving - The 5kg SKU is fast moving and is available in 30kg cases; these can be readily used and damages due to moisture are reduced.

The Approach

There is a thin line of difference between deficiency and disease, when crop agronomy is talked about. A deficiency, if not addressed at the right time may lead into disease. At Agzon, they believe in addressing many crop health related challenges at the deficiency level, by doing so:

- it induces the overall health of the crop ensuring better quality and quantity of produce.
- it reduces the cost of cultivation by substantial decrease in the use of crop protection products.

Benefits

- Better crop health management resulting in better quality and quantity of produce.
- Better return on investment to the grower as it reduces the cost of cultivation by reducing crop protection requirements.
- Less yield loss due to disease in the crops.
- Smaller SKU's have helped marginal farmers get the product in quantities as per their requirement.
- Smaller SKU's ensure quality Agri-input every time as it reduces risks of moisture due to tampering of packaging.

The Future

CII INDUSTRIAL INNOVATION AWARDS 2018

30% increase in the quantity of water discharged

Apex Laboratories Pvt. Ltd.

Apex Laboratories Pvt. Ltd., based at Chennai, is one of the leading pharmaceutical formulation companies in India.

Apex was established in 1978 by a group of marketing professionals and a team of technical experts for the manufacture and marketing of pharmaceutical products. They are ranked amongst the fast growing pharma companies in India with the current annual turnover of nearly USD 70 million (approximately INR 500 crores). They are leaders in the nutraceutical/dietary supplement segment in India apart from bringing out innovative derma-care products providing rapid cure and patient comfort at affordable cost.

The core strength of the company lies in its ability to formulate innovative products to provide superior therapeutic benefits for various ailments. The company has manufacturing plants to produce all dosage forms. Currently the products are exported to nearly 25 countries, mainly under its own brand names.

The Innovation

Apex has developed Topical Drug Products under a patented technology wherein the various categories of active molecules are formulated embedded with a biopolymer. This ingredient is critically chosen on its specification in all their formulations to ensure superior wound healing and rapid skin rejuvenation therapy enhancing the claimed therapeutic property of its Active Pharmaceutical Ingredient. This core innovation concept reflects across all of their patented Topical Drug products formulated. In any wound therapy, the restoration of the skin to its native state is important to avoid scar formation. This is achieved by incorporating the biopolymer in all their Topical formulations at optimal concentration, which varies from one product to the other. Wound therapy management is becoming such a costly affair due to hospitalization and drug cost that its access becomes difficult for the common man. The products brought to the market by Apex through their innovative concept described above have established reduced hospitalization and thus medical expenses by ensuring a speedy recovery.

Apex has developed a Mouth Rinse and a Mouth Gel with natural ingredients ensuring superior effect to achieve oral hygiene and address inflammatory/ bacterial lesions. Mouth ulcers due to excessive abuse of tobacco products (chewable/cigarettes) affect a huge population particularly in the developing countries. These ulcers turn malignant in most of the cases. Their innovative mouth wash/gel contains a novel combination of natural ingredients address this problem for prophylactic treatment and prevent these ulcers from turning malignant. The products provide relatively superior/safer medical therapy by the combination of natural ingredients proven safe from time immemorial for prolonged and continuous use. The combination provides relief from pain and cure to the patient from mouth ulcers.

The Approach

With a vigorous focus on innovation, the company has heavily invested in creating an exclusive, DSIR approved R&D facility backed up by a strong team of 60 scientists. Backed by its exclusive state-of-the-art manufacturing facility for topical products, the company is well on its path of taking its innovative products across the globe. The company believes that people are its basic strength and going by this approach, a large number of its employees are associated with the company for more than two decades.

Benefits

All products being developed at their R&D Centre are based on innovative concepts to provide quick, safe and affordable medical therapy apart from providing comfort to the user patient.

The topical products developed by Apex have shorter duration of therapy thereby reducing the cost of hospitalization. Synergistic action of the therapeutic effect of both its active molecule and its functional excipient result in prevention of secondary infection, rapid wound healing and restoration of skin to natural state.

The company adopts these innovative concepts across all dosage forms thus bridging the gap that exists in many chronic segments of medication.

The Future

The biopolymer-based technology utilized in the topical product would be tested for chronic indications and would expand to other dosage forms. The marketing of these products would also expand to other geographic domains other than India. The company aims to emerge as the global leader by providing safe and efficacious medication.

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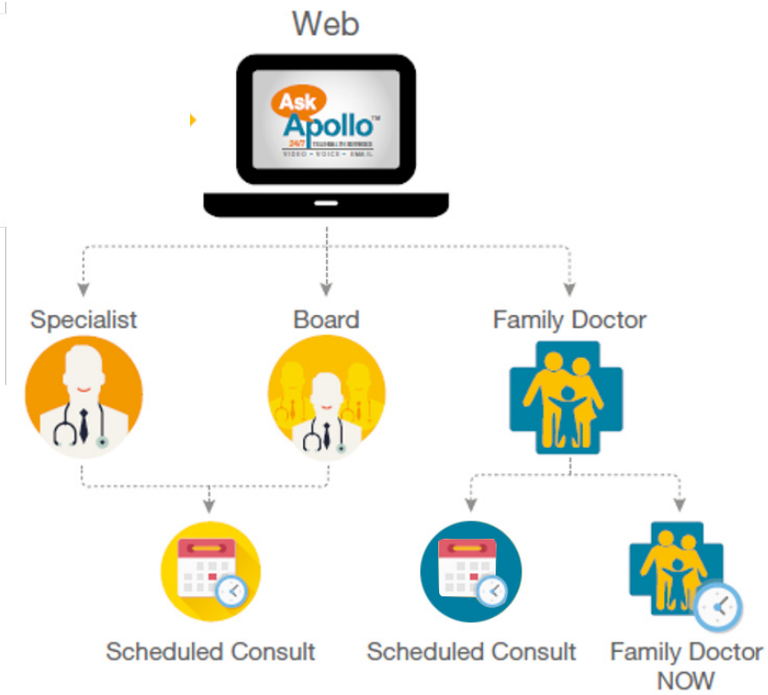

Apollo Tele Health Services Pvt. Ltd.

Apollo Hospitals with close to 17 years of experience in the field of telemedicine has created the largest and oldest multi-specialty telemedicine network in South Asia. As one of the pioneers of telemedicine across the world, Apollo has always striven to enhance the access to quality healthcare for communities both in urban and rural geographies

With the vision of bringing healthcare of international standards within the reach of every individual, Apollo Telemedicine Networking Foundation (ATNF) and Apollo Telehealth Services (ATHS) were established in 1999. On March 24, 2000, Bill Clinton, the then US president, commissioned the world's first VSAT enabled village hospital at Aragonda in Chitoor District of Andhra Pradesh. This marked the formal introduction of telehealth services in India. Indian Medical Association (IMA) has declared March 24 as IMA's National Telemedicine Day to acknowledge telehealth as the most promising solution to bridge the urban-rural health divide.

The Innovation

Innovation 1

Ask Apollo (Direct to Consumer platform) - It is a virtual platform through which consumers have access to specialist and super specialist doctors anytime, anywhere at their convenience. Patients with severe health conditions for the first time have an option to consult a multi-specialty board of doctors from Apollo Hospitals virtually using mobile app called 'Ask Apollo'.

Through Ask Apollo, they are in process of making the world's most advanced and integrated healthcare solution. With access, convenience and patient safety at the core, Ask Apollo ensures 'Continuum of Care' for a healthier and happier future.

Innovation 2

Tele Ophthalmology (Public Private Partnership model) – Apollo Tele Health has set up Tele-Ophthalmology centres with state-of-the-art eye diagnostic facilities at 115 identified Community Health Centers run by the Department of Health and Family Welfare, Government of Andhra Pradesh in 13 districts. The 'Mukhyamantri e-Eye Kendram-MeEK' is a specialized telemedicine programme using advanced technologies such as non-mydriatic Fundus Camera and Auto-refractometer integrated with a complete EMR. Not only preventive tests, but also the corrective measure of free spectacles is also provided through this programme.

Innovation 3

Tele-Emergency @NTPC- (Business to Business model) – NTPC (National Thermal Plant Cooperation), Bongaigaon with a vision to provide comprehensive healthcare to its employees, has initiated the Tele Health Services programme along with Apollo Tele Healthcare.

The program combines recent advancements in ICT, along with the deployment of trained and dedicated human resources, under the expertise of Apollo Telemedicine division. It includes basic lab devices, along with Tele emergency and Physiotherapy services.

The Approach

All three innovations are the combinations of advances in ICT along with the deployment of world-renowned doctors with clinical expertise. With amalgamation of medicine and technology, Apollo Tele Healthcare envisage to reach a wide base of population in cost effective ways by bridging the gap between doctor and the patient. Apollo Telehealth has been a patient centric value driven approach of empathy, integrity, responsibility and unity.

Benefits

For Innovation 1: The Direct to consumer Platform i.e. 'Ask Apollo', which has a usage across 34 countries with 4000 plus doctors over 220 specialities has been a very user-friendly app for easy access to quality healthcare. This platform is not only available on website and app but can alsob e embedded into 3rd party digital channels, which could be used in their app or website.

Also, a new feature added to it, the Emergency Consults for a stroke patient, is called as Ask Apollo emergency video call feature.

For Innovation 2: Free consultation of specialists/super-specialist i.e. Ophthalmologists

For Innovation 3:

- Under the programme, speciality, super-speciality and emergency services are provided at the NTPC facility, through telemedicine.
- This has ensured that healthcare needs of NTPC (Bongaigaon) employees are in trusted hands and that the total care is provided for overall wellness of its people.

The Future

Apollo Tele Healthcare aims to touch billion lives and provide primary healthcare facilities to one and all thereby, providing 'continuum of care' from illness to wellness.

Bharat Fritz Werner Pvt. Ltd.

Bharat Fritz Werner Ltd. (BFW) is India's leading machining solution provider with the most comprehensive range of offerings in milling, turning and special purpose machines.

BFW started the journey in 1961 and was the first Indian private sector company to introduce CNC Machining Centres. Over 40,000 of BFW machines are in use in 29 countries across the world. Most of the best-known companies in manufacturing use BFW machines for very critical applications.

BFW's commitment to customers has led it to hone its skills in design, innovation and technology, and create more futuristic products, which were recognised with various awards for decades. With 500 plus engineers and a well-resourced Dr. Kalam Centre for Innovation, BFW has created internationally recognized product breakthroughs.

Headquartered in Bangalore and a Kothari Group company, BFW has two digitally connected factories and 44 Sales and Technology centres.

The Innovation

A reliable, smart and sustainable platform is developed for CNC machine tools in general and for the Vertical Machining Centre (VMC) in particular. The core idea is to enhance the performance of every BFW machine in terms of productivity, life and quality attributes such as accuracy, precision and surface finish. These intelligent machines use in-house IoT solution to digitally connect the whole manufacturing ecosystem.

For the aforesaid development, the following four-fold strategies were adopted:

First, deliberate innovation steps were undertaken to significantly improve the vibration dampening capability of the machine tool structure. A new class of composite material system called iCTech (Iron Composite Technology) was developed in conjunction with the conventional casting process. One of the materials consciously used in this technology was fly ash (60-80% of total composite), an industrial waste product, in order to promote a sustainable environment.

Second is the development of a multi-physics simulation driven platform for designing intelligent machine tool sub-systems like spindles in order to facilitate high-speed machining process, thereby enabling even higher productivity and subsequently higher customer delight.

Third is the development of an in-house IoT platform named IRIS. IRIS is a secure, robust, software/controller agnostic and cloud-based digital solution. IRIS is the innovative tool to connect the various elements of operations - man, machine, material, methods and management to the value chain.

Finally, iRTC (Intelligent Real-time Thermal Control) app is developed and deployed through IRIS to offer a real-time model-based reduction, control, and compensation of thermal errors, thereby significantly improving machining precision irrespective of machining and machine shop environmental conditions to consistently achieve high quality.

The Approach

The inspiration for the above development comes from the working technology of human body. The vision was to develop and optimize an equivalent system

for a machine tool using Biomimetic principles. The four strategies adopted to achieve the objectives are analogous to improvements in the skeleton of the body, heart and other important muscles, brain which controls all sub-systems of the body and the improvements done on the nervous system of the body.

Benefits

Technical Benefits: Up to 3X improvements in tool life, 10X improvements in productivity, 3X improvements in surface finish, 3X reduction of noise emanated during the machining.

Operational Benefits: Enhanced productivity by digitally connected operations.

Business Benefit: Better cost per piece and a solution to address critical applications of aerospace and medical sectors.

The Future

The roadmap ahead is to horizontally deploy this development. The concept of Biomimetic analogy will be further expanded in sensory functionaries by including camera (eye) and speaking (voice) capabilities in the IoT platform towards realizing the dream of an intelligent factory.

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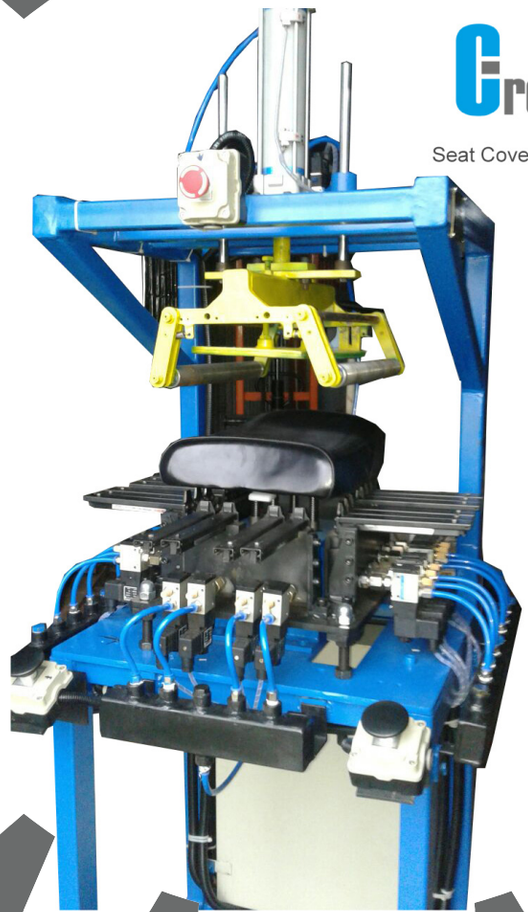

Seat Cover Stapling Machine

Creintors Teknosol Pvt. Ltd.

Creintors mission is to be a mother company providing a platform to nurture innovative thoughts, values to serve the society and visionary ideas that grow to form an independent, sustainable and profit-making enterprise.

The firm envisions to be a leading business enterprise in bringing innovative reforms while upholding high values to transform the society at large to eventually get closer to Nature.

Their growing experience of customized solutions has helped them develop a series of customized products due to customer demand. The company understand that all things cannot be done by one team and know that there are many organizations working with similar intentions in their areas of expertise. They believe in interdependence rather than independence, so they happily work with others to multiply their throughput. This helped them develop a good list of vendors with state of art facilities to deliver quality product at optimum cost.

The Innovation

Stapling Automation for Two-Wheeler and Four-Wheeler seats/ Automobile Industry

During their visit in 2016 to one of their valued customers M/s Harita Fehrer at Hosur (TN), which is into the business of making two-wheeler and four-wheeler seats, it was observed that that there was a serous manpower issue for seat stapling. The seats were being stapled manually, which incurred a lot of fatigue and also injury at times due to staple pins and resultant pain. It was very challenging for them to get and retain manpower. The Creintors team collected the data and observed that daily 20,000 to 30,000 staples are pressed into per person per shift and more than 200 people work in this work area. They recognized the pain and fatigue to the operator and decided to automate this process and took it as an innovation project. They came up with the 'Gang Stapling' invention, which provided automated stapling solution for any design of product. The innovated 'Automated Stapling Machine' supplied to their customer has been working fine since the last one year.

Along with the stapling the other manual elements like stretching and clamping are added features of their Innovation. This enabled them to offer a complete seat cover stapling solution.

The Approach

- The team in Creintors studied the customer issues like high productivity, human fatigue, regular absenteeism and quality of seat stapling.
- After understanding the said issues, they followed the concept of Quick fail'. By Quick fail they created small playschool models with their innovative ideas and upon its failure created new models by lessons learnt with the previous one and continued till they succeeded.
- They demonstrated the play school model at customer place and won their trust and confidence. At last, with more value addition they delivered their innovative product to the customer.

Benefits

- This innovated seat stapling machine increased productivity by three times, improved safety and moreover no skilled labor is required.
- As the stapling is clubbed with the uniform stretching of seat cover, it enhances the quality of the seat stapling.
- Average 1 to 5 accidents were reported weekly due to stapling; this is now reduced to zero.
- Absenteeism due to fatigue has been reduced to zero which was earlier between 2-5 days in a month.

The Future

They are working to reduce human interface with machine by integrating a robot with stapler along with automatic loading of stapler pin in magazine to mitigate human fatigue and enhance quality of the stapling.

To maintain continuity and increase cycle time, they are working further on long magazine and automatic loading of stapler pins.

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Delhi International Airport Ltd.

Delhi Airport, a unique example of a successful PPP project for airport infrastructure development, was adjudged the World's best Airport (above 40 million passengers per annum category) by Airports Council International (ACI) in 2017. After taking over from the Government in 2006, Delhi International Airport Ltd. (DIAL) has made substantial improvement in the Infrastructure and capacity enhancement at the Delhi airport by connecting 135 domestic and international destinations and hosting 63 airlines. It has commissioned the Terminal 3, India's largest building post-independence, in a record time of 37 months. T3 has the highest number of aerobridges (78 nos.) in the world in a single terminal and highest On Time Performance in the country. Only Indian Airport to have three operational runways, Delhi Airport has handled a total of 63.3 million passengers, and a whopping 4.3 lakh air traffic movements in 2017.

The Innovation

DIAL, a leading Indian airport both in passenger and cargo capacities, firmly believes in green and sustainable technology, and has won a number of awards for its initiatives. DIAL is first of its kind airport in the Asia-Pacific region for the following-to achieve Carbon Neutral accreditation, to adopt the Green Building Performance Monitoring Platform – ARC, to commission the Solar Power Plant for captive use, with a current capacity of 7.84 MW (contributing to 9% of net IGI consumption, thereby reducing 10,600 tons of CO2 emission). The innovations are described in detail as follows:

- State-of-the-art Airport Operations Control Centre (AOCC) facility to perform the airport operations from a remotely located facility. Implementation of A-CDM (Collaborative Decision Making), which aids in improving Air Traffic Flow and Capacity Management (ATFCM) at airports by reducing delays, improving the predictability of aircraft events, planning and optimizing the utilization of infrastructures and natural resources, which results into enhanced OTP.
- Implementation of Xovis Passenger counting and Tracking System (PTS). This enables the airport to reach new levels of passenger flow analysis and steering. Besides the normal passenger counting, the other benefits are process and waiting times in queuing areas, queue fill level measurement, wait time and dwell measurement, wait time prediction, throughput and process time measurement, desk and line opening detection & Automated queue detection and desk/ line allocation.

- Automated Exterior Aircraft Cleaning (AEAC) - A unique concept in India, this exterior cleaning of the aircrafts is performed by highly advanced robotic equipment with a telescopic boom, mobile power unit, spray nozzle, rotating cleaning brushes. It can work up to the washing height of 8.5 meters, which has been specially designed for narrow body aircrafts (B737, B757, B767, A300 & A320). However, AEAC can clean wide body aircraft up to window height. This also has inbuilt safety features designed to prevent accidental personal injury or aircraft damage.

The Approach

For over 5 years, DIAL has involved its stakeholder & partners to drive inclusive improvements and innovation. Resource optimization, rising aviation fuel prices and thin operating margins have been the major areas of concern and their impacts on customers/stakeholders were the sole objectives of these Innovations.

Benefits

- CDM - Airlines have benefitted with enhanced terminal and runway capacity, aircraft parking, airside facilities, fuel systems, Pre-departure Sequence Dashboard with a complete information in a bird's eye to Airport Operations Control Centre, Air Traffic Controller & BHS, thus helping increase their business.
- Xovis - Enhanced Resource management - All queue areas are detected automatically and are allocated to relevant desks. This enables actual measurements and predictions such as waiting times, throughputs & passenger count etc. Visualization on real-time dashboards with live view, alerts, reporting and sensor management is also possible.
- Automated Exterior Aircraft Cleaning (AEAC) – Benefits the Airlines, reducing manpower, washing time, leading to increased aircraft availability and fuel cost savings due to lesser drags.

The Future

The future lies in Airport 4.0 with following plan such as:

- Digi Yatra (Domestic & International)
- Air-side Asset Optimization (below-the-wing solutions)
- Transportation Optimization (Road traffic & multi-modal)
- AI/ ML, Robotics
- Passenger Engagement Platform – Build & Evolve
- Block-chain

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Dow Chemical International Pvt. Ltd.

Dow Chemical International Pvt. Ltd. (Dow India) is a leading material science company, that drives innovation at the intersection of science and markets. Headquartered in Mumbai, it is a billion-dollar enterprise with 900+ employees spread across eight locations. This includes a corporate office in Vikhroli, a sales office in Noida, three manufacturing plants at Taloja, Sriperumbudur and Lote, and two global Centers of Excellence (CoE): Central Engineering Center (CEC) in Chennai, and the Dow India Technology Centre in Juinagar, Navi Mumbai.

Their strength lies in their ability to connect science and innovation with the principles of sustainability. 'Innovating in India, for India' is core to their business strategy and is reflected in processes, products, customer experience and business models. Working closely with their customers, they deliver products and solutions that create value and competitive advantage while positively impacting the world we live in. From reverse innovation with the Hawaii chappals, to making packaging Recycleready™, or even enabling water saving in home laundry – their 2000 solutions, catering to 5000+ customers help build a better future for everyone.

Dow India's primary focus is on responsible governance, and the safety and security of employees, customers, and the communities in which they operate. They follow the global company, or regional legal standards, whichever is higher - thus all their plants and manufacturing sites are Responsible Care® certified.

The Innovation

Innovation 1

DOWSIL™ EasyRinse GP-4633 Granule (patented) - In developing and emerging countries, consumers mainly hand wash their laundry. Detergent powders are designed to generate a lot of foam during the wash to lubricate the fabric and show cleaning evidence to consumers. Reducing the amount of water used for rinsing off fabric and therefore better eliminating the rinse foam was the key technical challenge and sustainability driver of this product. GP-4633 granule is a silicone-based foam control agent that incorporates a surfactant level activation trigger. The trigger preserves the level of foam in the washing stage, retaining the perception of ability to clean, and activates upon first rinse, dissipating residual foam at a much earlier stage in the rinse cycle. The final result is the same superb wash performance that the consumer expects, at the same time using 25-50% less potable water to achieve the expected visual cue of properly rinsed laundry.

Innovation 2

All PE Laminates & RETAINTM (patent pending) - The Government of India has proposed a phased ban on the manufacturing and use of non-recyclable multi-material laminates by August 2018 for environmental reasons. This has led to multiple developments from Dow Chemical in sustainable packaging solutions like All Polyethylene (PE) Recyclable Laminates and India's first recyclable barrier film for edible oil. This is a first of its kind development globally; the novelty of this development lies in the positioning of RETAIN™ as recycle compatibilizer with ease of processing to converters. The barrier films made with RETAIN™ were scrapped, dried, re-granulated and put back into injection molded irrigation pipes. The third-party certification was achieved claiming the recycled granules with RETAIN™ were equivalent to reprocessed granules of pure polyethylene.

Innovation 3

FORMASHIELD - Indoor Air Quality (IAQ) has a direct impact on the health and wellbeing of the occupants of a household. The most dangerous and difficult to detect pollutant is formaldehyde. Conventional paints perform the function of protection and decoration. What if they could perform the additional functional role of air purification? Dow Coating Materials team of scientist looked at the possibility of including functionality in the backbone of polymer that can abate harmful pollutant formaldehyde from indoors and convert into water.

Benefits

For Innovation 1:

- With reduced water consumption, it reduces the load on water transportation and treatment.
- Impact in regions where water shortage is an acute issue.
- Increased profits in Home Care business in India by up to 25%.

For Innovation 2:

- All PE Laminates & RETAINTM based barrier films are both recyclable. Together, these two technologies have potential to move non-recyclable laminates/films to a proven value chain of recycle materials having potential to recycle ~100,000MT of laminates/films from Indian market alone.

For Innovation 3:

- Minimizing exposure to pollutants while living in the house will lead to improving health of occupants.

The Future

Dow plans to extend each of these environmentally-friendly and sustainable technologies to multiple application areas. EasyRinse can extend to different Home and Personal care areas such as dishwashing, hand wash soaps and shampoos. Formashield is being experimented towards different industrial coatings. The recyclable plastic is such a high impactful technology that it will address the huge concern of recyclability of plastic materials. Dow is further working on different types of packaging materials for different products to make them sustainable.

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Ethosh

Ethosh Designs Pvt. Ltd.

Ethosh is a 'Digital Experience Company' focussed on developing innovative solutions for organizations in the domains of engineering and science.

A few months into the inception phase, Ethosh identified a gap between the creation of technical content and its consumption. The gap was bridged by decoding complexities and bringing-in the element of simplicity. As the years went by, Ethosh's innovations helped unskilled workers learn to weld, erect a windmill, assemble a locomotive, resolve on-site technical problems and much more. From the skill specialization aspect, naval cadets were empowered to fix a combat warship, nurses to deliver the best care and doctors to operate hi-tech medical devices.

Ethosh believes that innovation is not only just in its DNA, but also the only secret of success. In a short span of six years, innovation has fuelled Ethosh’s rapid growth, and it will continue to be the engine that will propel them in the future.

The Innovation

Experiential learning is essential for the areas that involve operations, maintenance and safety procedures of complex machines. Experiential learning requires knowledge not only for setting up of the equipment, but also for its maintenance and on-going operations. Additionally, there are potentially high costs involved. Other challenges could be the scalability of such learning environments for allowing simultaneous access for multiple students. Safety also becomes an important element in such real-time learning scenarios as incorrect actions could be harmful to the students and could also damage the equipment.

The Navy and Ethosh partnered to identify a solution that would allow experiential learning for its cadets, while managing the challenges listed above. Ethosh designed and created multiple learning scenarios using an innovative technique of Virtual Reality (VR). For the VR experience to deliver the desired superior learning outcomes, it was essential to create the actual environment i.e. ship along with its complex machines and equipment. Moreover, the entire interactions required for learning had to be recreated in the simulated world. This required complex 3D modelling that was optimized for the VR along with gamification scenarios to enhance learning through interactions.

The solution simulates complex scenarios that could occur on a naval ship like malfunctioning of AC plant, breakdown of fire system or actual fire hazard on a ship. The cadets are trained to troubleshoot such issues in a virtual environment and are assessed to ensure knowledge and skills developed. The solution allows trainer to follow and observe the learner throughout its journey thus ensuring proper feedback and assessment of the learner. The multi-learner solution enables the Navy to train many more cadets on important practical aspects of maintaining combat ships resulting in efficient vessels.

The Approach

Such first of a kind project requires a perfect amalgamation people, process and technology. Ethosh organized a team of experts with variety of skills i.e. engineering, 3D modelling, animation, instructional designing, game designing, UX designing and VR technology and established a process for this team to collaborate very effectively with speed. The technology being in early stage, required many forms of experimentation to eventually achieve the finesse in the final learning solution. The Navy and Ethosh worked collaboratively to conduct early user studies to ensure higher adoption of the solution and better outcome.

Benefits

The experiential learning in a simulated VR environment engages learners with a powerful sense of presence – 'visual', 'audio', 'interaction' driving superior engagement and rapid learning and enhanced learning retention and recall rates that drive superior outcomes.

It allows freedom to experiment and fail, thus encouraging exploration and learning from mistakes. More importantly it eliminates the risks of failure and harm to the learner and the environment.

The continuous and consistent monitoring, immediate feedback and playbacks boosts learning. The TCO is much lower in comparison to setting up physical training environments, as it allows the flexibility of learning in multiple scenarios with ease.

The Future

Mental Health VR – A Futuristic Milestone

India is experiencing a severe shortage of medical professionals to serve millions of mental health patients. Ethosh and India's renowned mental health hospital in New Delhi are co-innovating a therapeutic VR solution for the treatment and management of Obsessive-Compulsive Disorder. The solution is envisioned to aid mental health professionals reduce diagnosis time and enhance treatment effectiveness.

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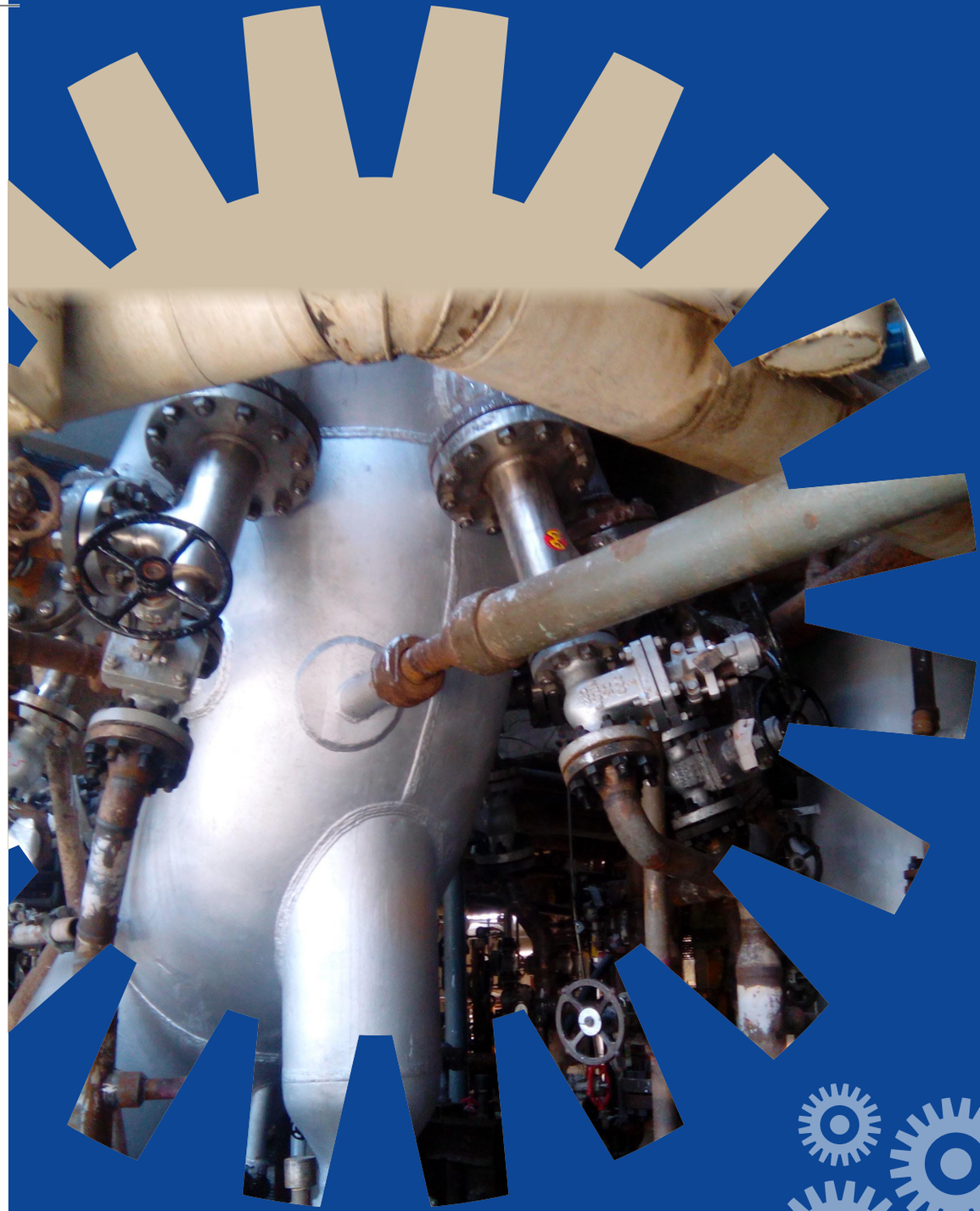

Hindustan Petroleum Corporation Ltd.

Hindustan Petroleum Corporation Limited (HPCL) is a Navratna PSU, and a Forbes 2000 and Global Fortune 500 company. HPCL owns and operates two major refineries in Mumbai (7.5 MMTPA) and Visakhapatnam (8.3 MMTPA). HPCL has the largest Lube Refinery in the country producing Lube Base Oils of international standards, with a capacity of 428 TMT, which accounts for over 40% of the India's total Lube Base Oil production. HPCL has JVs with M/s Mittal Energy Investments Pvt. Ltd. for a refinery with 9 MMTPA capacity at Bathinda and with Mangalore Refinery and Petrochemicals Ltd. (MRPL) for a refinery with the capacity of 15 MMTPA.

HPCL has started Corporate R&D Centre, which is called HP Green R&D Center (HPGRDC) in 2016 at Bengaluru with state-of-the-art infrastructure facilities and labs in a campus of 110 acres. Main objective of HPGRDC is to provide advanced technical support to refineries and marketing division for operational improvement, absorb new technologies, develop innovative and path breaking technologies, license technologies on the long run and emerge as a knowledge hub. Within a short span of time HPGRDC developed and commercialized 13 products/processes.

The Innovation

Innovation 1

HP-HiGas: Since the inception of petroleum refining, conventional trayed columns dominated separation processes like distillation and absorption. Traditional columns have huge height and are limited in throughput by liquid descending the column due to gravity, and lower interphase mass transfer rates. HP-HiGAS technology significantly improves the process efficiency through Rotating Packed Beds wherein the high centrifugal forces (100 times gravity) results in high mass transfer intensification thus leading to very low equipment size. The first ever industrial scale HiGAS unit was successfully implemented and demonstrated by HPCL in 2014-15.

Innovation 2

Cat-Visbreaking: Visbreaking process is one of the residue upgradation technology, which reduces the viscosity of heavy residue to which diesel stream is added for meeting the viscosity specification of fuel oil (FO) in the refineries. The conversion/viscosity reduction in visbreaking process is limited by FO stability which is measured by P-value. There was a need to increase the conversion in visbreaking process by catalytic approach and reduce the diesel consumption required for FO viscosity correction. Hence, a suitable catalyst was developed and commercialized by HPCL-R&D; this increases the conversion by 3-4 wt% while producing stable visbreaker FO.

Innovation 3

SPrayMax: Even after 70-years of existence of Fluid catalytic cracking (FCC) technology, feed nozzles, a critical component of FCC units, are still supplied by the technology-licensors and the nozzles designs had a scope for further improvement. Hence, HP R&D worked on developing indigenous nozzle design for FCC application for an improved performance by increasing the conversion.

Based on atomization principles, HPCL-R&D developed novel feed nozzles called 'SprayMax' with multistage atomization which are unique w.r.t prior art. 'SprayMax' nozzles were successfully installed and commercialized at two refinery FCC units of HPCL

The Approach

- Detailed understanding of the fundamentals, Know-how of the existing processes/ technologies related to gas-liquid adsorption, visbreaking and atomization.
- Conceptualization of the ideas followed by experimental study in micro reactors or pilot plants to prove the concepts.
- Successful demonstration in refineries.

Benefits

For Innovation 1: HP-HiGAS unit is a rotary packed-bed equipment making it first of its kind unit in the petroleum industry. HP-HiGAS unit installed by HPCL with 2.5m height had replaced the existing 23m conventional absorption column resulting in significant size reduction by nearly 10 times.

For Innovation 2: Cat-visbreaking process which is unique with respect to existing technology increases the distillate yield by 3-4 wt% leading to economic benefit of 15 crores per year.

For Innovation 3: This 'SprayMax' innovation increases the conversion by at least 1 wt% while reducing the undesired products viz. dry gas & coke leading to economic benefit of 10 crores per year.

The Future

- HP-HiGas has applicability in all gas treatment processes related to refineries, oil-platforms, FLNG vessels & On-ship flue-gas treatments (MARPOL) and there would be no necessity to have 20-30m tall columns.
- 'Cat-Visbreaking' process implementation in other refineries.
- 'SprayMax' nozzle implementation at refineries for FCC application in India and abroad.

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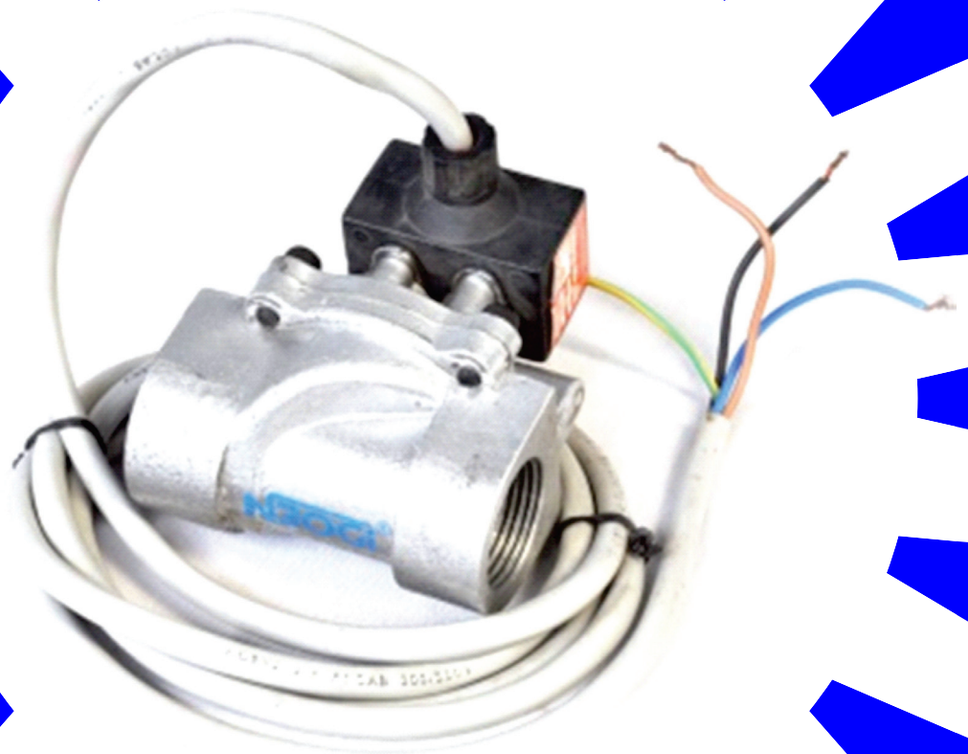

Neogi Technologies and Research Pvt. Ltd.

Neogi Technologies & Research Pvt. Ltd. (NTR), Kolkata is engaged in the business of manufacturing and marketing of high accuracy fuel measurement system. The company is now recognized as the solution provider in liquid management system. NTR products are Legal Metrology & PESO certified and marketed under 'Neogi' brand. It serves various market segments like petrol pump, mining, fleet management, chemical plants, edible oil, infrastructure, industries, etc.

The company has nurtured culture of innovation at all levels of organization and is practicing the process of sustainable development. 'Neogi' brand owns 15 patents and has won three National Awards from the Ministry of MSME, two on Innovation and one on lean manufacturing. The company is also actively involved in CSR activities for underprivileged.

This year NTR has been awarded 'Gold' rating in ZED.

The Innovation

NTR faced severe competition in the market from large MNCs and cheap Chinese imports. Despite having 15 patents the prospect of market success was bleak. In this situation the core management team came together to find a solution. The conclusion was to establish NTR as a 'solution provider' to customer problems; this meant the business process was to be re-oriented from 'product- out' to 'market- in' approach. Objective was to provide each customer a specific solution to his problem thereby improving customer satisfaction, which in turn would create the 'demand pull'.

For the entire market, this would warrant a 'mass customisation' approach. Mass customization required innovation capability of different nature. Instead of complete product design, 'modules' were developed; these could be combined based on the customers' requirement. The supply chain was upgraded for quick response.

This also called for a short lead time for quick response to customer for which operations group were trained in lean manufacturing techniques. The company trained all their employees to align with their renewed customer-oriented solutions.

The company developed about 14 standard modules for 'mass customization'. These modules were used in various combinations to offer solution to customer specific problems. There were cases where small modifications were also done to fulfil customer requirements. This approach has improved value proposition significantly through higher customer satisfaction.

Benefits

Newly developed modules were awarded 4 Patents in last 3 years.

From the customer's point of view, they were getting 'solutions' to their problems rather than buying a 'product' and adopting their system for the solution. This improved customer satisfaction Index from 70 to 95%.

This reorientation of the Business Process has helped NTR to find a tremendous market acceptance in the highly competitive market. Consecutively in the last 2 years NTR has increased its turnover by more than 50%.

The Future

NTR aims to move from being 'Fuel Management System Solution Provider' to 'Liquid Management System Solution Provider'. The company also plans to develop more digitalised and network solution and develop 'green product' through miniaturisation.

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Power Grid Corporation of India Ltd.

Power Grid Corporation of India Limited (POWERGRID), incorporated in 1989, is a 'Navratna' CPSE under the Ministry of Power and is the Central Transmission Utility of India. The company owns and operates about 85% of India's inter-State power transmission system. The company has been the 'Fastest Growing Electric Utility in Asia' since 2014 (five consecutive years) and is one of the world's largest transmission utility.

The company has diversified into telecom and consultancy services and has footprints in 20 countries. The company has also ventured into intra-state transmission, energy management, railway electrification etc. further leveraging its capabilities. It is also exploring smart grid/ city opportunities including setting up of eV charging infrastructure.

The company is involved in various Govt of India projects/ schemes in the areas of power transmission & distribution (North-East, Sikkim, J&K), rural electrification, telecom (connectivity to gram panchayats), SAUBHAGYA, IPDS etc.

The company recently completed the prestigious and critical assignments of cabling works in extremely crowded Old Kashi area of Varanasi; and railway electrification. Considering that these were challenging assignments in unchartered territories, innovative approach to the projects ensured timely deliverance.

The Innovation

Innovation 1

1200kV National Test Station for indigenous UHVAC technology development: POWERGRID spearheaded the innovation through a unique Public-Private-Partnership (PPP), wherein POWERGRID established the 1200kV National Test Station at Bina, MP and invited Indian transmission industry for indigenous development of equipment for this voltage level. 35 Indian manufacturers, across various equipment categories joined hands in this unique and challenging endeavour, as no IEC standards are available for UHVAC systems. The systems for 1200kV maximum operating voltage for 2-3 times increase over existing 800kV systems were designed and selected considering 30% higher power transfer capacity as compared to 1100kV system adopted elsewhere. POWERGRID established 1200kV test lines and test bays and the manufacturers developed their equipment for field-testing. Successful completion of field trials led to commencement of power flow, which was achieved in May 2016.

Innovation 2

Process Bus based Substation Automation Systems for complete digitalization of substations: The utilities, world over, have generally refrained from fully digitizing the transmission substations over concerns of its impact on power system protection & control and inter-operability issues. POWERGRID, as a bold step, utilized the capabilities of available digital devices, and process bus technology for digitization of substation data and deployed it for advanced monitoring, control and protection of the transmission system. Considering the criticality of transmission infrastructure, the project was initially taken up as a pilot project in parallel mode. Based on the success and the learning from the pilot, the same is being deployed in a green field substation.

Innovation 3

Smart Ventilation System: An experimental set-up was designed and developed in-house to establish the energy efficient features of POWERGRID's newly invented ventilation system. The research was backed by computational fluid dynamics technique which was used to get insight of thermo-fluid problems. For operating the entire system in close coordination, a control system was also developed. A novel damper system is designed and developed to ensure optimal use conditioned air in the occupant's zone.

The Approach

POWERGRID considers innovation as a strategic tool for sustainable growth and continuously seeks to innovate not only in terms of products and services but also across various areas of its operations. POWERGRID is at the forefront of introducing and adoption of latest and innovative cutting-edge technologies aligned to its core business objectives for efficient and reliable bulk power transmission with lower losses and optimisation of precious Right-of-Way (RoW).

Benefits

Indigenous development of 1200kV UHVAC system - This project aims to serve the twin purpose of transmitting higher power through optimal use of precious RoW (>2x higher MW transmitted per meter of RoW vs 800 kV EHVAC system) and providing a platform to Indian manufacturers to be export-ready and world leaders in this segment.

Process Bus for Substation Automation - Full digitization of substations results in reduction of copper cables and concrete by 80% and 15% respectively and facilitates lower carbon footprints, reduction in commissioning time, advanced diagnostics/ troubleshooting, thereby increasing reliability and availability.

Smart Ventilation System - It improves the efficiency in buildings by synchronous operation of air supply unit in accordance to the occupants' comfort and availability status. It can be seamlessly-fitted in existing ventilation systems as well and with marginal deployment cost, it has potential to offer substantial savings.

The Future

With a focus on both internal and external stakeholders, the Company targets its innovations to:

- Grow Value and Wealth – to enhance service to customers and to enhance returns to shareholders, by leveraging its people, technology interventions and upcoming opportunities, and expanding across geographies.
- Save Planet – to facilitate optimum utilisation of resources and reduction of carbon footprints, by creating power and related infrastructure.
- Serve People – to ensure inclusive growth, by sharing benefits with the society and empowering employees.

Resil Chemicals Pvt. Ltd.

RESIL Chemicals Pvt. Ltd. is a Bangalore based manufacturer of speciality chemicals for textiles, plastics, agriculture, cosmetics, personal care, auto-care and pharmaceutical industry. Since their inception in 1994, they have been driven by their passion for emerging technologies to develop products that make a positive impact on the people's lives. At the frontier of technology, they meet the diverse and emerging needs of the industry, which they serve using technologies based on Silicones Silver, Bio Materials Naturals, Advanced Materials, Nano tech and Organic chemistry. Their world-class manufacturing facilities are certified for ISO, OSHAS, EMS, IMS, SA8000. Their products meet global regulations such as GOTS, Oeko-Tex, ZDHC, Tox services etc.

Today, they are rediscovering science and its applications to meet everyday technical requirements of the market, helping their customers move forward by designing differentiated solutions for a sustainable future. Having a rich legacy in research and innovation, their R&D Labs are recognised by DSIR (Department of Science and Industrial Research) to carryout innovative research.

The company believes in the tenets of innovation namely, Creativity, Communication, Collaboration, Customer focus and Community. RESIL has strong focus in commercialization and marketing of novel chemistries and concepts, which resulted in market launches in over 200 premium global brands catering to a wide range of consumer applications.

The Innovation

Resil is the first company to produce a globally patened composition containing nano silver particles on large scale having unique pyramidal shaped particles that have very high surface area making it a potent antibacterial agent. This produt is marketed for textiles, plastics, cosmetics and various other end applications under the brand name N9 Pure Silver.

Innovation 1

Silver in Textiles: Their revolutionary, Oeko-Tex listed, silver-based technology neutralizes odour-causing bacteria on contact, keeping textiles sweat odour-free. The technology aids the garments to be used more and washed less.

It is compatible with multiple chemicals, substrates, and processes. Further, it does not leach from the treated surface, making it the world's most sustainable freshness technology. Its application is popularly seen in the inner wear, active wear, work wear, formals, jeans, woollens, knitwear, socks, bed linen, towels, upholstery and jute.

Innovation 2

Silver in Plastics: A patented silver-silica-silicone composite is used in plastic and polymer application to impart antibacterial property. The active silver will neutralize and inhibit the bacterial growth that keeps the plastic/polymer surface hygienic and protect it from bacterial contamination.

N9 Pure silver is already commercialised in water storage overhead tanks, lunch boxes, water bottles, seats for school buses, human contact applications and many more.

Innovation 3

Silver in cosmetics & other applications: N9 pure silver substitutes conventional preservatives in cosmetics applications such as soaps, liquid detergents, creams and lotions. Water based hand santizers using N9 are available in airports and many food processing industries to maintain hygiene. The applications of N9 are limitless, to name a few, toilet seat sprays, automotive odour controls sprays, toilet tissue papers, hygiene pads, feminine care products.

The Approach

The development approach of this technology rests on four main pillars namely, 'ease of use', 'environmental friendliness', 'human safety', and 'excellence in performance'. Ease of use helps in smooth integration of the product with end application without processing difficulties. 'Environmental friendliness' is a global need to commercialise products today. The Resil team designed a non-leaching silver to build sustainability that helped them enter the global markets. 'Human safety' can never be compromised therefore, the safest silver chemistry was selected and further supported with global testing and registrations. 'Excellence in performance' is about delivering the promise to the customers by disigning the highest silver efficiency with the lowest silver dosage. The commercialisation approach has been to launch new technologies in the textiles first and extend it to other industries subsequently.

Benefits

- Safest ingredient for hygiene, wellness and safety into households.
- Leveraging the power of silver in many applications
- Excellent antibacterial, sterilization & deodorization functions
- Non-toxic and harmless to human contact
- Evironment friendly ingredient and product
- Does not cause bacterial resistance
- Excellent lasting effects and durable performance at low concentrations
- Developed in various formats for adoption in different applications
- High specific surface area due to nano silver particle technology
- Cost competitiveness compared to other ingredients

The Future

At Resil, they continue to ideate for breakthrough applications of emerging material technologies, like silver technology, to bring world-class, patented products into global market place. They wish to leverage existing technologies by extending their applications to various industries. Their mission is to bring technologies and cost-effective solutions that help substitute imports and develop make in India products to provide affordable hygiene and wellness solutions to their customers.

SIEMENS
Ingenuity for life

Siemens Ltd. (Power and Gas Division)

With a focus on electrification, automation and digitalization, Siemens India stands for engineering excellence, innovation, and reliability. Thanks to a holistic view of the value chain, Siemens sustainably optimizes energy and resource efficiently of the entire product development process ranging from product design, product planning and engineering to production, execution and all services involved in the production process.

Siemens Power and Gas (PG) division's Engineering Center (SPEL) is a trusted partner for regional faces across global Siemens PG business. They are the engineering hub for entire Siemens Power Generation Solution Projects worldwide providing complete engineering solutions for Power plants. From decentralized industrial applications to heavy duty power plants, they deliver tailored OEM solutions, focusing on customer's overall business success by increasing turnover, reducing costs and improving profitability. Whatever be the market challenge, they serve with end to end solutions covering most complex portfolio to address requirement.

The Innovation

Engineering Solutions offered by SPEL business unit of Power and Gas division focusses on harnessing innumerable ideas by leveraging in-house expertise outside their regular scope of work with its robust portfolio management and open innovation culture. This has led to increased opportunities for new business fields and models along with modularization. New ideas result in innovations, which in turn lead to competitive advantage. With more than 15 patent grants in last 5 years, Power and Gas division has scripted noteworthy successes.

Among the various sustainable initiatives taken, new services launched in the last 2 years include:

1. Crude Oil Pretreatment – With SPEL's autonomous efforts for developing the related reference plant, Siemens has tapped on this great business opportunity. This technology for firing gas turbines with crude oil has been developed in collaboration with a partner. The pretreatment design converts the crude oil into distilled volumes, which is acceptable for Siemens E class and bigger F, H and HL gas turbines.
2. Organic Rankine cycle – SPEL is playing a key role to develop turnkey bids for this new technology aimed at improving the bottoming cycle by extracting additional energy at higher efficiencies. The focus is on using waste heat from gas turbines in the cycle to convert it into power (electricity and mechanical drives).
3. 5D Digital Power Plants is an extended simulation of timeframe and cost in addition to the 3-dimensional space requirements aimed at leveraging the digital revolution to implement fast tracking in complex project and operational execution with increased productivity and higher efficiencies.

The Approach

Realizing ideas into valuable outcomes requires a structured approach. This intention evolved through daily informal ideation sessions, enabling seamless collaboration between employees and management. Empowerment of employees led to speak-up culture, learning from mistakes through 'Dare to Fail' programme and storing database for preventive measures (CAPA). Initiatives like Innovation Charter's, Futureland, Speedboat, New Shark Tank, 3i, Continuous Improvement Process, Intrapreneurs Bootcamp, next47, "I am Change"culture and integrated ingenuity. This fervor to innovate is recognized and rewarded through Winner of the Quarter, Synergy of the Quarter, Instant Puraskaar Schemes, Monthly 3i winners, Champion of the Year Awards and internal funding from global businesses.

Benefits

Innovation has led to increased opportunities to venture into new business fields, modularization development (pre-engineered/fabricated modules/solution of power plant), plant start-up and shut-down time optimization, removal of auxiliary boiler from power plant cycle, reduction of cost and execution timeline and pre-fabrication modules reducing EHS incidents.

The Future

Powerful forecasting tools based on extrapolation and retropolation and driven by their brand claim 'Ingenuity for Life', SEPL thrive on a disruptive innovation culture. This enables development of new business models for customer-centric solutions and new technologies for continuous improvement in efficiencies while reducing waste for a sustainable future.

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stempeutics

Stempeutics Research Pvt. Ltd.

Stempeutics is a leading Asian stem cell company developing stem cell based therapeutic products, with facilities in Bangalore and Manipal. Stempeutics was established in 2006 and has been funded by the Manipal group. In 2009, Stempeutics entered a strategic alliance with the pharma major Cipla. Company is focusing on three products: Stempeucel® (a drug based on Mesenchymal Stromal Cells derived from bone marrow), Stempeucare® (cosmetic products based on human bioactive factors) and Stempeutron® (medical device for isolation of stromal vascular fraction from adipose tissue). Stempeutics is in the process of bringing stem cell-based therapeutics to India and eventually to the global market for the treatment of Critical Limb Ischemia, Osteoarthritis & Diabetic Foot Ulcer.

In 2017 DCGI granted manufacturing & marketing approval for Stempeucel® product for the treatment of CLI patients due to Buerger's disease. Stempeutics have filed over 60 patents and have published over 75 peer reviewed international publications.

The Innovation

Company's flagship product is Stempeucel® drug. It is on-demand off-the-shelf product range, based on allogeneic MSC derived from normal adult human bone marrow for curing various degenerative disorders. Stempeucel® is a first of its kind allogeneic, MSC therapy. It is produced by pooling bone marrow-derived MSC's of healthy individuals through a proprietary, patented process. Research conducted at Stempeutics has shown that pooling balances out variations observed with individual donor cells, resulting in a product with strong immune-modulatory properties, broader cytokine / growth factors array, longer lifespan and consistent clinical outcomes. Pooling underpins the clinical success demonstrated by Stempeucel®. Stempeucel® works through anti-inflammatory and immuno-modulatory properties and by inducing angiogenesis in ischemic muscle ultimately leading to improvement in the clinically relevant endpoints for Critical Limb Ischemia. Pooling also enhances the potential for using Stempeucel® for a variety of disease indications.

Second focus is on personalized medicine based on autologous Stromal Vascular Fraction (SVF) cells isolated from fat tissue using Stempeutron®, which is a point-of-care medical device for addressing unmet medical needs. The key differentiators of the device are: flow through gravity, operations through robotics technology deployed with unique algorithm for digestion process, isolation thru' filtration technology for extraction of ready to use SVF of controlled composition and IP protection covering three core process flow/digestion/filtration.

Third focus is on the over-the-counter product Stempeucare® based on stem cell derived bioactive factors for cosmetic applications. First cosmetic product, branded as Cutisera™ is developed to enhance the rejuvenation of aging skin. Key differentiators of the product are: conditioned medium is generated from a novel pooling process of the cells and conditioned medium, which reduces batch to batch variability, stable secretion of growth factors, cytokines and presence of factors important for skin health like VEGF, TGFb1, PDGF, IGF to mediate diverse skin- regenerative effects.

The Approach

Stempeutics has taken an aggressive, focused and well thought-out scientific approach to understand the biology of human adult stem cells, and to harness the potential of these cells for the treatment of various types of degenerative diseases. The underlying principle is "Science" should drive the business. This approach is realized through innovative technologies and ideas, cutting edge R&D, patentable process development, large scale manufacturing and effective clinical trial design. Stempeutics is committed to delivering safe, effective and affordable stem cell therapies and endeavors to maintain scientific and ethical practices through a quality management system in accordance with international norms.

Benefits

Critical Limb Ischemia (CLI) disease is a serious condition that requires immediate treatment to re-establish blood-flow to the affected area to prevent the limb from amputation. Moreover, most of these patients are in the low socioeconomic strata of the society and if not treated their condition will worsen due to the disabling characteristics of this disease. Stempeucel® product has significant benefits in treating CLI patients who are not amenable for revascularization due its anti–inflammatory properties, ability to promote neovascularization and healing of non-healing ischemic ulcers.

The Future

Stempeutics goals is to globalize Stempeucel product. In this regard it has approached European Medicinal Agency and US FDA. In Europe it has obtained Advance Therapy Medicinal Product status and Orphan Drug Designation for the treatment of CLI due to Buerger's Disease. With US FDA it had PreIND meeting.

Vyome Biosciences Pvt. Ltd.

Vyome Biosciences is an innovation-driven clinical and commercial stage company with a deep pipeline of novel technologies and products for the treatment of antibiotic resistant acne and other skin pathogens.

The Company is uniquely positioned to target multi-billion-dollar opportunities and unmet needs in antibiotic resistant acne and other skin pathogens. The lead drug development programme, targets a potential US$2 Billion market opportunity with ~100 Million patients globally for suffering from antibiotic resistant acne, is currently initiating phase 2B clinical trials in USA.

Vyome has a deep preclinical pipeline of New Chemical Entities based on Dual Action Rational Therapeutics (DARTs) technology to treat indications caused by the opportunistic skin pathogens to overcome resistance development. Vyome has developed clinically proven antifungal products based on patented Molecular Replacement Therapeutics (MRT™) technology and commercialized them. Vyome has >110 patent applications filed globally, 12 granted patents and significant number of trademarks and design applications in India.

Vyome has assembled a world-class team of scientific experts with a track record of conducting scientific research, developing breakthrough products and building sustainable businesses.

The Innovation

Innovation 1

Vyome's product VB1953 addresses the antibiotic resistance in acne, which is a big unmet global medical need, by being a novel and safe topical antibiotic and anti-inflammatory treatment alternative, which has shown better efficacy than the current topical antibiotics in clinical trials. It exerts potent bactericidal effects against bacteria and provides a significant anti-inflammatory effect thus treating the disease comprehensively. Its dual mechanism of action on the DNA of p.acne bacteria ensures lower probability of resistance development.

Innovation 2

Vyome's product VB001 is based on unique Molecular Replacement Therapy (MRT™) technology which enhances the efficacy of existing antifungal molecules. VB001, Vyome's novel anti-dandruff leave-on product, has been clinically proven to provide >20% reduction in dandruff flakes than leading shampoo in the market within 14 days. It also has multiple sensorial benefits for hair/scalp.

Innovation 3

Vyome has developed an improved, novel Luliconazole formulation which has better targeted product profile than the marketed formulation through its patented platform technology. Vyome's product has better penetration and absorption capacity & better sensorials, which can lead to faster onset of action to treat recalcitrant skin fungal infections leading to superior efficacy in comparison to the generic versions.

The Approach

Vyome built a library of Propionibacterium acne isolates from patients, and built genomic understanding of the drivers of resistance. Based on this understanding, Vyome rapidly advanced its lead molecule VB1953 to the clinics for the treatment of drug-resistant acne. Vyome merges this next-generation antibiotic with an IP protected microtechnology gel system that ensures the drug is retained at the site of infection and minimizes systemic exposure.

Vyome's MRT™ approach focuses on the development of effective, targeted and safe topical therapeutics against fungal and bacterial infections of the skin, with better pharmacological profiles than the incumbent therapies. This promising MRTTM intends to have topical antifungal formulations to achieve faster onset of action and amplify relief for the patient.

Benefits

240 million population are affected by Acne worldwide. This is a serious life-style disease causing serious distress among teenagers. The innovation of VB1953 addresses a serious unmet need by offering a novel, effective and safe topical antibiotic and anti-inflammatory treatment deferring the use of oral drugs that have significant side effects.

Approximately 3 billion people are affected by dandruff across the world. This disease causes emotional distress among the sufferers. Vyome's innovation of VB001 based on unique Molecular Replacement Therapy (MRT™) technology helps as an effective treatment to reduce this disease burden where ordinary dandruff shampoos are proving to be less effective.

Approximately 10% adult population are affected by skin fungal infections across the world. Vyome's innovation of novel Luliconazole formulation with patented technology helps as an effective treatment to reduce this disease burden where other antifungal compositions are proving to be less effective.

The Future

The huge unmet need of Antibiotic-Resistant Acne treatment is Vyome's key target market. About 100 million people are suffering from antibiotic resistant acne worldwide, with over 10 million patients in the US alone. Vyome is looking to address this potential USD 2 billion market of drug resistant acne with VB 1953, being first in class, first ever bactericidal antibiotic for acne treatment with anti-inflammatory properties and lesser probability of developing resistance, is well positioned to meet this unmet need.

Vyome with the innovation of potent antifungal formulations like VB001 and novel Luliconazole formulation is well positioned as an effective alternative to currently marketed anti-dandruff and antifungal products.

Wendt (India) Ltd.

Wendt India Limited (WIL) was incorporated in 1980 and the commercial production started in the year 1983.

WIL, a joint venture of Wendt Gmbh and Carborundum Universal (Murugappa Group), is a recognized leader in super abrasive technology. WIL pioneers in the grinding technology, manufacturing a comprehensive range of Diamond and CBN grinding tools and machines and precision components to international standards. Wendt exports 30% of its production. It has two 100% owned subsidiary companies operating in Thailand and UAE.

WIL is certified for ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007, SA 8000:2014 & EN13236:2010+A1:2015 in its journey towards TQM and Lean Management Systems.

World class manufacturing, management practices and innovation are constantly embraced to continuously improve the productivity, quality, cost and delivery.

The Innovation

WIL's policy for innovation promotes an organizational climate that ensures employee skills, provides incentives and removes obstacles, enabling them to convert their ideas and knowledge into innovative and improved products, services and processes. Some of the major innovations implemented in the last two years are as follows:

Innovation 1

Development of Glass Grinding wheels – A breakthrough Process Innovation

A robust process with a suitable grit and bonding system were required for automotive glass grinding applications. An automated hot-pressing route enabled them to sinter metal bonded wheels at relatively lower sintering conditions improving the overall performance.

Innovation 2

Double disc fine grinding – A Breakthrough Product Innovation

Wendt team designed and developed a double disc super abrasive wheel for fine grinding application up to 1500 mm diameter. They realized this by adopting a unique design for sintering and machining process.

Innovation 3

Razor blade grinding wheel -Their team also developed a CBN spiral grinding wheel for razor blade grinding application.

Benefits

For Innovation 1:

- Improved the performance and bench marked against imports, contributing to Make in India vision
- Productivity improvement
- Opening up of new opportunities

For Innovation 2:

- Significant reduction in cost when compared to imported wheel
- Faster delivery: 50% less compared to import
- Re-tipping process also offered on customer plates
- Faster technical support and serviceability to customers

For Innovation 3:

- Improvement in wheel life – benefit to the customer
- Quality enhancement.

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Zydex Industries

Established in 1997, Zydex is a speciality chemicals company with an emphasis on innovation for sustainability. With its diversified product range, they touch upon all the basic necessities of a common man i.e. Roti, Kapda, Makaan and Sadak (Food, Clothing, Housing and Roads).

The company is committed to create a sustainable world through innovative, environment friendly and patented technologies in the areas of agriculture, textiles, paints & waterproofing and roads. Their product portfolio encompasses 200+ innovative solutions with presence in over 40 countries across the globe. The company has stated their vision as to conserve limiting resources through innovation, for a sustainable world.

Their research teams work on the anticipated needs of tomorrow with a focus on sustainability, which is supported by best in class manufacturing and people resources to accomplish the purpose ‘Innovating for Sustainability’.

The Innovation

In the course of road making process, the water loving materials like stones, stone powders are mixed with bitumen, which is like a glue and oil based. The hydrophilic stone & stone powders and oil based glue do not end up in sticking well to each other. This is the reason why water damages the roads during its life cycle.

The organo-silane technology, which Zydex has innovated, intervenes differently into process mentioned above. The silane makes the surface of aggregates & the stone powder oil loving and water resisting leading to extended durability and better performance.

The second innovation is the in area of soils, which are used for roads construction; they generally swell in the presence of water and lose strength in wet condition. Zydex nanotechnology of organo-silanes and polymers along with cement, results in swell control, particle to particle nano bonding and quick wet strength gain with cement leading to soil bases making them strong and durable like stone base.

The Zydex organo-silane nanotechnology helps the chemically bonded tack coat and prime coat become from a band aid bitumen to a skin bitumen, which is chemically attached to the stone base.

The Approach

With the aforesaid innovations, Zydex approach is to make the rural roads water resistant, dust free and strong. The technology will also lead to building new green highways of the world, reducing the consumption of aggregate and bitumen due to stronger and flexible soil bases below, which are also water resistant.

Benefits

- Will give smoother rides with less physical Injuries.
- Will create water resistant nano bonded roads lasting 50 years, extending life cycle.
- Will result into lesser consumption of resources due to extended life of roads.
- It will be possible to make village to farm roads dust free and water resistant in all weathers.

The Future

In future, the company aims at building the perpetual pavements, resulting into 50 years of life with complete recyclability.

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GMR Hyderabad International Airport Ltd.
GMR Aero Towers, Rajiv Gandhi International Airport, Shamshabad, India
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Godrej Consumer Products Ltd.
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Hella India lighting Ltd.
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Gurgaon-122016 (Haryana), India
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W : www.hella.co.in

KFC , YUM! Restaurants India Pvt. Ltd.
12th Floor, Tower D, Global business park, MG Road, Gurgaon, India
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W : online.kfc.co.in

L&T Technology Services Ltd.
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W : www.lnttechservices.com/

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Pluss Advanced Technologies Pvt. Ltd.
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Ramani Precision Machines Pvt. Ltd.
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W : www.ramaniprecisionmachines.com

Sahajanand Technologies Pvt. Ltd.
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Surat, Gujarat, India
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W : www.stpl.com

Siemens Healthcare Pvt. Ltd.
No. 84, Keonics, Electronics City, Hosur Road, Bengaluru, Karnataka, India
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SKYi Composites Pvt.Ltd.
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Tata Power Delhi Distribution Ltd.
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W : www.tatapower-ddl.com

Tata Steel Ltd.
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Tata Hitachi Construction Machinery Company Pvt. Ltd.
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W : www.hitechrobotic.com

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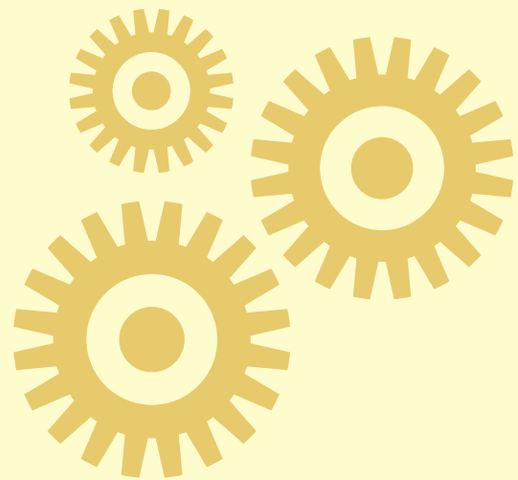
Wipro Ltd.
Block C, SJP 1, Doddakanelli,
Sarjapur Main Rd, Bengaluru,
Karnataka 560035, India
P : 080 2844 0011
W : www.wipro.com



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Access Healthcare Services Pvt. Ltd.
A-9 First Main Road, Ambattur Industrial Estate, Chennai - 600058, India
P : +91.44.42176066
W : www.accesshealthcare.co

Agzon Agro Pvt. Ltd.
Office No-203, IInd Floor, Deron Heights, Baner, Pune, India
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W : www.agzonagro.com

Apex Laboratories Pvt. Ltd.
SIDCO Garment Complex (III Floor), Guindy, Chennai, India
P: +91 44 42225000
W: www.apexlab.com

Apollo Tele Health Services Pvt. Ltd.
Genome Valley Shameerpet, Hyderabad, Telagana, India
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BARC India
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Mumbai - 400012, India
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Bharat Fritz Werner Pvt. Ltd.
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W : www.bfwindia.com

Creintors Teknosol Pvt. Ltd.
Udyambag Industrial Area, Udyambag, Belgaum, Karnataka - 590008, India
P : 0831 244 1105
W : www.creinotrs.com

Delhi International Airport Ltd.
Indira Gandhi International Airport, New Delhi - 110037, India
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Dow Chemical International Pvt. Ltd.
B-02, Godrej Business District, L B S Road, Vikhroli, Mumbai - 400 079, India
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Ethosh Designs Pvt. Ltd.
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Hindustan Petroleum Corporation Ltd.
Petroleum House, 17, Jamshedji Tata Road,
Mumbai, Maharashtra - 400020, India
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Indus Towers
Tower A, Fourth Floor, Building, N-10, DLF Cyber City,
Gurugram, Haryana - 122002, India
P : 0124 429 6766
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Kale Logistics Solutions
9th Floor, Thane One, Behind CineWonder Mall Majiwada,
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W : www.kalelogistics.in

Mahindra & Mahindra Ltd.
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Truckhall Pvt. Ltd.
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Vyome Biosciences Pvt. Ltd.
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Plot No# 61, Gotri Sevasi Road, Gotri Rd, Gotri, Vadodara, Gujarat, India
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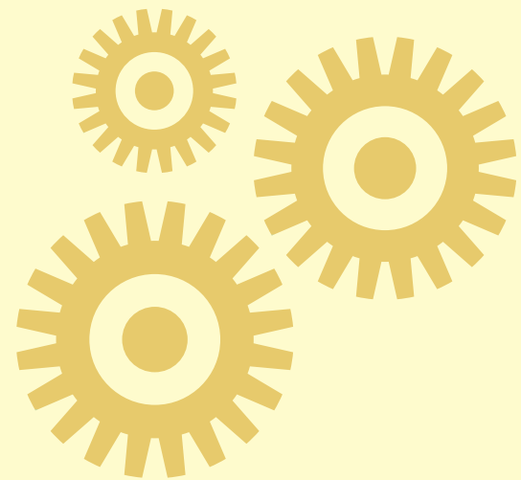
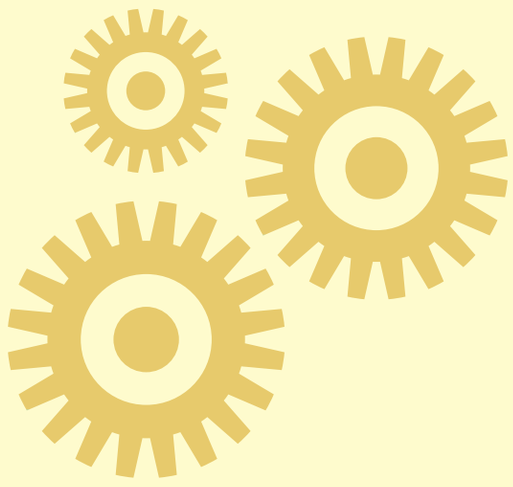
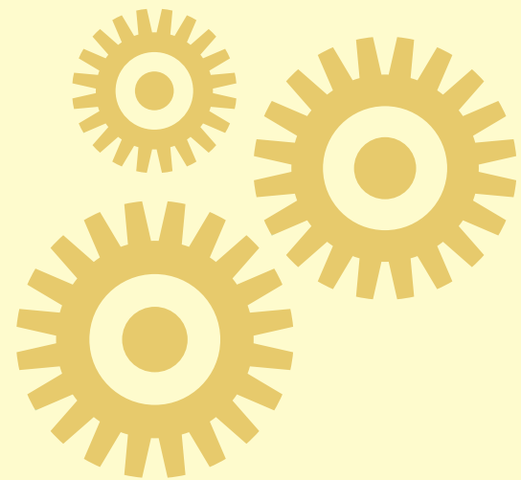
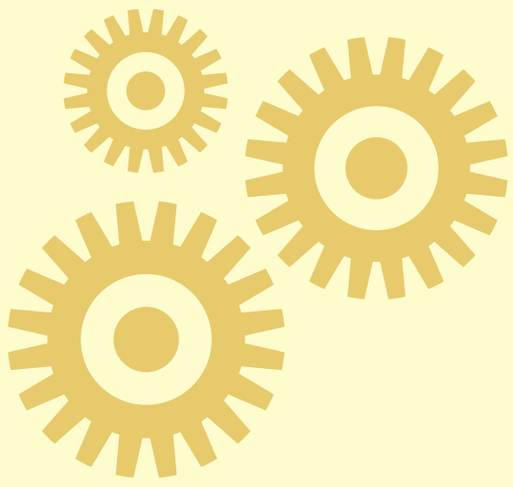
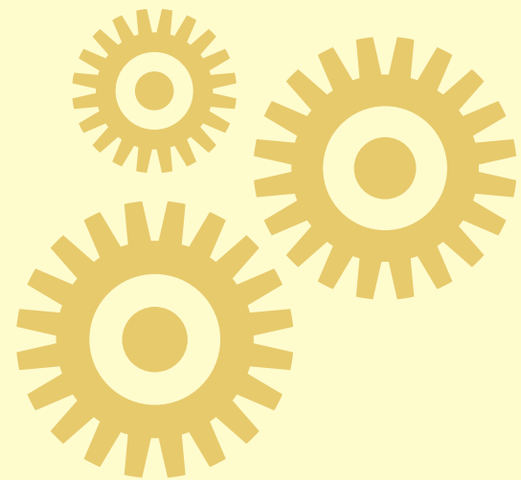
W : www.zydexindustries.com











Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, playing a proactive role in India's development process. Founded in 1895, India's premier business association has around 9000 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 300,000 enterprises from around 265 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

As a developmental institution working towards India's overall growth with a special focus on India@75 in 2022, the CII theme for 2018-19, **India RISE : Responsible. Inclusive. Sustainable. Entrepreneurial** emphasizes Industry's role in partnering Government to accelerate India's growth and development. The focus will be on key enablers such as job creation; skill development; financing growth; promoting next gen manufacturing; sustainability; corporate social responsibility and governance and transparency.

With 65 offices, including 9 Centres of Excellence, in India, and 10 overseas offices in Australia, China, Egypt, France, Germany, Singapore, South Africa, UAE, UK, and USA, as well as institutional partnerships with 355 counterpart organizations in 126 countries, CII serves as a reference point for Indian industry and the international business community.

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