

Annexure 1
Tata Innovista 2017

Winning entries**Implemented Innovations: New Product****Tata Sampann low oil-absorb besan: A simple path towards health – Tata Chemicals Limited (TCL)**

Besan has been traditionally used in making deep fried snacks which absorb a lot of oil and in turn cause health concerns and a sense of guilt. Through a deep scientific understanding of the chemistry behind besan and the role of particle size in water and oil absorption, Tata Chemicals were able to create, a differentiated besan which absorbs up to 20% less oil as compared to other market samples. A deep understanding of besan chemistry with regard to the surface polarity of protein and oligosaccharides, and the role of particle size in water absorption, helped TCL offer a differentiated besan with reduced oil uptake.

Eight O' Clock Coffee Infusions – Tata Global Beverages

Consumers are constantly looking to gain functional benefits from products that they already consume. Eight O' Clock Coffee Infusions are coffees blended with ingredients that consumers typically get from other products. The Infusion line is a game-changer in the United States coffee market where consumers usually expect more from a daily cup of coffee. Eight O' Clock is the first national brand to launch this type of a product, thereby creating innovative disruption in the coffee aisle. This innovation aims to take America's most loved beverage, coffee, and introduce it with differentiation. It can be considered as a functional coffee, with a reason behind every sip.

Smart Raking System for Desulphurisation (DS) in Steel Making Shop – Tata Steel

In any integrated steel plant process, the blast furnace iron contains unwanted sulphur. This needs to be removed by desulphurisation process as sulphur has a detrimental effect on the final steel product. During the desulphurisation process, a thick layer of floating slag is formed on the surface of the liquid iron meniscus. The process of removal of this slag is by skimming, which is a manual and an inefficient process. This skimming process is operator skill dependent, as a result, it is non-standardised and leads to yield loss. A novel product, Smart Raking System, has been designed, developed and implemented in steel making shops of Tata Steel. The innovation is centered on using techniques of image processing using Infrared camera with pattern recognition and data analytics to differentiate slag from iron. This facilitates removal of slag

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optimally from molten iron. This product innovation has improved the quality, productivity of the raking process as well as reduced yield loss. The product, Smart Raking System, has been engineered indigenously by Tata Steel.

Implemented Innovations: New Services

Embedded Secure Element – Digital Transformation – Tata Consultancy Services (TCS)

An innovative and tamper proof digital embedded security solution to address the security threats for smart connected devices in the Internet of Things (IoT) ecosystem. This is a first of its kind solution to the world. Existing solution addresses security only at software level, however, TCS' holistic solution is by converging both hardware and software solutions which makes it completely unique and path defining for future digital security needs. TCS' solution has the capability to self-destruct the device in case of security threats. The solution has the potential application areas in consumer electronics, transportation, identification, automotive, manufacturing, retail, banking & financial transactions.

Implemented Innovations: Core Process

Virtual Road Load Data – Jaguar Land Rover (JLR)

Virtual Road Load Data comprises of many industry-first smart projects such as digital proving ground, flexible tire modeling and integration of active systems into virtual verification prototypes. It helps reduce the reliance on expensive, often late, and poor engineering pedigree physical prototypes to measure design loads. Road Load Data is the measurement of loads, displacements and accelerations from a real car taken on a real road. In order to create a new car, the team made assumptions about how it would work, because the effect of the many new, innovative and cutting edge systems in JLR products is often not known. To build a prototype that is complex, well-tuned and reliable is a time consuming and expensive task. Therefore, the aim of the project was to reduce reliance on physical prototypes and deliver a product that customers would love. The available literature was studied in depth and a six-sigma approach was used to create the best possible design space to predict loads accurately. JLR has now filed for two patents for the modeling done in this project.

Indigenous development of high strength steel – Tata Motors and Tata Steel

Automotive industry has a keen interest in adoption of advanced high strength steels to meet the objectives of ever-increasing demands on product safety, emission control, reliability & durability,

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mileage, operating economics and cost competitiveness. The availability of such steel in India is limited and imports are expensive with long lead times and consequent higher inventory carrying costs. This led to the drive by Tata Motors, in collaboration with Tata Steel, for indigenous development of hot rolled “nanometer-sized precipitation hardened 800-900Mpa tensile strength” steel with excellent cold formability for current and future vehicle programs. This project led to import substitution and light weighting program for commercial vehicles.

Smart Fusion - In-house Laser Welding Automation – Titan Company

The Project – Smart Fusion is a bouquet of innovative ideas driven by the business need. The innovativeness of the project was three pronged. Conceptualizing the idea of laser welding on a rotary transfer set-up, combined with the 120-degree laser welding spot location on the tiny pinion, with the planetary rotating anvil and an on-line checking systems. This led to establishment of a high productive, automated laser welding setup required to producing a redesigned component assembly, which would minimize the gearbox rejections. Completely developed in-house, the novelty of this project lies in interfacing a 50-micron laser on a high-speed automation setup which will produce component assembly every 2 seconds. The entire automation setup was established with several unique features within a short span of 6 weeks. This project has streamlined the business with the Swiss OEM, enhanced the internal FTA levels up to 98 %, brought down the market rejections for the customer from 4 % to as low as 0.2% and maximized the capacity of gear box supplies to 10,000 sets per day.

Implemented Innovations: Support Process

Leaders from Learners – Tata Power Delhi Distribution (TPDDL)

With an aim to get a hold on a very critical segment of consumers (slum consumers) where resistance to cooperation was witnessed time to time, a game changer move was planned wherein TPDDL focused on empowering some slum women by providing them quality training and uplifting them to a definite positive level. Starting from 5 women, now 741 slum women have been nurtured and empowered who, in turn, work as TPDDL Abha member (Brand Ambassador), and spread awareness among slum consumers serving dual purpose of social accountability and recovery of dues ultimately. A special department was made to deal with this segment of the society called the Special Consumer Group. A segment where any employee feared stepping in is now conquered by their ambassadors with the help of whom, TPDDL are now able to spread awareness regarding their Special Interest Group-corporate social responsibility (SIG) policies and gripping the dues.

Piloted Technologies**Microbiome-based diagnostics: Preterm Birth & Colorectal Cancer – Tata Consultancy Services (TCS)**

Asymptomatic diseases, the 'silent killers', are atypical conditions showing no apparent symptoms until it is too late and affect people at large. Early detection and treatment of such diseases is 'the need of hour'. The TCS team have developed human-microbiome based 'low-cost, non-invasive, accurate and early-stage' diagnostic solutions for two highly prevalent asymptomatic-diseases viz. 'Preterm-Birth (PTB)' and 'Colorectal-Cancer (CRC)'. These inventions, 'first-of-their-kind', are anticipated to redefine the diagnostics landscape in maternal/neonatal (PTB) as well as elderly healthcare (CRC).

Dare to Try**Superhydrophobic bacterial coatings – Tata Steel (Europe)**

The exposed cut edges are a major issue in terms of corrosion for organic coated steel. Hence, in order to limit this corrosion, paint systems are loaded with inhibitors. The corrosion inhibitor hexavalent Chromium is going to be banned by European legislation. For years, research groups tried to find an alternative inhibitor that could perform the same task. Tata Steel Europe team tackled the problem using a different but simple approach - prevent the corrosion by removing one of the base components - water. The hydrophobic chaplins have shown water limiting behaviour. By applying a chaplin containing coating to the cut edges, the team believed that it was possible to prevent corrosion.

Design Honour**Push lock Pull Open door latch for interior paint application – Jaguar Land Rover (JLR)**

The Push Lock-Pull Open Door Latch is an innovative door latch that will allow automated interior painting robots to securely open and close the vehicle doors without manual intervention. With the increase in automation, the JLR team needed to design a solution that the robot handler could operate effectively but would not be difficult for the production operator to use, whilst securing the door as it travels through the paint shop. The current automotive standard for this type of application is to use a single disposable plastic door clip. The JLR team wanted to

challenge this concept by designing an ergonomically friendly door tool that can easily and quickly be attached, and removed from the vehicle door frame by the operator.

Next Gen Customer Experience in Industrial Services – Tata Consultancy Services (TCS)

This project aims at developing a customer engagement portal with next generation user experience design, which will revolutionise the way a customer interacts, transacts and consumes data. The current customer experience involves complex, lengthy and costly service processes, in addition to up to 90 days of cycle time for repairs and a hefty cost involvement of \$30 million to prepare, print and ship data books. The growing need to eliminate back office operations and help reduce the need for customer service and decrease repair cycle time triggered this idea. The USP of the solution is its unique UX Design which is the first of its kind for industrial assets and services.

Dual Discharge Wagons – Tata Steel

Tata Steel receives around 30,000 tonnes of raw materials every day, to run a steel plant at Jamshedpur. While the receipt of around 90% of this raw material is by rail route, the logistics inside the plant necessitate some rail and road transportation within the plant premises for the movement of raw material in between the storage yards. Tata Steel maintained a set of captive wagons and locomotives along with road transportation, to ensure internal raw material movement. There are three types of wagons for bulk material movement - side discharge, bottom discharge & revolving type. Tata Steel team designed a wagon which can be used both as a side discharge wagon as well as can be like a tippler wagon. There is no evidence of design modification being attempted in wagons, including in the Indian Railways, to adapt them to suit both kinds of unloading stations. Tata Steel growth shop team took upon itself to design a dual discharge wagon can have impact on overall logistics landscape of steel industries and the country.

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