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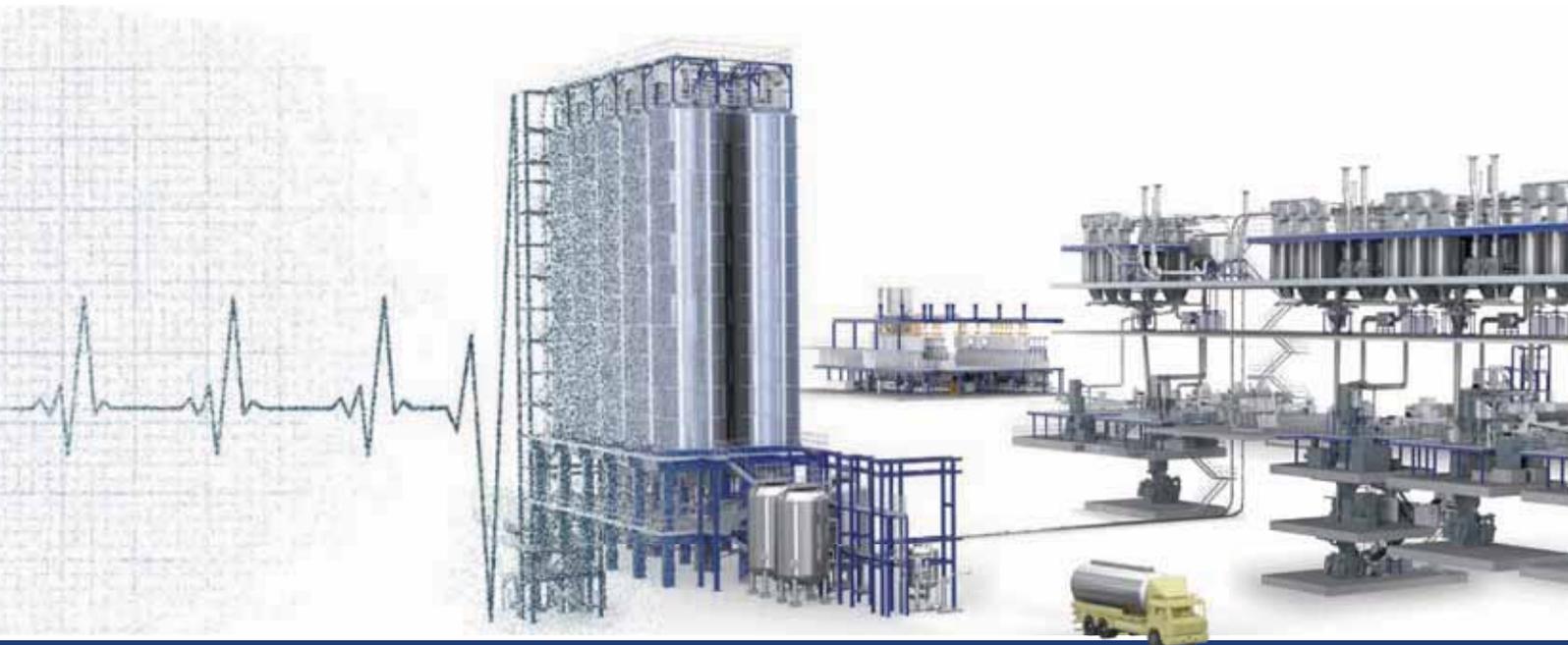


Guido Veit

Business Unit Director
Plastics & Rubber Plants
Zeppelin Systems GmbH

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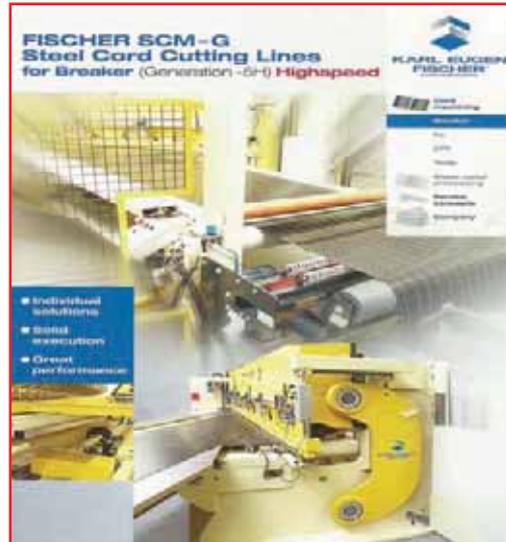
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INDIAN RUBBER JOURNAL
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March has been a month of political uncertainty in the U.S. due to the continuing turmoil in the White House. President Trump has shown consistency in carrying out his firings practically every Friday. The sanctions imposed by Trump on aluminum and steel imports have angered both friends and enemies of the country. The effect of tariffs imposed on Chinese goods will be felt in the global economy.

While the US has ordered tariffs on \$60 billion worth of Chinese goods, China has so far announced a modest \$3 billion retaliation and is prepared to engage in a trade war with the US. One can only speculate as to the ripple effect of such a trade war on the global economy and in particular on the international tire industry.

Nearer home in India, by-elections in U.P. & Bihar, two of the country's most important and populous states, have given a jolt to the ruling BJP, following the victory of the BSP – SP combine. Opinion is divided as to whether this is a trend for the national elections in May 2019.

As we go to press, the other major news item making waves had been the evidence of Facebook's permission to Cambridge Analytica to gain access to (and subsequently misuse) the personal data of 50 million Facebook members without their permission. The Facebook stock has already lost over \$ 50 billion and rocked political establishments across the world, including India. Mark Zuckerberg has apologized for this major breach of trust without stating how he will prevent such misuse to influence elections across the world.

To top off an eventful couple of months, the US Fed's announcement of 2 more interest rate increases in 2018 and 2019 has spooked the Indian stock market, which is down to 32000 points, compared to 36000 points in January.

Our Cover Story in this issue features Germany's Zeppelin Systems, inheritor of the iconic legacy of Count Zeppelin. Zeppelin Systems has grown by leaps and bounds aided by innovation, R&D and a focused plan to become a complete solutions provider for the global tire and rubber industry.

As a further extension of its pioneering introduction and development of radial tires in India, India's tire major JK has mainly been involved in supporting Motor Sports. It has now taken its involvements even further with a focus on the awareness of safe driving, which has received a big boost in a highly publicized national TV inauguration of its Constitution

Club of India Rally on 18 March in New Delhi in the presence of Senior Government Members.

India's multinational tire company Apollo Tyres continues to grow above industry level and is said to touch a turnover of Rs. 15000 to Rs.16000 crores (\$2500 million) for the Financial Year ending 31st March 2018.

We also report on the top level changes at Michelin, with Florent Menegaux said to take over as Managing Partner from Jean-Dominique Senard in April. He becomes the second person outside the Michelin family to be appointed Managing Partner of this storied company.

LANXESS AG recently announced the resignation of its Chairman Dr. Rolf Stomberg and his succession by Dr. Matthias L Wolfgruber, following the Annual Shareholders meeting on 15 May, 2018, as well as the promotion of Pamela Knapp, the first female member on its Supervisory Board member.

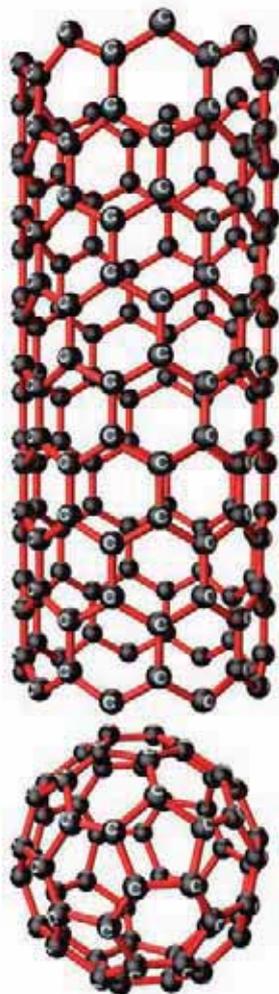
In other recent news, Maxxis is, the world's No.9 Tire Company and a wholly-owned subsidiary of Cheng Shin Rubber of Taiwan, has started production of two-wheeler tires in Gujarat as a precursor to its production of other tires in the near future.

Also in this issue, we have great pleasure in publishing an article by Dr. R Mukhopadhyay, JK Tyre Director R&D and CEO of Hasetri, on the challenges and opportunities of the Green economy for the Indian Rubber Industry.

We round off the issue with a fine presentation on the global synthetic rubber situation by Juan Ramon Salinas, Managing Director and CEO of the International Institute of Synthetic Rubber Producers, (IISRP).

I hope this issue provides you with interesting reading.

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QUALITY WORKS.

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Guido Veit

Business Unit Director, Plastics & Rubber Plants Zeppelin Systems GmbH in an interview with M. Noorani

In which year was your company founded and by whom?

Our company goes back to Count Zeppelin who started to build airships at the end of the 19th century. He founded his aviation company Luftschiffbau Zeppelin GmbH in 1908 and handed over the entire company to the Zeppelin Foundation. Count Zeppelin was a real innovator and pioneer who recognised opportunities and faced the challenge. His airship company was dismantled in 1947 but the experience gained from the production of airships laid the foundation for a new beginning. In 1950, the Zeppelin Foundation established Metallwerk Friedrichshafen GmbH that started by producing lightweight structures and large vessels for the chemical industry. The company was renamed Zeppelin-Metallwerke GmbH in the 1950s.

It would be interesting to know more about the choice of Zeppelin as a name?

The name Zeppelin was the family name of the airship pioneer Ferdinand Graf von Zeppelin. His airships bore his name and so did his Foundation which is still the owner of the Zeppelin Group. We are proud of our origins and aim to live by the values of Count Zeppelin even today. He has been a role model for us and our company has always been striving to be as innovative as he was.

Could you tell us something about the development of the company from the 1960s onwards?

In the 1960s, Zeppelin invented silos made of aluminum. As the plastic industry was booming at that time, Zeppelin became the biggest silo supplier around the globe.

Since that time, there has been an enormous growth and diversification into many branches of industry. Today, the Zeppelin Group with its Group holding company called Zeppelin GmbH comprises six strategic business units: Construction Equipment EU (sales and servicing of construction machines), Construction Equipment CIS (sales and servicing of construction and agricultural machines), Rental (rental and project solutions for the construction and industry sectors), Power Systems (drive, propulsion, traction, and energy systems), Z Lab (new digital business models), and our Business Unit, Plant Engineering (engineering and plant engineering).

Has your company always



been based in Friedrichshafen?

The Plant Engineering Business Unit, which is called Zeppelin Systems, has always been based in Friedrichshafen on Lake Constance in Germany, although different companies are at other sites in Germany and abroad have been incorporated into the company. Subsidiaries were founded in Belgium, Italy, India, Singapore, the USA, Brazil, Saudi Arabia, South Korea, England and China but the headquarters of Zeppelin Systems are still located in Friedrichshafen.

Which kind of products were manufactured during the early years?

In the beginning, the know-how, which had been acquired in the production of airships, particularly in aluminum processing technology, was used by the new company for the production of light-weight structures and large vessels for the chemical industry. So, the company initially focused on the manufacture of silos which, very quickly, have earned an excellent reputation in the market.

When and which products were further added to the company's portfolio?

Over the years, the portfolio was extended to include other key components for the bulk material industry, such as rotary feeders, diverter valves, filters etc. The company gradually developed into a specialist for the storage, conveying, mixing, metering and weighing of high-quality bulk materials.

By taking over several companies from different branches of industry and through strategic alliances, Zeppelin Systems have continuously expanded their portfolio. Today, Polyolefin Plants, Plastics & Rubber Plants, Food Plants and Mixing Technology are all handled by Zeppelin Systems. We are now the world's leading plant engineering company for the handling of high-quality bulk materials, including the supply of mixers and automation solutions.

Zeppelin has many types of mixers. What are the major differences between these mixers?

Zeppelin offers the original HENSCHTEL-Mixer® series, comprising Laboratory Mixers, High Intensity Mixers, Cooler Mixers and Container Mixers for a wide range of applications e.g. masterbatches, toners or chemicals. Furthermore, Zeppelin invented blending silos. This Silo blender can mix bulk materials up to 2500 m³. For details, please refer to our website www.zeppelin-systems.com. Our Mixers have been proven in application of mixing recycling Carbon Black and part of continuous rubber mixing processes.

Zeppelin is respected worldwide for its customer services and technical services. Apart from the service from your headquarters, do you also have service supports based in other parts of the world?

Yes, due to our global network of subsidiaries we are always near our customers so that we can support them by providing the services they need. Many of our global subsidiaries also have production facilities, so they can produce the equipment conforming to our proven

We are now the world's leading plant engineering company for the handling of high-quality bulk materials

designs. Therefore, we are not only doing services in our customers countries and time zones, but project management, site services or deliveries partly based on local production or selected suppliers are our daily businesses. For instance, in India we have one subsidiary (Zeppelin Systems India Pvt. Ltd.) and one JV partner (Smart Controls India Ltd.).

What competitive advantage does Zeppelin have in having a subsidiary and a JV partner in India?

Our competitive advantage in having **Zeppelin Systems India Pvt. Ltd.**, as a wholly-owned subsidiary, is the seamless access

to German technology for the Indian market. Further, Zeppelin Systems India offers complete services to the customers in the region, including Sales, Engineering, Project management, Installation and a complete service network. This brings a real price advantage for the Indian rubber & tire industry and also the advantage of local service and spares support. This is our Unique Selling Point. Gaurang Joshipura is the Managing Director of the Indian subsidiary.

Further, with the JV with **Smart Controls India Ltd.**, we are bringing an integrated solution including Automation from a single source. The JV provides Automation Hardware and Software for complete Mixing room, upstream & downstream. This also includes for the Projects we execute from Germany across the Globe. **Ashutosh Chincholikar** is the **Founder & CEO** of this JV.

Have you licensed manufacture of your products to companies outside Germany?

According to our strategy, only selected subsidiaries have been chosen for the manufacture of our products abroad. We do not license the manufacture to partners, sub-suppliers or other companies because we want to make sure that Zeppelin products offer the high quality our customers expect from us.

How did your business develop in 2017 as compared to the previous year?

In 2017, the Plant Engineering Strategic Business Unit achieved a sales turnover of 326 million Euros and an order intake of 318 million Euros. This has been an increase in sales with regard to 2016 of roughly 25% (2016: sales turnover: 262 million EUR). The rubber industry provides approximately 20 % of the sales of Zeppelin Systems, including the corresponding service business, and the rubber plants business unit was especially successful in 2017. This was one of our best years and we are building on this success in order to continue in this direction.

What are the success factors in the rubber industry?

Thanks to several decades of experience and the knowledge gained from hundreds of plants we have built,

we offer sustainable and economic plant designs and support our customers from very early stages in their projects already. We use the most up-to-date tools and experienced project managers and engineers while implementing complete professional solutions for the mixing room. Due to our 3D competence in plant engineering, we are able to carry out complex modifications on existing plant systems safely and on time, even if technical documents are no longer available. And we focus on efficiency in terms of energy and material consumption.

Can you tell us something about your innovations in the rubber plant sector?

Our major innovation in this sector is our newly developed Automation platform called MIRA. This is an open platform which offers a real bunch of advantages for our customers and will also lead to new business. It is suitable for almost all interfaces to other systems with reasonable effort and opens up all Industry 4.0 opportunities for the customer.

And we also offer a new system for the dosing of liquids which has a disruptive effect on old methods with all their disadvantages such as restricted maximum accuracy, emitting of aerosols and contamination due to open systems, low flexibility and high risks of fire. Our new system is closed, it is expandable by modules according to our customers' requirements and it is able to introduce up to 36 liquids into the process at hitherto unknown

Our major innovation in this sector is our newly developed Automation platform called MIRA

flow rates and accuracy, at exact temperatures, partly simultaneously or sequentially. We offer a low-cost starter kit for this, so that customers can use this new technology without having to buy the big system and can expand it later on.

What are your business/turnover targets for 2018 in the short and medium-term future?

In 2018, we aim at further development and expansion of our business and expect to achieve considerable growth. In

our rubber plant business unit, we are working on downstream equipment and additional products, on improved engineering services and turnkey systems for Brownfields and Greenfields as well as expansion projects.

In addition to new products such as our new fully automatic Liquid Dosing System, we also grow in the market by opening up new regions or business areas such as consultation and engineering services for the modernisation of Brownfields.

An important asset for the future of our company is the recycling of rubber, in particular, the recycling of tires for which we co-operate with our partner Pyrolyx.

So, as an overall perspective, we are looking forward to interesting business opportunities from our innovations and further expansion in the short and medium-term future.

**Guido Veit (Dipl.-Ing.)
Business Unit Director
Plastics & Rubber Plants**

Guido Veit studied process engineering at the University of Stuttgart. He has more than 20 years of international project and plant engineering experience and is responsible for the global rubber, plastics and mixing business of Zeppelin Systems. His practical experience ranges from bulk material handling and liquid dosing through hot gas filtration to the recycling of rubber and plastics. He maintains excellent contacts with the tire industry and develops concepts for the rubber mixing room for both Greenfield and Brownfield projects.

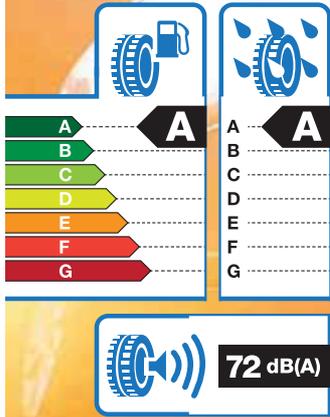
He joined Zeppelin Systems GmbH in 1998. In his present position as Director Business Unit, he is responsible for the Rubber & Tire as well as the Plastic Processor markets worldwide. Zeppelin Systems GmbH is today one of the worldwide leading companies for processing of bulk materials as well as mixing and compounding processes. Guido Veit developed Zeppelin as a full service provider for



Mixing Room Solutions in the Tire Industry. Furthermore, he supports the development of a closed loop recycling system for tires and other technologies such as Liquid Dosing System and fully automation processes according to Industry 4.0.

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Zeppelin Systems: Provider of solutions for full spectrum of rubber and tire manufacturing

Zeppelin Systems is an exceptional German manufacturing company which is perhaps not as well known in the global rubber and tire industry as it should be. This iconic company was founded by the legendary Count Ferdinand Graf von Zeppelin in 1908 to build airships under the company name Luftschiffbau Zeppelin GmbH. He then handed over the entire company to the Zeppelin Foundation. The Zeppelin, the rigid airship created by Count Zeppelin, were developed in detail in 1893 and patented in Germany in 1895 and in the US in 1899. They were first flown commercially in 1910 but will go down in history for their key role as bombers during raids



Count Ferdinand Graf von Zeppelin



over England in the World War I. The Airships were named Zeppelin, as was the Foundation which continues to be the owner of the current Zeppelin Group.

The company is justifiably proud of its origin and, even today, aims to live up to the values of its founder, Count Zeppelin, who was a role model and inspires the company's drive to be innovative.

After World War I, the airship company Luftschiffbau Zeppelin GmbH was dismantled. With the experience gained during wartime years, the groundwork was laid for a new beginning in 1950, with the formation of Metallwerk Friedrichshafen GmbH. This company started producing lightweight structures and large vessels for the chemical industry. The company was again renamed Zeppelin-Metallwerke GmbH in the 1950s and quickly earned an excellent reputation for its products.

Zeppelin soon became the world's largest silo supplier due to its invention of silos made of aluminum. Since then an enormous growth and diversification into many groups took place under the group holding company called Zeppelin GmbH comprising six strategic business

units. The company has a huge impact globally on many aspects of life.

Zeppelin's global strategy has been nicely outlined by its Managing Director Rochus Hofmann.

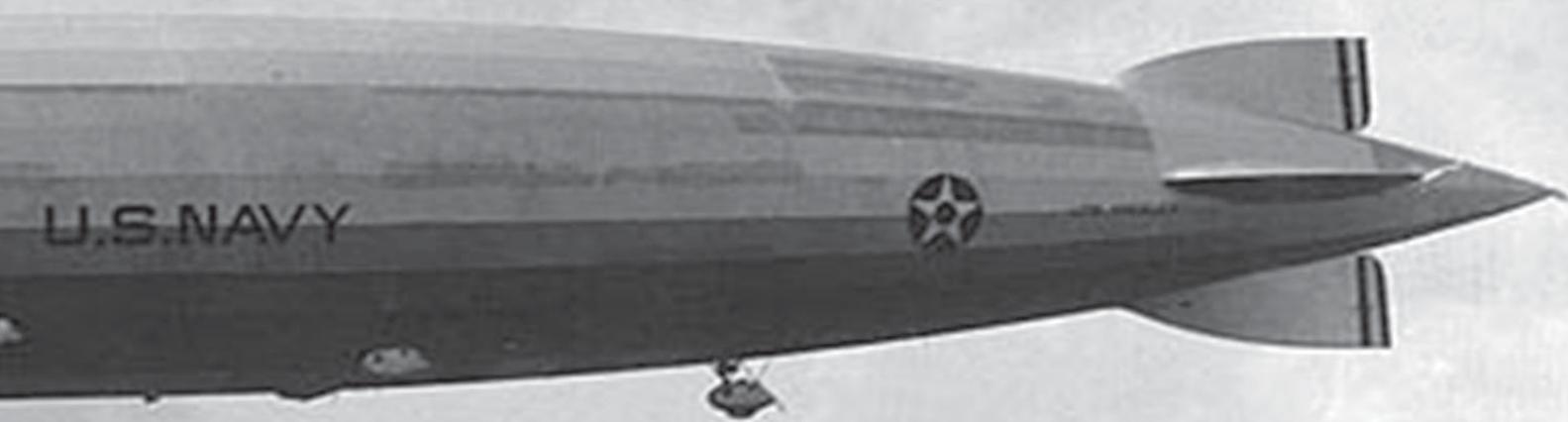
His philosophy is his thinking globally and acting locally in India.

He is confident of the powerhouse that is India and to this end, he founded a joint venture with Smart Controls. With the growing importance of digitalisation as part of Industry 4.0, Smart

Control and Zeppelin share a united passion for their new automation concept MiRA, a module to open automation concept. With its long tradition of more than a century, Zeppelin Systems is committed in its relationship with customers, partners and employees.



**Rochus Hofmann, Managing Director,
Zeppelin GmbH**



ZEPPELIN®

WE CREATE SOLUTIONS

Zepelin GmbH comprises six strategic Business Units

As Guido Veit, Director of the Business Unit, Plastics & Rubber Plants affirms, the company has followed a systematic strategy to become a provider of solutions for the full spectrum of rubber and tire manufacturing.

Sustainability remains a key focus. This does not mean only the effective use of materials and energy in tire plants, but plant design and equipment supply for the recycling of used tires offered with its closest partners Pyrolyx in USA.

Zepelin Systems

The Plant Engineering Business Unit has always been based in Friedrichshafen on the beautiful Lake Constance in Germany, but other different companies have also been established in Germany. Overseas subsidiaries were founded in Belgium, Italy, India, Singapore, USA, Brazil, Saudi Arabia, South Korea, England and China while the headquarters of Zepelin Systems remain in Friedrichshafen.

As the years went by, Zepelin extended its product portfolio to include other key components for the bulk material industry, such as rotary feeders, diverter valves, filters etc. It gradually became a specialist for the storage, conveying, mixing, metering and weighing of high-quality bulk materials.

As a technical leader, Zepelin offers the advantage of the world's largest in-house technology centre based in Friedrichshafen for testing of various materials to verify plant design and develop new products and processes.

MiRA

Zepelin's new automation and digitisation platform has been working successfully for some time on a new concept motivated by the current field of digitisation.

Topics such as IoT, Big Data, Machine learning and other factors play an important role. The development does not focus only on one new product, but on several new products grouped under the umbrella term MiRA.

By taking over several companies from different branches of industry and through strategic alliances, Zepelin Systems has continuously expanded its portfolio. Today, Polyolefin Plants, Plastics & Rubber Plants, Food Plants and Mixing Technology are all handled by Zepelin Systems. Zepelin is now the world's leading plant engineering company for the handling of high-quality bulk materials, including the supply of mixers and automation solutions.

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Zepelin supplies complete plants from a single source from the receipt of raw materials and the storage and conveying technology, the weighing and dosing of carbon black, silica, oils as well as other additives and small components through to turn-key mixing rooms.



A variety of different mixing tasks need to be solved in the manufacture of products. Zepelin has various types of mixers available for this.



COMPOUNDING IN SYNCHRONISATION

The requirements placed on compounding systems are on the increase. We have solutions on hand. Even the most sensitive of materials can be compounded thanks to our newly developed screw elements. Special mixing elements ensure the gentle incorporation of fillers that only have a very low shear force applied to them thanks to the unique process technology.



Compounding in
synchronisation



The company's global network and subsidiaries ensure that it is always close to its customers and can support them by providing the necessary services at all times. Many of its global subsidiaries also have production facilities which enables them to conform to Zeppelin's designs and thus it is not only providing services in various customer countries and time zones, but also project management, site services or deliveries partly based on local production or from selected suppliers.

its vision and strategy of thinking globally and acting locally. Building on its impressive heritage of over a century of innovation, Zeppelin's spirit of partnership in its relationship with customers, partners and employees ensures its future beyond another century, as it expands its rubber plant business to support the success of its customers. Zeppelin's customers across the world can always rely on this consistently high performing company to provide the full spectrum of services for rubber and tire manufacturing.

India

Zeppelin Systems India Pvt. Ltd. is the Indian subsidiary, while Smart Controls India Ltd. is a joint venture partner. Both these companies are managed by very capable CEOs viz. Gaurang Joshipura and Ashutosh Chincholikar respectively.

Having built so systematically and robustly on its impressive heritage, Zeppelin Systems, led by Managing Director Rochus Hofmann and Business Director Guido Veit, has successfully implemented



Gaurang Joshipura , Managing Director, Zeppelin Systems India Pvt. Ltd



Ashutosh Chincholikar, Smart Controls India Ltd.

Zeppelin Global Strategy : Rochus Hofmann, Managing Director, Zeppelin Systems GmbH, Germany



Rochus Hofmann, Managing Director,
Zeppelin Systems GmbH

The Zeppelin philosophy of thinking globally and acting locally is truly in place in India

Recognising India as one of the world's fastest-growing economies, from 2009 onwards, Zeppelin started to strategically develop its subsidiary in Vadodara and utilise the immense talents and resources for Engineering, IT and integration readily available in India. The Zeppelin philosophy of thinking globally and acting locally is truly in place in India with both onshore and offshore supply of new and innovative technologies and effective digitalisation from Zeppelin to meet the ever-increasing manufacturing process demands.

Zeppelin has further reinforced its commitment and ambitions to the powerhouse that is India by forming a joint venture with the innovative Indian process automation company Smart Controls. With the growing importance of Digitalisation as part of Industry 4.0, Smart Controls and Zeppelin share a united passion for their new automation concept – MiRA, a module based 'open' automation concept that is truly flexible. This partnership is already evolving rapidly not only in India but in all corners of the world.

Zeppelin Systems has systematically extended its network all over the world for many years. It plays a leading role in the rubber and tire industry, as well as in the plastics production and processing industries and the food industry.

The company, which is represented by subsidiaries throughout the world, is perceived as an "architect of complex

system solutions". Zeppelin produces and manufactures the integral key components for storing, conveying, mixing, dosing and weighing high-quality bulk materials. For the engineering of the complete plants Zeppelin has a proven track record in demonstrating cost savings in buildings, civil work and solutions through utilisation of their pre-engineering packages.

Zeppelin has a long tradition of more than a century. It is committed to a sustained spirit of partnership in our relationships with customers and partners as well as our employees.

Strategic Development of Plastics & Rubber Plants, Zeppelin Systems GmbH: Guido Veit



Guido Veit: Director Business Unit
Plastics & Rubber Plants

Zeppelin has followed a systematic strategy to become a provider of solutions for the full spectrum of rubber and tire manufacturing

Zeppelin has more than 30 years of experience in the engineering of plants for rubber and tire production providing a backbone of process knowledge and expertise in the company. Its leading technology for the reliable pneumatic conveying, dosing, weighing and precise and fast mixer feeding of carbon black and silica is the foundation of Zeppelin's excellent reputation. For years we have followed a systematic strategy to become a provider of solutions for the full spectrum of rubber and tire manufacturing.

More and more customers all over the world appreciate our expertise for the upfront development of the plant design right from the outset of the project. They have recognised that a good design will save costs and a well-engineered plant can be built and commissioned much more quickly and according to schedule. This, together with our 3D engineering competence, allows us to offer optimal solutions for greenfields as well as the modification of brownfield projects from scratch. Global tire industry majors have benefited from faster project implementation and optimised plant design.

As technological requirements have increased due to the growing complexity and number of recipes and ingredients, Zeppelin has accepted the challenge. It has developed more flexible and sophisticated technology for the mixing room as well as a new open automation platform called MiRA for more flexible control and digital integration of plants to be ready for Industry 4.0. The development of the Liquid Dosing System and Bolt-Tec silos also prove our strength when it comes to

innovation.

Sustainability is also a key focus for Zeppelin. This not only means the effective use of materials and energy in rubber and tire plants but also specific plant design and equipment supply for the recycling of end-of-use tires offered with our process partner, Pyrolyx.

Zeppelin continues to drive the industry forward and is set to be a major force in the industry with ambitious plans for growth. So, Zeppelin has a long-term commitment for the rubber market and intends to expand its rubber plant business systematically in the future in order to give customers continued support for their success.

New Zeppelin Technology Centre Liquid Dosing System for precise dosing of liquids

As a technological leader, Zeppelin offers the advantage of the world's largest in-house Technology Centre, located in Friedrichshafen, for trials of various materials, in order to verify plant design and develop new products and processes. The new Liquid Dosing System (LDS) from Zeppelin has been set up in our Technology Centre and is available for trials in our new test house. Customers are welcome to test their liquids to see for themselves the numerous advantages of the new system.

The LDS is a robust closed-loop modular system that allows for accurate injection of liquids at high injection flow rates, regardless of the viscosity. Through a specially-designed injection valve, it can accommodate six different liquids at each injection point of the mixer, offering a wide variety of benefits.

The system uses volumetric or gravimetric dosing to ensure extremely high levels of accuracy and dosing speed, consistent properties and better quality of the compounds with high repeatability of test parameters.

By doing so, this eliminates the need for overdosing, which is occasionally considered while using traditional systems in order to compensate for consequences out of poor repeatability. This increases the quality of the compound and repeatability of the entire process and brings down raw material costs and material losses.

The speed of dosing and the ability of feeding the liquids precisely and in



Liquid Dosing System

sequence could save, on an average, 3 – 4 seconds per batch, thus one can achieve up to 20 additional batches in a day.

Zeppelin offers a modular design Starter Kit for LDS, so customers can test it without any risk. The kit consists of four modules and is ready for instant use, allowing clients to test the system before making that big investment. Designed according to state-of-the-art technology, the LDS does not leave any questions unanswered. It is simple, easy to install, Plug and Play, pre-configured and suitable for one liquid. The starter kit is a complete pre-arranged system and can be applied to any mixer. Supervision of assembly and training of customer's specialists is included.

Now, starting with the Zeppelin Liquid Dosing System is easier than ever. And in addition to the Starter Kit, Zeppelin's Technology Centre is available to support clients for their success.

The new Liquid Dosing System (LDS) is a robust closed-loop modular system that allows for accurate injection of liquids at high injection flow rates

New recycling plant for tires in US, Terre Haute

Zeppelin is building a large-scale tire recycling plant for Pyrolyx in the United States. The first sod was turned in September 2017 and despite harsh weather conditions in winter in Terre Haute, USA, work is on schedule. The complete structure of the building is ready and start of production (SOP) will be in the first half of 2019. The plant in the US that Zeppelin builds together with their technology partner, Pyrolyx, is designed to produce approx. 4 million end-of-use tires per year. This will yield approx. 13,000 tons of recovered carbon black (rCB) which will be used for the production of new tires. At present, this tire recycling plant will be the largest of its kind, globally.

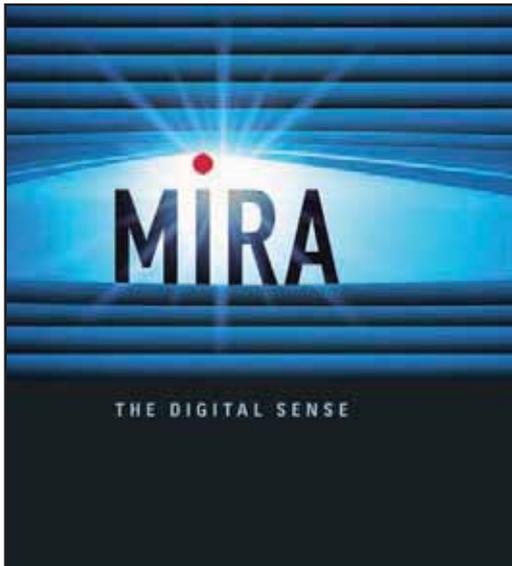
As a perspective for the future, Zeppelin has the vision of a zero-waste tire production facility. We already use sustainable concepts in order to reduce waste in the production of tires and recycle it. The tire recycling plant of the future could include a system so that materials gained from it can be introduced back into the process as valuable raw materials. Furthermore, recyclates could be offered on the market as sought-after products, perhaps as pre-compounds or prepacks.



Zeppelin's large-scale Tire recycling plant Pyrolyx in Terre Haute, USA

It will still take some time until recyclates of this quality are available in the market in major quantities but we think this is the trend for the future.

MiRA: Zeppelin new automation and digitisation platform



Mg. Director Rochus Hofman

MiRA is the future new automation and digitisation platform of Zeppelin Systems. Zeppelin has been working for some time on a new concept motivated by the current requirements in the field of digitisation. Topics such as IoT, Big Data, Machine Learning and others play an important role. The development does not focus on “one” new product, but on several new products that are grouped together under the umbrella term MiRA. An example of one of these products is the Zeppelin PLANT.GATE, another example today is Smart Mix.

In order to further complete the portfolio, Zeppelin also works on the MES (Manufacturing Execution System) level. The aim is to equip entire production lines in the future and thus be able to offer customers an overall solution from the field level via the PLC and Scada level to MES.

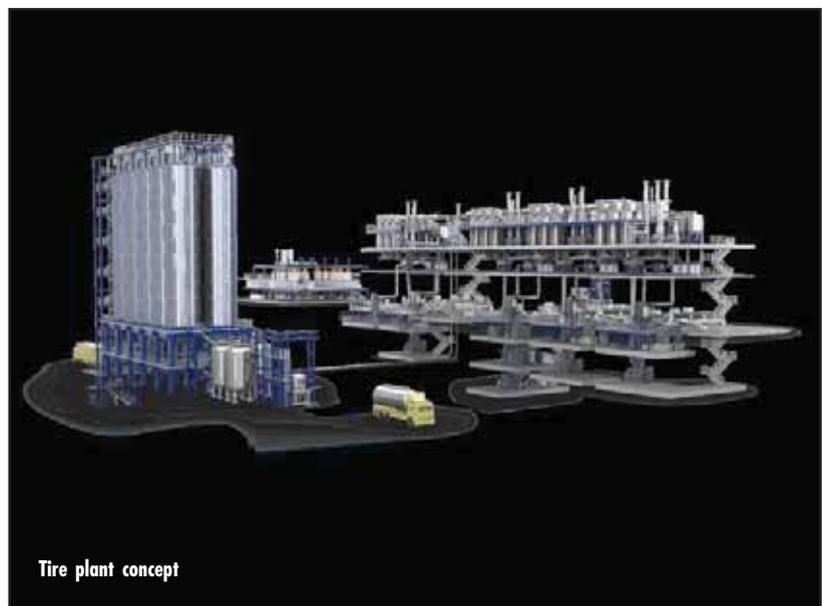
In addition to the existing core business, automation and digitisation are fundamental elements of Zeppelin's strategy. In this context, PoCs (proof of concepts) in the IoT platform area have already been successfully planned and performed with customers.

The advantages of MIRA at a glance:

- Open platform with standardised modules which map out all the processes in the plant
- Uniform “language” in the documentation and recording, using standardised modules
- Basis for the “artificial intelligence” for plant operation
- Independence from the plant provider
- Freely configurable
- Streamlined architecture
- Lower costs
- Fast and safe introduction to digitalisation of plant operation

- Location-independent analysis and optimisation of plant performance at any time due to remote access to all relevant dates

Zeppelin, as a company which masters all the processes and procedures in complex systems, is also a trend-setter when it comes to automation. For digitalisation is the next milestone on the road to a smart factory – perhaps there will even be a plant which works completely autonomously in the future, constantly optimising itself. Zeppelin has created the basis for this with the automation concept MIRA. The concept paves the way for an easy, safe introduction to digitalisation for the industry and ensures long-term planning reliability due to its open and streamlined architecture.



Tire plant concept

Zeppelin Systems India Pvt. Ltd.

Zeppelin Systems India Pvt. Ltd. is a wholly-owned subsidiary of Zeppelin Systems GmbH, Germany and is active in India since 1989. The operations, which started as a JV and a Sales office, has developed into full-fledged operations with Sales, Engineering, Project management, Installation and after-sales spares & service organisation. Since 2009, the company has established its operations at Vadodara, Gujarat, where it has its Corporate Head Office and Operating offices as well as a Manufacturing unit near Halol. It also has Area Sales Managers located in all regions. In 2017, a JV was formed with Smart Controls India to strengthen complete Mixing room Automation solutions from Zeppelin.

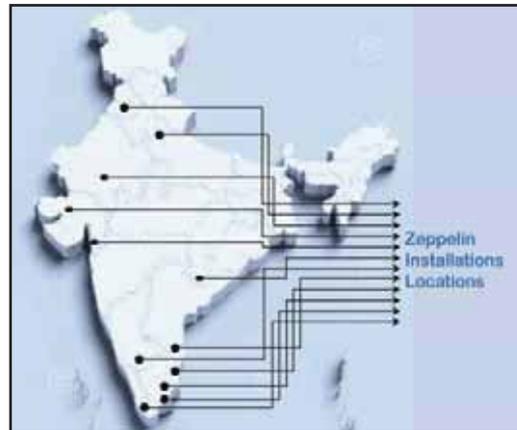
Gaurang Joshipura, Managing Director of Zeppelin Systems India, states, "The constitution of the Company as a wholly-owned subsidiary ensures seamless access to German technology for the Indian Market. Through this, Zeppelin has brought a Superior alternative, with efficiency in terms of Energy & Material consumption and environmentally-safe handling practices for various ingredients of Rubber compounding. With further JV and acquisitions globally, we are working on solutions which will be even more adoptable to Indian Industries."

The Company has a right blend of experienced professionals and a young energetic team of engineers, which provides the company, a strong broad base to serve their clients. The team has worked for joint international projects and received training in Germany. The infrastructure at Vadodara has the same tools and processes as used by Zeppelin's worldwide network. The company has an experienced Site team, including highly-qualified Aluminum welders.

Zeppelin has been spreading the



Gaurang Joshipura, Managing Director of Zeppelin Systems India,Pvt.Ltd



The Company as a wholly-owned subsidiary ensures seamless access to German technology for the Indian market

footprints of the Plant Systems set up by them across industries and geographies, within India.

The Systems and services offered for the Rubber & Tire industry by Zeppelin include the Mixer Feeding Systems, complete with, Unloading and intake, Pneumatic Conveying, Storage, Weighing & Batching, Small Chemical, Liquid dosing, Antitack system, Dust extraction system and completely integrated Controls and Automation. The storage systems include Large Silos as well as Day Bins.

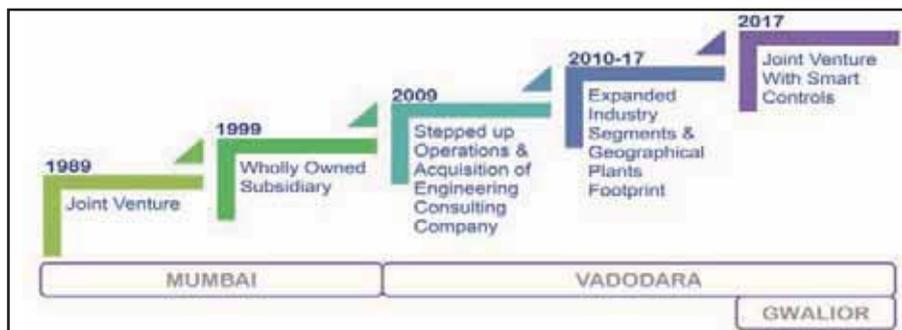
The Projects in India are implemented jointly from Zeppelin, in Germany and in India. The Sales as well as implementation teams at both offices are fully integrated. The project structure has Central Project Manager from Germany, local contact Project Manager from India and engineers

from both the offices. Complete Technology, supply of Key Components and Commissioning are by Germany whereas detailed engineering, all other Material supplies, installation and supervision are done by India. The complete Plant design is carried out in 3D on PDMS software. This 3D model is developed jointly at Germany and in India, which brings a distinctive advantage to the Customer.

With this Project Structure, Zeppelin brings Global technology and close market local support at the same time, to the Indian Rubber & Tire Industry. The Industry has recognised this value proposition and hence Zeppelin systems India has set up Mixer Feeding Systems for their prestigious clients across India. The Systems are supplied for the complete range of Tire Manufacturers from Bicycle / 2 wheelers tiers to Passenger Vehicle tiers to Off-highway vehicle tires, including some being exported. In the Technical Rubber industry, the systems have been supplied for a wide range of plants.

Zeppelin foresees long-term growth potential for the Indian Tire market which will, in turn, induce additional manufacturing capacities. With the current economic policies and environment, it is expected that the tire industry would double its installed capacity in the coming decade.

Zeppelin will bring to Indian customers the latest technologies from their continuous development, some of which are MIRA, Smart Components and Liquid Dosing System, etc. These are bound to create disruptions and change our view on the Mixing Room. Further, Zeppelin plans to bring other value-added service offerings in area of FEED-Engineering, 3D Laser Scanning of existing plants for brownfield expansions and complete integrated Mixing Room solutions.



Smart Controls: Member of Zeppelin Group

Smart Controls India Limited, now a member of Zeppelin Group, was founded in 1999 by Ashutosh Chincholikar, an Electronics Engineer, who always dreamt of creating an innovation-driven company in the space of Industrial Automation.

The journey created many major milestones and some of the finest solutions for many industry verticals like Rubber & Tire, Polyester, Automobile, Metals, Infrastructure and Energy. The most salient part of the solutions were a strong flavour of Information Technology. Almost all Automation solutions were connected to the Business Platforms like ERP.

Realising the strength of Smart Controls, Zeppelin decided to walk along this journey by forming a Joint Venture (JV). It was time to transform the business from Industrial Automation to Digital Solutions for the Manufacturing Industries. Flair of Industry 4.0 and Industrial IoT can be seen in almost every solution or product that is being rolled out now.

Automation contributed largely in the third industrial revolution, thus helping the productivity of the industries to grow. No one realised that with growing industrial outputs, life of people, which means the quality of life, was somewhat ignored. That's where the need of Cyber Physical Systems came in, the industry was witnessing the fourth revolution, nothing but Industry 4.0.

There was a need for the machines to talk to each other and also to the product being manufactured. The



Ashutosh Chincholikar

Smart Controls was one of the pioneer companies in the whole world to bring this strong flavour of digitalisation to the tire industries

need was to view the industry as a whole, not connected through the human beings. Thus, Digitalisation started playing a major role in the industry. The whole idea was to make the industry more visible and certain, without the intervention of people. Once this happens, it is believed that people working with the industry can have a better work-life balance.

Smart Controls was one of the pioneer companies in the whole world to bring this strong flavour of digitalisation to the tire industries. Solutions like Mixing Room, Curing SCADA, Tire Genealogy and MES are some of them.

The strategy ahead

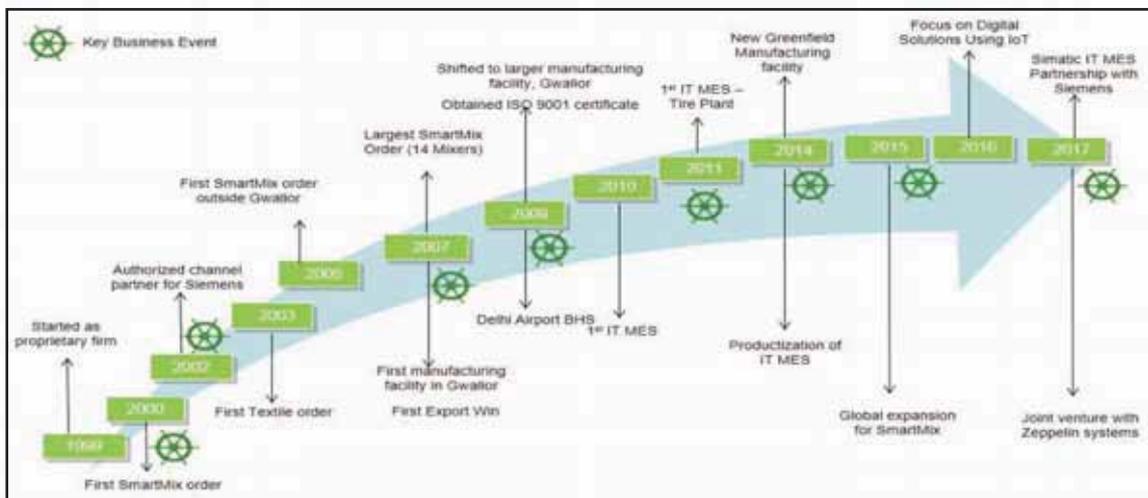
Smart Controls along with Zeppelin now targets to develop Digital Solutions for the Plant Engineering Business in the areas of Rubber & Tire, Plastics, Food and Polyolefin. Along with this, Smart Controls shall continue giving Digitalised Automation Solutions for Polyester Plants.

Roll out of IoT solutions for the entire manufacturing industry has already started with the PoC for Polyester Staple Fibre Line and development of products like Smart Sense Air Quality Index (AQI) measurement system and Plant Gate.

SmartSense AQI (Air Quality Index) measurement is based on IoT technologies. Sensors measure air parameters like Temperature, Humidity, Pressure, So₂, Co₂, CO, Ozone, PM_{2.5} and PM₁₀ to calculate the AQI. The measurement data is directly transferred to the cloud and is then available on Mobile Applications. This product can be installed on the Carbon floor and can be used for real-time measurement of leakages and also the quality of air to which the operators are exposed to. Under extreme conditions, the Carbon transportation process can be stopped automatically through the cloud service. After all, it's the question of the health of the operators.

Plant Gate is yet another product that is likely to be rolled out in 2018. Take the example of Rotary Valve. In the

future, it will be possible to pair the rotary valve with an iPhone or an iPad over Bluetooth and get all data sheets about the product from the cloud. It will also be possible to start an online chat with Zeppelin service department to get support on this product.



Safe Driving Awareness: Top politicians, dignitaries drive on Delhi roads at JK Tyre-Constitution Club of India Rally 2018 On 18 March 2018

The JK Tyre-Constitution Club of India Rally 2018 was organised amidst much fanfare on 18th March, with a number of Members of Parliament (MPs) and various dignitaries driving on the roads of Delhi to raise awareness on road safety and to encourage responsible driving.

Smt. Sumitra Mahajan, Speaker of the Lok Sabha, Rajiv Pratap Rudy, MP and Secretary of the Constitution Club of India (CCI), and Dr. Raghupati Singhania, Chairman and Managing Director of JK Tyre & Industries, flagged off the cars cheered on by families, officials and spectators.

Chairman of JK Tyre Industries Dr. Raghupati Singhania presented a memento to Smt Sumitra Mahajan during the flagging off ceremony of the JK Tyre - CCI Rally.

A specially made 'Mann ki Baat' video by the Prime Minister Shri Narendra Modi was played at the august gathering, with the PM exhorting every citizen to adhere to traffic rules and drive safely.

The annual rally, which attracted a few vintage cars too, was organised in memory of many Parliamentarians, including former President of India Giani Singh and well-known leaders like Rajesh Pilot and Gopinath Munde, who had lost their lives in road accidents.

Over 50 friends and relatives of MPs, bureaucrats and army personnel, who had died in road accidents, participated in the 40-km event. The rally traversed through the iconic streets of New Delhi, starting from the CCI in Rafi Marg and touching Sansad Marg, North Avenue, Dr. APJ Abdul Kalam Marg, South Avenue, Teen Murti Marg, Kautilya Marg, Shanti Path and Sardar Patel Marg before culminating at the Constitution Club.

Nitin Gadkari, Hon'ble Minister for Road Transport &



Chairman of JK Tyre Industries Dr. Raghupati Singhania presents a memento to Smt Sumitra Mahajan during the flagging off ceremony of the JK Tyre - CCI Rally

Highways, felicitated The winners at a dinner on 19 March at the ITC Maurya, New Delhi.

Rajiv Pratap Rudy, MP and Secretary of CCI, said: "As politicians and lawmakers, it is our duty to lead by example. We must

exercise caution while driving. All participants must be congratulated for their enthusiasm and sense of responsibility towards drawing attention to the fact that it is never okay to drive rashly or carelessly. The success of the JK Tyre-CCI Rally lies in driving this awareness."

Sanjay Sharma, Head, JK Tyre Motorsports, said: "The JK Tyre-Constitution Club Rally is more than just a rally. It is aimed at raising awareness on a very important aspect of driving — safety. India has one of the highest incidences of death due to road accidents and this rally addresses the need to observe safety while driving on the roads. The theme of safety, embedded in our motto of Total Control, is close to our ethos of being a responsible brand."



Smt Sumitra Mahajan, CCI secretary and honourable MP Rudy Pratap Singh and Chairman of JK Tyre and Industries Dr Raghupati Singhania flagging off the JK Tyre-CCI Rally.

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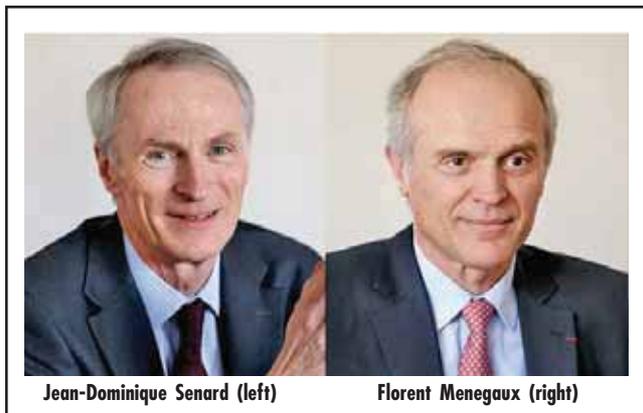
LEHVOSS
Group

Michelin names Florent Menegaux to succeed Jean-Dominique Senard as CEO in 2019

● Group Michelin’s board of directors is recommending Florent Menegaux, Senior Executive Vice President and Chief Operating Officer, to succeed Jean-Dominique Senard as CEO when Senard’s term expires in 2019.

Senard recently notified his employer of the past 13 years that he does not intend to stand for re-election at the 2019 shareholders’ meeting. He’s been CEO since 2012. Senard joined Michelin in March 2005 as CFO and a member of the firm’s group executive council. He was appointed Managing Partner in 2007 and Co-Managing General Partner in 2011 alongside Michel Rollier, whom he succeeded as CEO in May 2012.

Menegaux joined Michelin in 1997 as Commercial Director for truck tires in the United Kingdom and Ireland, and held additional sales positions in the truck tire sector for the next nine years, including Sales Director for truck tires in North America and Head of truck tires for South America. In



Jean-Dominique Senard (left)

Florent Menegaux (right)

2006, he was made responsible for the firm’s consumer tires business in Europe and then Executive Vice President of same activities worldwide two years later. He was appointed Chief Operating Officer in December 2014 and Senior Executive Vice President last year. He was named to supervise the Group’s business directions, and manufacturing, supply chain and customer experience operational directions in January. He also oversees Michelin’s Motorsports activities and materials business.

Menegaux was recommended to the Michelin board by Société Auxiliaire de Gestion (SAGES) –

Michelin’s non-executive general partner – with the cooperation of Senard and board members,

The board will also recommend that shareholders elect Yves Chapot, currently Executive Vice President, automotive business lines, since January, to be Managing Partner.

A 25-year Michelin employee, Chapot supervises the automotive B2C global and regional brands, automotive OE business lines and three regions – Africa, India, Middle East; East Asia and Australia; and China. He joined Michelin in 1992, assuming various management

Apollo’s 3rd Quarter sales up 17%

● Apollo’s 3rd Quarter (Oct-Dec) grew 17% crossing the Rs 4,000-crore mark (\$61 million). Net sales for the nine-month period (April–December) of this Financial Year rose 9% to Rs 10,692 (\$165 million). The company recorded double digit growths both in the Indian and also in the European Operations in the 3rd Quarter.

Chairman Onkar Kanwar stated, “We have witnessed healthy growth across our Operations, and this trend is likely to continue in the coming quarters as well, with our expansion projects coming on stream. While there was growth across all product categories in India, it was primarily led by truck radials. The increase in customs duty for the truck radials, announced in the Union Budget, will further boost our sales of commercial vehicle tires in India. The raw material costs in the third quarter were significantly higher than the previous year.”



Onkar S Kanwar,
Chairman Apollo Tyre Ltd

Cross Currency Reference Chart for Key Financials:

	Rs Billion		US\$ Million		Euro Million	
	Q3	9M (Apr–Dec)	Q3	9M (Apr–Dec)	Q3	9M (Apr–Dec)
Net Sales	40.16	106.92	622.25	1657.75	528.62	1439.55
Operating Profit	5.43	12.09	84.12	187.44	71.88	162.77
Net Profit	2.45	4.74	38.02	73.46	32.62	63.79

JK Tyre displays India's largest off-the-road (OTR) tyre at Auto Expo 2018

● JK Tyre & Industries Ltd put on display the best-in-class technology in tires at Auto Expo 2018 in Greater Noida. Auto-lovers were given a sneak peek into the latest tires that add to a vehicle's style quotient in different areas of the Auto Expo, including India's largest off-the-road (OTR) tires, on show outside Hall No. 1.

Visitors to the Expo experienced the thrill of off-roading at the JK Tyre Ranger Off-road Experience Zone outside Gate No. 11-12, where they could ride with national champions like Hari Singh through a series of hurdles like a 20-foot metallic hill construction, a 12-foot uneven surface made of boulders and logs and a 30° slanted turn. The BLAZE Rydr Range Zone outside Hall No. 1 has been designed to give visitors an understanding of the premium two-wheeler BLAZE tyres, built in with hybrid technology. Designed to emulate the success JK Tyre enjoys in the commercial vehicle segment, visitors can experience the tires on Enfield motorcycles in a 3D setting. The company's exhibit is also a major draw at Hall No. 5 of the Federation of Motor Sports Clubs of India (FMSCI), where it has displayed JK Tyre's racing vehicles, and a peek into the history of Indian motorsport. As a leading corporate that invests heavily in motorsports, JK Tyre



is associated with many championships and events, including the JK Tyre National Racing Championships, JK Racing India Series, ASEAN Rally, SAARC Rally, Indo-Myanmar Army Rally, the Indo-Bhutan Friendship Car Rally and Hornbill Rally. The JK Tyre displays also offered unique interactive opportunities for visitors to win exciting goodies by taking part in a selfie contest. All participants need to do is click a selfie at one of the experiential zones and share it on social media, including Facebook, Instagram and Twitter under the hashtag #JKTyre Automania, and they could win an attractive prize.

responsibilities within the internal audit team, and worked his way up the corporate steadily, taking over as Executive Vice President for the passenger/light truck product lines in March 2017.

ATMA wants carbon black manufacturers to disclose available stock

● With the tire industry witnessing acute shortage of carbon black for the past several months, members of the Automotive Tyre Manufacturers Association (ATMA) have offered to pick up the entire stock of the raw material available in the country.

ATMA's reaction comes in the wake of carbon black manufacturers stating that there was no shortage of carbon black and production was in surplus of domestic demand. ATMA has asked the carbon

black manufacturers body to disclose the stock that is available for off-take. The assertion by carbon black manufacturers about surplus carbon black is in sharp variance to market realities. Even non-tire rubber industries have expressed serious concern over non-availability of carbon black. As communicated by the rubber industry body, as many as 1,000 rubber units have threatened to shut down



operations in view of paucity of carbon black. "Certainly there wouldn't have been so much of agitation if availability was normal," said Mohan Kurian, Convener, Supply Chain and Resources (SCR) Group of ATMA.

According to ATMA, if the crunch in carbon black continues, it will lead to 10% drop in capacity utilisation in tire production during the current quarter. There is need to curb the export of carbon black from the country so that domestic demand is met and tire production is not affected. The tire industry is left with no choice but to import carbon black to meet domestic deficit. However, the steep anti-dumping duty of about 40% on imports was making such duty paid imports almost prohibitive.

ATMA has sought the Commerce Ministry's intervention to resolve the situation as unplanned cuts in tire production arising from shortfall in carbon black availability will lead to higher imports of finished tires.

There's been good news in the Budget for domestic tire manufacturers, with the basic customs duty on imported truck and bus radial tires being hiked to 15% from the current 10% levels.

Unlike car tires, which are almost 100% radial, radialisation levels in truck and bus tires were negligible until a few years ago. With increasing awareness about the benefits of radial tires, the commercial vehicle (CV) industry has been embracing it rapidly. Today, CVs have seen about 45-50% radialisation and this level is expected to double over five years.

This rapidly changing preference led to tire manufacturers setting up new radial capacities to cater to the demand. However, the existence of a huge unorganised market for tires, where cheaper imports were available and dumping of radial CV tires from China have been hurting prospects for domestic players. Truck owners preferred to buy from the unorganised markets for tire replacement.

Some tailwinds have favoured domestic tire manufacturers over the past year. One, demonetisation has brought down imports from the levels of 1.5 lakh tires a month to about half

Goodyear Unveils Intelligent Tire Prototype

● A prototype of a system that provides fleet managers with real-time information on their vehicles' tires has been developed by the U.S. tire giant, Goodyear Tire & Rubber Co., and was recently showcased at the Geneva Motor Show.

The system comprises a tire, sensors and cloud-based algorithms that work together to communicate in real-time with fleet operators via a mobile app. Details of tire wear, temperature and pressure are transmitted by the "intelligent" tire, amongst other information.

According to Goodyear, this enables optimal tire usage for safer and more cost-efficient driving. Chris Delaney, President of Goodyear Europe, Middle East and Africa, noted that for shared fleet operators, proactively managing tire service issues is critical to both the customer experience and the business model and that with the growing popularity of shared mobility, kilometers driven per vehicle will increase substantially in the years ahead. In 2015, shared mobility accounted for 4% of global travel and is set to rise to 25% by 2030.

Delaney explained that with the intelligent tire, tire performance and wear information provide a real-time signal for when a tire needs service to extend its life, fuel economy and performance attributes. This kind of proactive maintenance allows fleet operators to precisely identify and resolve tire-related and potential service issues before they arise. Goodyear is anticipating the products, services and experiences that will deliver the mobility that consumers and fleet operators need, he added.



ETRMA's New president, Franco Annunziato

big beneficiaries. MRF and Ceat will also benefit.

Facts & science, mark continuity for innovation and sustainability: ETRMA

● The Board of Directors of the European Tyre and Rubber Manufacturers' Association met recently. This was the first meeting chaired by ETRMA's new president, Franco Annunziato.

"It is with great enthusiasm that I have taken up my role as President of ETRMA" said Annunziato opening the meeting. "In a time of change for our industry," he continued "it is important to seek for continuity in the principles that have always guided our work: facts, science and solid knowledge to lead to innovation and sustainability."

The Board of Directors discussed many of the issues that will be at the heart of the upcoming transformation of the automotive industry, starting with the digitisation of transport. This is an opportunity for the tire industry to foster innovation and growth and further contribute to safer and greener transport, by developing products and

of that or even lower now.

Two, the imposing of anti-dumping duty on Chinese tires to the extent of \$245.35-452.33 a tonne in September 2017 gave a leg-up to the local players.

The latest import duty hike is the icing on the cake. It will further reduce the price differential between domestic and imported CV radials.

Among listed players, JK Tyres and Apollo Tyres — the biggest players in truck, bus and radial tires — will be

services more tailored to the consumers' needs. To achieve this, ETRMA stressed the importance to have unimpeded access to in-vehicle data, which are a key and essential "raw material" for the tyre digital revolution.

Another important point of attention was the European Commission Communication on Plastics Strategy. ETRMA confirmed its commitment to play its part. "We want to do this right" said Mrs Cinaralp addressing the topic "and to do so, we need to acquire deeper knowledge and apply a holistic approach. We are working and investing in this direction as well as seeking the support of EU Institutions. This is the only way to have a result that is impactful, sustainable and enforceable."

With two mobility packages already on the table and a third one soon expected, "ETRMA wishes to remain a reliable partner of all stakeholders

involved in the future of mobility, safety, environment, free and fair trade and competitiveness in Europe and globally," concluded Mrs Cinaralp.

Finally, the Board recognised again the importance of the National Associations Members of ETRMA, who contribute to the success of ETRMA's activities. Their action at Member State level has the effect of an efficient transmission belt that brings the EU dimension closer to home whilst allowing national priorities to be brought at the heart of the EU decision making.

Yokohama to expand tire capacity in India

● Yokohama Rubber Co. Ltd is to expand production capacity for passenger-car tires at its manufacturing and sales subsidiary in India. The ¥6.6 billion (€49 million) project will increase Yokohama India

Pvt Ltd's annual production capacity from 700,000 to 1,530,000 tires. The move is in response to growth in India's automotive market driving strong sales of tires, according to Yokohama. "The company decided to expand local production capacity to avoid capacity shortfalls over the medium term," said its statement.

Construction of the new facilities is expected to start in March this year, with production scheduled to begin in the fourth quarter of 2019.

Yokohama India was established in 2007 as a tire sales subsidiary. It began local production of passenger-car radial tires in July 2014 after completion of its tire plant at the Bahadurgarh Industrial Estate in the state of Haryana. The plant's new facility will manufacture OE tires for local car makers as well as replacement tires, including tires for passenger cars and SUV tires. The unit currently employs 474 people.



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LANXESS's record earnings for 2017: Good start to the new fiscal year



Matthias Zachert, Chairman LANXESS

● Global chemicals major LANXESS continues its profitable growth path. The company ended fiscal year 2017 with record earnings and has also made a good start to the new year.

EBITDA pre exceptionals rose by 29.6% in fiscal year 2017 to EUR 1.29 billion, the highest result in the company's history. In the previous year, EBITDA pre exceptionals amounted to EUR 995 million. The operating result was therefore at the top end of the forecast range of EUR 1.25 billion to EUR 1.3 billion.

The main drivers of the strong rise in earnings were higher volumes in all segments as well as the strong contribution of the Chemtura businesses acquired in the previous year. The EBITDA margin pre exceptionals increased from 12.9% to 13.3%, moving another step closer to the mid-term margin target. From 2021, the average margin is expected to be between 14% and 18%. Group revenue also rose substantially by 25.5% to EUR 9.66 billion in the last fiscal year compared with EUR 7.7 billion the year before.

Net income totaled EUR 87 million, after EUR 192 million in the previous year. This decline was due to significant one-time exceptional expenses, particularly for the integration of the Chemtura businesses and consolidation of production networks and value chains as well as a one-time charge arising from the US tax reform.

Adjusted for these exceptional items as well as amortization of intangible assets, net income was up by 53.9% from EUR 246 million to EUR 379 million.

The reported key financial ratios are in line with current market expectations. "We achieved a lot strategically and operationally in the last fiscal year, laying firm foundations for the future," said Matthias Zachert, Chairman of the LANXESS Board of Management. "With Chemtura, we successfully completed our biggest acquisition to date, and also significantly improved the quality of our portfolio even more. In this set-up, we achieved the best earnings in LANXESS's history so far while further enhancing the Group's profitability."

Higher dividend proposed for 2017

The strong business performance in 2017 should be reflected in a further increased dividend. The Board of Management and Supervisory Board will therefore propose a 14-percent higher dividend of EUR 0.80 per share to the Annual Stockholders' Meeting on May 15, 2018. This would correspond to a total dividend payout of around EUR 73.2 million.

German sites strengthened, growth regions expanded

Along with its acquisitions, LANXESS also accelerated its organic growth in 2017. The Group invested around EUR 550 million in its global plant network, including around EUR 235 million in the German sites. It also made progress with its aim of achieving a greater regional balance of its business in 2017. LANXESS continued to expand its presence and its sales in the growth regions of North America and Asia. North America increased its share of global sales from 17% to 19%, while that of Asia-Pacific rose from 26% to 28%. This means that the Group now generates almost half its sales in these two market regions.

Sales and earnings up in all segments

Sales of the **Advanced Intermediates** segment came to EUR 1.97 billion in fiscal year 2017, 13.1% above the prior-year figure of EUR 1.74 billion. EBITDA pre

exceptionals increased by 2.8 % to EUR 335 million compared with EUR 326 million a year earlier. A solid rise in volumes for intermediates generated this positive performance, offset by weak demand in the agricultural sector and adverse currency effects. The EBITDA margin pre exceptionals was 17.0% against 18.7 % in the previous year.

Sales in the **Specialty Additives** segment almost doubled, soaring by 90.7% to EUR 1.60 billion compared with EUR 841 million in the previous year. EBITDA pre exceptionals again grew strongly by 76.8% to EUR 267 million compared to EUR 151 million a year earlier. This strong earnings performance was the result of the integration of the Chemtura additives business. Higher volumes also had a positive impact on earnings. The EBITDA margin pre exceptionals was 16.6%, against 18.0% in the previous year.

Sales in the **Performance Chemicals** segment rose by 10.5% from EUR 1.30 billion to EUR 1.44 billion. EBITDA pre exceptionals amounted to EUR 252 million, up 13.0% on the prior-year level of EUR 223 million. The improvement in earnings was mainly attributable to the strong volume growth. The Clean and Disinfect business that LANXESS acquired from Chemours in 2016 also made a substantial contribution to earnings. Accordingly, the EBITDA margin pre exceptionals rose to 17.5% from 17.1% in the previous year.

Sales in the **Engineering Materials** segment increased by 29.4% from EUR 1.06 billion to EUR 1.37 billion. EBITDA pre exceptionals amounted to EUR 219 million, up by a substantial 37.7% on the prior-year level of EUR 159 million. This was driven by the urethanes business acquired with Chemtura as well as higher selling prices and volumes. Accordingly, the EBITDA margin pre exceptionals increased from 15.1 percent to 16.0%. In the **ARLANXEO** segment, sales were up by 19.2% to EUR 3.23 billion against EUR 2.71 billion a year earlier. EBITDA pre exceptionals amounted to EUR 385 million, 3.2% higher than the prior-year level of EUR 373 million. competitive situation, highly volatile

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raw material prices and the weak U.S. dollar. The EBITDA margin pre exceptionals came in at 11.9%, against 13.8% in the previous year.

Arlanxeo to supply Saudi-made EPDM rubber

● Arlanxeo is to supply EPDM rubber made at a petrochemicals site in Rabigh, Saudi Arabia. The EPDM grades will be produced at a 75 kilotonnes per annum plant within the integrated chemical complex operated by Petro Rabigh, a JV between Saudi Aramco and Sumitomo Chemical. Products from the EPDM unit – currently in start-up phase – will be supplied from the first half of this year, under a global sales & marketing agreement with Dhahran-based Saudi Aramco Products Trading Co.

Arlanxeo – a synthetic rubber JV

between Lanxess and Saudi Aramco – will sell the new EPDM grades under its own Keltan trademark, with 'KSA' added to represent the Kingdom of Saudi Arabia. "As producer, Petro Rabigh sets the specifications for [the Keltan KSA grades]. We supply material based on these specifications," an Arlanxeo spokeswoman explained. With regard to the duration of the sales & marketing agreement with Saudi Aramco Products Trading, Arlanxeo's representative said that the parties had agreed not to comment on this point.

Asked about the process technology involved, Lanxess would comment on the technology used by other companies."

According to Arlanxeo, the deal will strategically expand its activities in the market for EPDM rubber materials. Keltan KSA will have "its own brand identity and positioning supported by

a dedicated organisation," according to Jasvinder Kaur, head of Keltan KSA.

The deal combines "Petro Rabigh manufacturing strength with Arlanxeo's global market expertise, Muhammad Al-Arfaj, vice president of Saudi Aramco Products Trading, said "Through this agreement, we are further strengthening Arlanxeo's position as the global supplier for synthetic rubbers in the world market," added Christian Widdershoven, Arlanxeo board member and head of the High Performance Elastomers division.

Petro Rabigh recently announced that it had achieved on-spec production at the units for cumene, phenol, methyl tert-butyl ether (MTBE)/isobutylene, metathesis, methyl methacrylate, naphtha reformer, polymethyl methacrylate, LDPE, thermoplastic olefin (TPO) and polyamide 6. Production was expected

LANXESS: Changes at the top of the Supervisory Board



Dr. Rolf Stomberg



Dr. Matthias L. Wolfgruber



Pamela Knapp

● Changes lie ahead for the top of the Supervisory Board for the specialty chemicals company LANXESS. The Board's current Chairman, Dr. Rolf Stomberg (77) will resign from his office as a member and Chairman of the Supervisory Board after the end of the Annual Stockholders' Meeting on May 15, 2018.

"When I was re-elected to the Supervisory Board in 2015, I announced support for the realignment of LANXESS, but that I would not hold office the entire term. Now the company is doing

well and is back on track for growth – it is the right time to leave the Chair of the Supervisory Board to someone new," said Stomberg.

He has recommended Dr. Matthias L. Wolfgruber (64) to succeed him. Wolfgruber, who has a doctorate in chemistry, has served as Chairman of the Board of Management of Altana AG. He belongs to the supervisory body as a representative for stockholders since 2015. The new chairman will be elected by the Supervisory Board at its constituent, first meeting after the Annual Stockholders' Meeting

in 2018.

Pamela Knapp (60) is expected to be promoted as a new member to the Supervisory Board for LANXESS. Her election will be recommended to stockholders at the Annual Stockholders' Meeting on May 15, 2018. She graduated in Economics and most recently served as the Chief Financial Officer (CFO) for GfK SE, the listed market research company based in Nuremberg, Germany. Prior to that, she was active in various management roles at the Siemens Group.



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to start at the aromatics and ethylene propylene rubber units in the first quarter of 2018 – completing phase II of the venture’s project to establish integrated production at the Petro Rabigh petrochemicals complex.

**HF Mixing Group:
Strong demand for
mixing room systems**

● Ian Wilson, new Vice President Sales & Marketing drew a positive conclusion for the HF Mixing Group which has been participating with the HF Tire Tech Group as exhibitor at the Tire Technology Expo. The quality of the conversations as well as the significant increase in contacts was seen as extremely positive for HF.

The solution for integrated automation of mixing room systems and intelligent process technology were at the centre of interest. With its Advise® system the HF Mixing Group provides a modular, scalable system for automating mixing rooms. All areas of the mixing room are included, starting with the inventory



management of raw materials in the warehouse, going to the manual weighing of small chemicals, the fully-automated weighing of bulk material, the control of the mixing process, downstream equipment such as open mills and single or twin-screw discharge extruder, and all the way to the compound storage room.

Depending on requirements, individual applications can be selected and combined to create a comprehensive automation solution. **Expanding the expertise** During the Tire Technology Expo, it became clear that rather than the delivery of individual machinery for mixing applications, the market

**HF TireTech Group launches its new Tire Building Machine
“HF ONE” at TireTech Expo**

● HF ONE, a flexible tire-building machine, is the answer to changing market demands.

Changes in the market pose new challenges for tire manufacturers in their production processes.

On the one hand, the variety of tires in the market is growing, especially for tire sizes larger than 17 which is gaining an above average share of the market. The thus resulting primary requirement for tire manufacturing is to enable production for quick code changes and at the same time to produce smaller lots.

Equally, quality requirements are constantly increasing, driven by the automotive industry not only as a result of Tire Labeling, which has been mandatory in the EU and South Korea since 2012, but also due to the requirement to sign OE tire sizes visually on the sidewall. The above prerequisites will also increase in

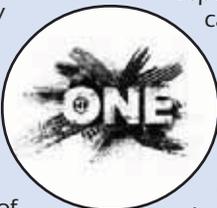


the coming years in other markets such as the US, China, Brazil and Japan, as a result of the pending launch of Tire Labeling.

Furthermore, this is linked to extremely high levels of repetitive accuracy and quality and also requires the capability to efficiently produce new tire designs – like tires for e-mobility, with a very low final shaping distance.

HF TireTech Group has developed a tire-building machine that meets these requirements by means of a flexible drum concept, which ensures the diversified production of highly complex and innovative tires. HF ONE is the answer to tackling the challenges posed by the tire market.

For more information, please visit: <http://www.hf-tiretechgroup.com/hf-one/index.html> or contact our sales team +49 40 77179-326





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Kordsa participated in the world's biggest composite technology show

● Following its growth in the field of composites, the global player in the tire and construction reinforcement and composite technologies, Kordsa attended JEC World 2018, the biggest composite technology show of the world.

The reinforcement leader shared its expanding product portfolio and new technologies with the visitors.

Kordsa's CEO Ali Çalıþkan was one of the jury members to evaluate a total of 30 projects in 10 different categories at JEC Innovation Awards Ceremony, which took place as part of the JEC World 2018 in order to celebrate and honour the outstanding innovations of the industry.

Kordsa participated in JEC World 2018, the world's biggest trade show of composite technologies held in Paris between March 6-8, 2018. As a jury member of the JEC Innovation Awards, which awarded sector-leading innovations, Kordsa took part in the project appraisal of 30 projects in 10 different categories where composite materials were used, especially in aviation and automotive industries.

In his speech at the ceremony, CEO Ali Çalıþkan emphasised Kordsa's mission to reinforce life and said: "This year, we are the official partner of the ceremony of the JEC Innovation Awards, which evaluates 30 impressive projects. As a member of a brand that embraces open innovation, I believe that every project in the competition, whether it is awarded or not, will be a significant contribution to the industry. On behalf of my company Kordsa, it was an honourable experience for me to be among the members of the jury, evaluating these projects."



Kordsa's stand



Kordsa JEC CEO

requires a concept for entire system solutions which not only include machines and modules, but also automation and all the auxiliary products that are integrated into a system. The HF Mixing Group's strategy is to provide complete and sustainable mixing room solutions.

With this in mind, HF recently announced the strategic co-operation with B&K Wage- und Anlagentechnik. The German company, based in Hamm, has a long experience in upstream material handling solutions and plant engineering. Now, HF has access to this knowledge. The expertise in dense phase conveying systems for fillers can significantly be increased. Ian Wilson is convinced, "This joint-venture enables us to shape the technical future of mixing room

solutions."

Energy efficiency and 3D-Simulation in the centre of interest

Visitors showed special interest for the 3D scan of existing mixing room systems. This brand new service allows an efficient planning for retrofitting of mixing room systems. Drawings and information from an existing mixing room are sometimes not current and changes made over the years are not very well documented or not digitalised. Capturing the as-built-conditions in a mixing room with a 3D-Scanner will solve these problems and result into an accurate 3D-model which allows measurements of the complete equipment.

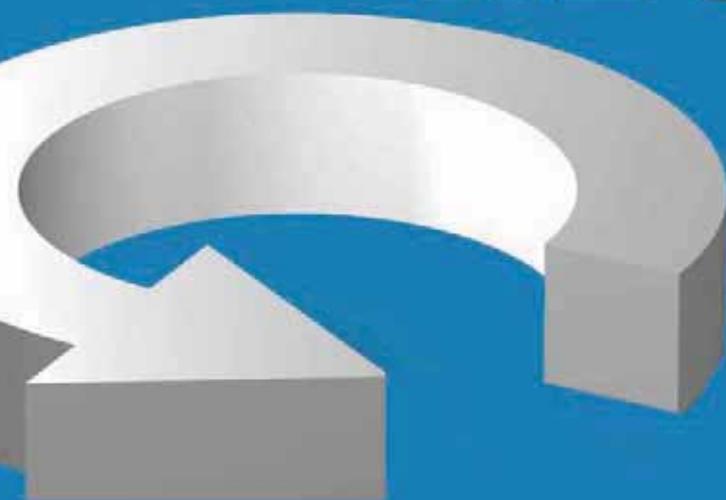
In Hannover, HF also presented new controllers for energy

optimisation of mixing room systems: iXseal the intelligent dust seal controller, the temperature controller iTC and the iRam, a special controller for ram control are three of HF's controller for optimisation of the energy efficiency in the mixing room.

Liquid Silicone Rubber Market to grow 4.5% from 2017 to 2026: Report

● A recent study published by Future Market Insights, a leading provider of market intelligence and consulting services, provides a look at trends for injection materials like liquid silicone rubber, which have seen an increasing demand. The unique properties of this material is leading to its growing popularity in the

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WACKER opens new laboratory in Moscow Technical Centre

● WACKER, the German chemical group, is strengthening its presence in Russia by expanding the service portfolio offered by its technical centre in Moscow. WACKER is integrating a new dedicated laboratory for adhesives and sealants based on silane-terminated polyethers (hybrid polymers) used mostly in the construction industry. Furthermore, the centre's existing laboratories for dry-mix-mortar, paints, coatings and construction-silicone applications has been accredited by the Russian Federal Service for Accreditation as an official test lab: WACKER can thus provide an independent test protocol as a basis for officially recognised quality certificates. Thanks to this expansion and accreditation, WACKER is able to meet the needs of its local customers, who are increasingly demanding high-quality silicone and polymer products.

Being extremely versatile, modern sealants and adhesives are used in an increasingly broad range of applications – from the construction industry through

to transportation and energy. The Moscow technical centre's new laboratory helps WACKER support the enhancement of these applications.



Highly specific tests can be performed in the new laboratory in Moscow. The image shows lab assistant Ekaterina Aleksandrova using a planetary mixer to produce a low-modulus sealant with silane-modified polyether as a binder. (Source: Wacker Chemie AG)

elastomer industry, where a wide range of consumer products, medical devices and industrial goods are being manufactured by injecting liquid silicone rubber into mold cavities. Future Market Insights estimates that by the end of 2026, the global market for liquid silicone rubber will be valued at \$ 7.9 billion.

The study foresees a moderate growth for the global liquid silicone rubber market during the period 2017-2026, estimating that it will post a value CAGR of 4.5% over the forecast period. Deterrents to the rising growth of liquid silicone rubber in the near future include the high carbon footprint of the large-scale production of the material, limitations to the reuse and recyclability of such elastomers, as well as disposability challenges.

According to the study, there will be a robust growth in demand for industrial grade liquid silicone rubber in the coming years. Through 2026, nearly half of the global liquid silicone rubber market value will be accounted by

sales of industrial grade elastomers. The report also foresees that liquid injection molding technology will be sought after in the global liquid silicone rubber market. In 2017, more than \$3.2 billion worth of liquid silicone rubbers was to be used by liquid injection molding systems internationally.

By the end of 2026, the report estimates that \$1.76 billion worth of liquid silicone rubber will be used in the production of consumer goods globally, with increasing use by the healthcare industry during the period. Liquid silicone rubber will be used in the production of expensive medical devices such as lung catheters. The global auto industry will also be a lucrative end user of liquid silicone rubbers and the automotive end use of liquid silicone rubber will reflect the highest-value CAGR of 5.4% in the global market.

Major manufacturers of liquid silicone rubber passed in the Asia-Pacific region include the China National Chemical Corporation, Shin-Etsu Chemical Co., Ltd., KCC

Corporation, Toshiba Medical Systems Corporation, and the Zhejiang Xinan Chemical Industrial Group Co., Ltd. The report estimates that in 2018 and beyond, the Asia-Pacific excluding Japan (APEJ) region will constitute the largest marketplace for liquid silicone rubber, reflecting a weighted 35% share on global market value. Other key players in the global liquid silicone rubber market, such as Dow Corning Corporation, Momentive Performance Materials, Inc., Evonik Industries AG, Bluestar Silicones International, SiVance, LLC, NuSil Technology LLC, Simtec Silicone Parts, LLC, Wacker Chemie AG, Stockwell Elastomerics Inc., and Xinapse Systems Ltd. are also expected to strengthen their presence across the APEJ region in the foreseeable future.

For a sample report with a table of contents and figures, please visit <https://www.futuremarketinsights.com/reports/sample/rep-gb-5736>

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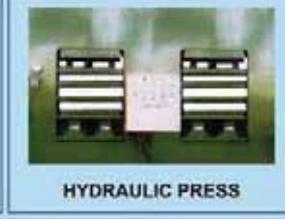
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Maxxis Tires launches its first manufacturing plant in India



Maxxis Tyres Plant Inauguration in India

Maxxis Rubber India, the largest two-wheeler tire manufacturer in the world, inaugurated its first manufacturing facility in Sanand, Gujarat on March 8. The plant was inaugurated by **Vijay Rupani**, Chief Minister, Gujarat, in the presence of **Tsai-Jen Lo**, Chairman, Maxxis Group, **Cheng-Yao Liao**, President, Maxxis India and **Jia-Ciao Liou** (Gary), Commercial Head, Maxxis India.

The plant with an investment of over \$400 million (Rs 2,640 crore), is spread across a massive 106 acres. The facility is currently dedicated to manufacturing of Two-Wheeler tires and tubes and will have a capacity to produce around 20,000 tires and 40,000 tubes per day. With this size and capacity, the company is targeting a market share of at least 15% of India's tire market within five years.

Cheng-Yao Liao, President, Maxxis India stated that Maxxis Global is targeting to become one of the top five tire manufacturers in the

world by 2026 and the Indian market will play a vital role in their growth. "We are fully committed to the government's Make in India initiative and our intent is to Make In India for

the world. We monitored the market for over two decades and then devised the strategy for entering India. The manufacturing plant in Sanand is only the first step of Maxxis's full range



Tsai-Jen Lo, Chairman, Maxxis Group with, Vijay Rupani, Chief Minister, Gujarat

Maxxis Rubber India's, manufacturing facility in Sanand, Gujarat



appearance in the country," he asserted.

Maxxis currently serves as an OEM tire supplier to Honda (Two-wheelers), Maruti Suzuki, Mahindra, Tata and Jeep in India. Apart from catering to the domestic tire market, the product portfolio from the facility will be exported to South Asia, and will further expand to Africa and Middle East countries in the coming years.

The production from the first phase of the facility began in August, 2017 and Maxxis has been selected as the original equipment tire supplier to India's number one-selling model, Honda Activa, since 2015.

Jia-Ciao Liou (Gary) said the Sanand facility, an integrated manufacturing plant offers all facilities from mixing to tire building and curing, all under one roof. With a rich global experience of over 50 years, Maxxis utilises the most advanced manufacturing equipment and engineering facilities in the industry. "We are committed to delivering the same world-class quality products and services that customers in India expect and deserve. The plant currently employs a workforce of 600 people and we are working to extend our manpower to 2,000 human resources within a span of five years," he added.

Maxxis India is dedicated towards Government of India's *Swachh Bharat Abhiyan* and reiterated their commitment to contribute towards the Clean India Mission during the ceremony. The Sanand facility boasts of the most

efficient Effluent Treatment Plant (ETP) and Sewage Treatment Plant (STP) that gives the plant the status of a 'Zero Liquid Discharge' facility.

Maxxis's global product portfolio includes tires for passenger cars, two-wheelers, light trucks, trucks, buses, ATV's and agricultural & industrial vehicles. Globally, Maxxis's high standards for quality, efficiency and innovation have been acknowledged with numerous honours and awards. The group has its presence in six continents with 21 manufacturing plants, five R&D Centres worldwide and develops its diversified tire

products for customers across 180 countries.

About Maxxis Tyres:

Maxxis is a wholly-owned subsidiary of Cheng Shin Rubber Ind. Co. Ltd., the largest two-wheeler tire manufacturer and the ninth largest tire company in the world.

The sub-company of Maxxis Group, Maxxis India (Maxxis Rubber India Private Limited) started its own arm of business in India in 2015. Maxxis currently serves as an OEM tire supplier to Honda (two-wheelers), Maruti Suzuki, Mahindra, Tata and Jeep in India.



Maxxis Inauguration Ceremony : CM Vijay Rupani With Cheng Yao Liao

► China Rubber Conference

March 27-30, 2018: Shangri-La Hotel, Qingdao, China

Contact: Ms. Mary Xu Deputy Chairman & Secretary General of China Rubber Industry Association.

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APRIL 2018

► Global Rubber Conference 2018

5-7 April at Sokha Beach Resort, Sihanoukville, Cambodia

Contact: CONFEXHUB Suite 1707, Plaza Permata, 6, Jalan Kampar, Off. Jalan Tunk Razak, 50400 Kuala Lumpur, Malaysia
Tel: + 603 27711668

Email: conference@confexhub.com

Web: www.globalrubberconference.com

► 15th International Tyre & Rubber Fair

09 - 11 April: Qingdao International Convention Center, Qingdao

Contact: Lily Zhao

Tel: +86 151 6529 4841,

+86 532 5555 2996

Fax: +86 532 5555 2903

Email: lily.zhao@jinnoc.com

Web: <http://en.tyrexpoasia.cn/>

► Tyrexpo Africa 2018

10-12 April at Gallagher Convention Centre, Hall 2 Johannesburg, South Africa

Contact: Jermaine Tan

Tel: +65 64032521

Email: jermaine.tan@singex.com

Web: www.tyrexpoasia.com

► RubberTech South Africa 2018

10-12 April at Gallagher Convention Center, Johannesburg, South Africa

Contact: CURC (China United Rubber Corporation)

Tel: +86 10 53779792

Fax: +86 10 53779608

Email: rubbtech@chrubber.com

Web: www.rubbtech-expo.com

► 5th Africa Oil Palm & Rubber Summit 2018

25-26 April at Labadi Beach Hotel, Ghana

Contact: Huiyan Fu
Centre for Management Technology

Tel: +65 6346 9113

Email: huiyan@cmtsp.com.sg

Web: <http://www.cmtsp.com.sg>

MAY 2018

► The Tire Cologne 2018

29 May - 1 June: Koelnmesse GmbH, Cologne, Germany

Contact: Sandra Horst, Sales Manager

Tel: +49 221 821 2213

Fax: +49 221 821 2271

Email: s.horst@koelnmesse.de

Web: www.thetire-cologne.com

► IRSG - World Rubber Summit 2018

7 - 8 May: Taj Samudra Hotel, Colombo, Sri Lanka

Contact: Christina Ho

Tel: +65-6837-2411 (Extn.: 201)

Email: christina@rubberstudy.com

Web: www.wrs2018.rubberstudy.com

► PLAST 2018

29 May - 1 June: Fairgrounds of FIERA MILANO, Rho (Milano)

Contact: Arianna Unger

Tel: +39 3974 6502

Email: arianna@a-piu-srl.com

Web: www.plastonline.org

JUNE 2018

► Rubber & Tyre Vietnam 2018

13 - 15 June at SECC - 799, Nguyen Van Linh, District 7, HCMC, Vietnam

Contact: Ellie Duong, Marketing Executive, Company name: VEAS Co. Ltd.

Tel: + 84 28 3848 8561

Cell: +84 1694 442 497

Email: info@veas.com.vn

Web: www.veas.com.vn

► Tyrexpo India 2018

21 - 23 June, Pragati Maidan, Delhi

Contact: Rahul Bhatia

Tel.: +91 8527765556

Email: rahul.bhatia@singex.com

Web: www.tyrexpoindia.com

► RubberTech India 2018

21 - 23 June at Pragati Maidan, Delhi
Contact: CURC (China United Rubber Corporation)

Tel: +86 10 53779792

Email: rubbtech.in@chrubber.com

Web: www.rubbtech-expo.com

JULY 2018

► German Rubber Conference - DKT 2018

02 - 05 July: Nürnberg Messe GmbH, Nürnberg, Germany

Contact: Ulrike Weber

Tel: +49 (0)69 / 7936-154

Fax: +49 69 7936 155

Email: u.weber@dkg-rubber.de

Web: www.dkg-rubber.de

SEPTEMBER 2018

► 9th International Rubber Glove Conference & Exhibition

04 - 06 September: Kuala Lumpur Convention Centre, Malaysia

Contact: Chan Wone Fu, MARGMA

Tel: +603 7727 3197

Fax: +603 7727 3191

Email: ceo@margma.com.my

Web: www.margma.com.my

► REIFEN 2018

11 - 15 September: New Hall 12 at the Frankfurt Fair & Exhibition Centre.

Contact: Dr. Ann-Katrin Klusak

Director Marketing Communications
Mobility & Logistics

Messe Frankfurt Exhibition GmbH

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Fax: +49-69-7575-6337

Email: ann.katrin.klusak@messefrankfurt.com

Web: <https://automechanika.messefrankfurt.com>

► Rubber Tech China 2018 & Tire+ China 2018

19 - 21 September: Shanghai New International Expo Centre, Shanghai

Contact: CURC - Ella Liu / Willow Sun

Tel: +86-10-58650277

Fax: +86-10-58650288

Email: expo@chrubber.com

Web: <http://en.rubbtech-expo.com/>

► Carbon Black World 2018

25 - 26 September: Hilton Dusseldorf, Germany

Contact: Adriana Lobo

Tel: +44 (0) 1372 802085

Email: alobo@smithers.com

Web: www.carbonblackworld.com

► Asia Rubtech Expo 2018

27 - 29 September: Hotel Lalit Ashok, Kumara Krupa High Grounds, Bengaluru-560 001

Contact: S.Vasudeva Rao, Hon.Sec.

Indian Rubber Institute, IRI

Tel: 91-9886758930, 91-7290050669

Email: irikarnataka1@gmail.com

NOVEMBER 2018

► Africa Rubber Expo & Summit 2018

20 - 21 November 2018: Sandton Convention Center, Johannesburg, South Africa

Contact: Peram Prasada Rao - TechnoBiz

Tel: +66 2 933 0077

Fax: +66 2 955 9971

Email: peram@technobiz-asia.com

Web: www.rubbtechnology-expo.com

JANUARY 2019

► 10th India Rubber Expo 2019

17-19 January: NESCO Complex, Goregaon(E), Mumbai.

Contact: Sandeep Sanyal, Coordinator

Email: sales@indiarubberexpo.in

Tel : + 022-28392095 /2107

Web : www.indiarubberexpo.in

► K- 2019

16-23 October: Duesseldorf, Germany.

Contact: Fr. Eva Rugenstein/Desislava

Angelova/Sabrina Giewald

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Fax: +49-211-4560 8548

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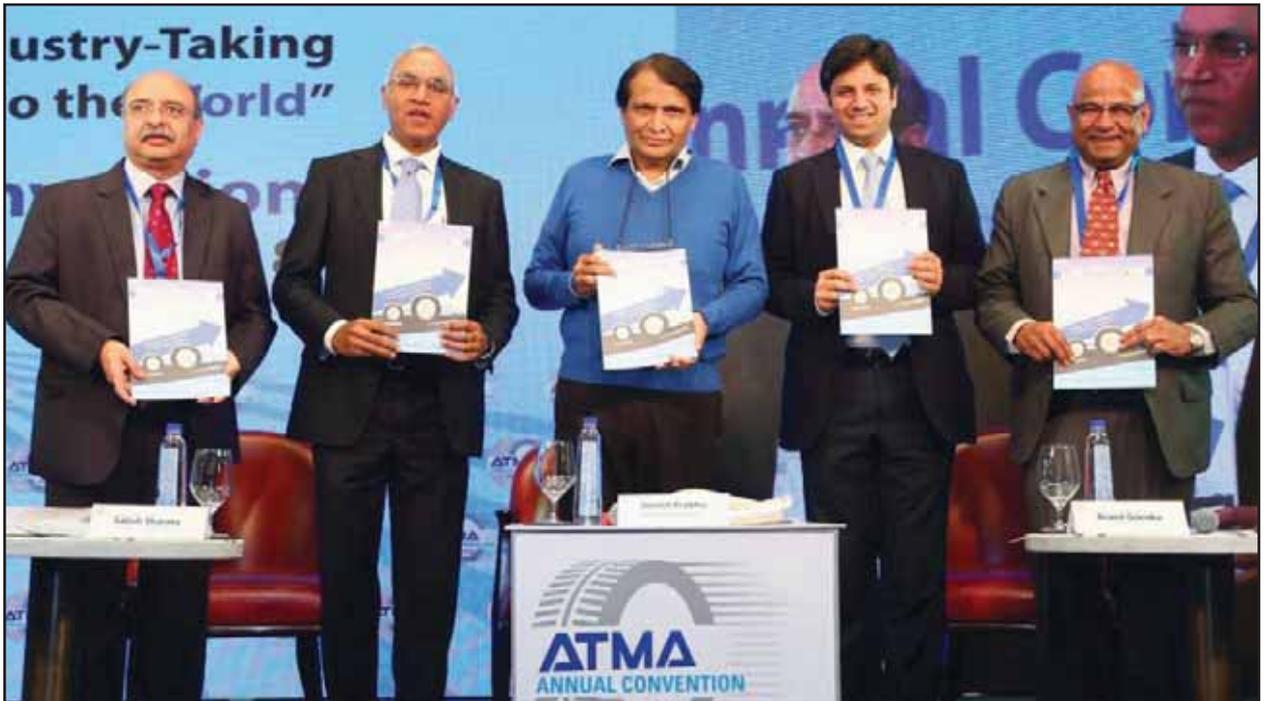
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ATMA's Annual Convention



Suresh Prabhu releasing the Tire Industry's Research Report with (L toR) Rajiv Budhraj, Satish Sharma, Anant Goenka and Kaushik Dutta (Director TARI)

ATMA Annual Convention 2018, the flagship event of the tire industry in India, concluded with a call for closer collaboration between the tire industry and its stakeholders especially the Auto OEMs for unfolding mega potential of the industry's rich value chain. As one of the largest conferences on the automotive calendar of India, ATMA Convention brought together automotive and tire industry leaders, top policy makers, government officials, thought leaders and consultants. The deliberations helped chalk out the agenda for the future while discussing current realities of the tire industry.

In his welcome address, Satish Sharma, Chairman ATMA said, "Having played its well-deserved role as a lead sector of manufacturing, the tire industry in India is at the cusp of a significant growth. At a time when the private investment cycle in India is yet to be revived, the Indian tire industry has invested over Rs 45,000 crore (\$7 billion) in recent years.

"FY18 has been a breakthrough year for the tire industry. The Government has supported the tire sector by way of imposing Anti Dumping Duty (ADD) on truck and bus radial Tires from China and by increasing the Customs Duty on tire to 15% (from 10%) in the Union Budget," said Mr Sharma.

Speaking on the occasion, Chief Guest Inaugural Session Suresh Prabhu, Union Minister of Commerce & Industry said, "All stakeholders

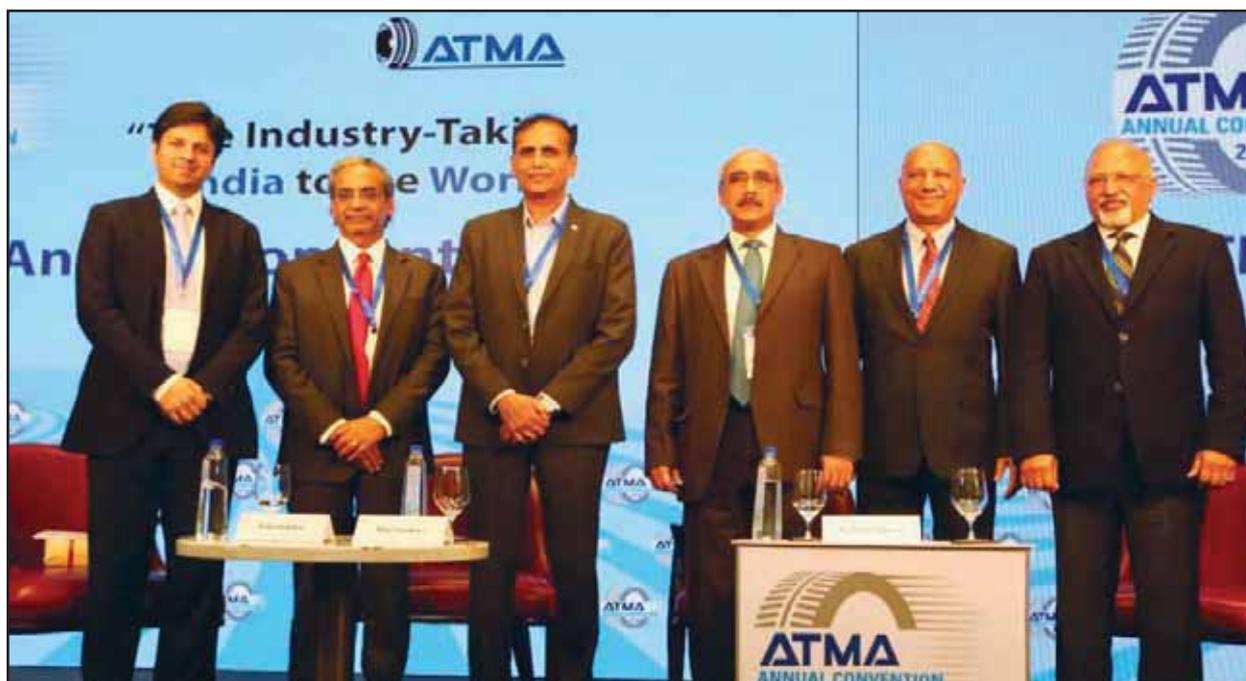
(producers and consumers of Rubber) need to work together along with the Government to arrive at a policy that is conducive to the growth of the Indian rubber sector and meets the needs of rubber growers and consumers of rubber." The tire industry is the engine of mobility and is truly the soul of the auto sector. Growth in the tire sector indicates a growing auto sector and in-turn a growing economy, he said.

That the tire industry is globally competitive and geared to take on the world came out clearly in the high-profile panel discussion on the tire industry participated by Neeraj Kanwar, VCMD Apollo Tyres, Dr. Raghupati Singhania, CMD JK Tyre & Industries & Arun Mammen, VCMD MRF. In one voice, industry leaders showed their commitment for continuing manufacturing excellence and make a mark globally.

Rakesh Batra, Partner and



Hon'ble Minister Suresh Prabhu addressing the ATMA Convention



(LtoR) Anant Goenka, Rakesh Batra, Ajay Sevekari, Koshy Varghese, Minaz Hassam and V K Misra at the Tire Industry-Auto OEMs session

National Leader Automotive, Ernst and Young made a theme presentation on Redefining the tire industry – OEM Partnership. In a panel discussion, four top executives with years of experience of partnering with Auto-OEMs discussed about the future of mobility and the respective roles of tire and auto sectors. The panelists included Ajay Sevekari, Director Bridgestone India, Minaz Hassam, CFO and MD Continental India, V K Misra, Technical Director, JK Tyre and Koshy Varghese, Executive VP, MRF Ltd.

While terming the Indian tire industry as a mature and established industrial segment, Chief Guest of the

Valedictory Session, Amitabh Kant CEO NITI Aayog exhorted the industry to take disruptions in automotive sector in its stride and continue to remain focused on manufacturing excellence. In his theme address on the tire industry – Government Partnership, Anant Goenka, MD CEAT & Vice Chairman ATMA said, the tire industry and the Govt have been working in sync with each other and in the coming days, the industry looks forward to much closer co-operation. He emphasised on the need to accelerate the process of Natural Rubber Policy formulation for optimum growth of Rubber value chain and addressal of Inverted duty

structure.

An important highlight of the first ATMA Convention was the release of a series of reports and studies. A Tire Industry Research Report titled “Turning the Wheels of Progress” was released by Suresh Prabhu. Prepared by Thought Arbitrage Research Institute (TARI) (headed by Kaushik Dutta), the report underlines the tire industry’s competitiveness, export achievements and policy enablers which could accelerate industry’s growth. Amitabh Kant released a Study on Corporate Social Responsibility (CSR) by the tire sector in India. A commemorative volume on the Indian tire industry’s journey over the years was also released.

Launch of ATMA Fleet Management Awards

Fleet Management Companies have been playing a key role in improving competitiveness of transportation sector. On the occasion of its first Convention, ATMA launched Fleet Management Awards to recognise the excellence in the sector. Five Fleet Management awards were conferred in the fields of Drivers’ Training & HR Practices; Safety Initiatives; Adoption of Technology/ Telematics; Adoption of Efficiency Measures and Corporate Social Responsibility. Amitabh Kant, CEO NITI Aayog presented the awards to the winners in a glittering ceremony.



Onkar S Kanwar, CMD Apollo Tyres felicitating Suresh Prabhu, Hon'ble Minister

Apollo Tyres provides income generation opportunities to Indian rubber tapper's wives

● To mark the occasion of International Women's Day, on March 8 Apollo Tyres inaugurated a Rubber Sheet Making Unit (RSMU), for rubber tapper's wives, which would be run by them, at Vellavoor Panchayat in Kottayam, Kerala. This RSMU, established with the help of one of the company's reputed suppliers, was inaugurated by **Adv S Jayasooryan, Vice Chairman, Rubber Board of India** in the presence of the Panchayat President, other Rubber Board members and the team from Apollo Tyres. It will be run by a group of women, who have been trained by Apollo Tyres, in association with the Rubber Board of



Lamp lighting ceremony at the inauguration of the Rubber Sheet Making Unit



Rubber Board Vice Chairman and other dignitaries processing the first sheet of rubber

India, on rubber tapping, sheet making, sheet smoking and general entrepreneurial skills. They have also been linked to the rubber dealers to directly market their produce from this unit.

Apollo Tyres initiated this project with the objective of empowering women and increasing their family income, in addition to getting better quality rubber sheets as raw material for the business. Earlier, these women were earning between Rs 1,000 – 2,000 per month that too, not very regularly. However, now they are expected to earn Rs 8,000 – 10,000 per month on an average after running this unit.

Michelin-licensed Indonesian rubber JV to start operation in Q2 '18

● A Michelin-licensed synthetic rubber manufacturing plant in Indonesia is 93.5% complete and set to start production in spring. The facility is to be operated by PT Synthetic Rubber Indonesia (SRI), a joint venture company of Michelin and PT Chandra Asri Petrochemical Tbk (CAP). The plant will use butadiene feedstock produced by PT Petrokimia Butadiene Indonesia, a subsidiary of CAP, to produce 120 kilotonnes per annum of solution styrene butadiene rubber (SSBR). The facility in Cilegon will produce SSBR and polybutadiene rubber with neodymium catalyst technology (PBR) licensed by Michelin. With a population of approximately 240 million, Indonesia offers high demand for tires along with increase of automotive and motorcycles. Michelin owns a 55% stake in PT SRI, while PT Styrimdo Mono Indonesia, a subsidiary of CAP, owns the other 45%. With the operation of these factories, Michelin will have three synthetic factories globally. Michelin is initially expected to absorb all of the SSBR produced by the plant.

Versalis, Bridgestone in partnership to study guayule rubber

● Bridgestone Americas Inc. is forming a strategic partnership with Italian polymer producer Versalis SpA to develop technology to commercialise guayule in the agricultural, sustainable rubber and renewable chemical sectors. The partnership combines Bridgestone's leadership in guayule agricultural and production technologies with Versalis' expertise in commercial-scale process engineering

and market development for renewables. This partnership brings together the two-largest guayule research projects globally under common management, the tire maker said.

Under this agreement, Bridgestone and Versalis will work together to create a commercially sound technology package for guayule. The two companies will also make their joint technology available to industrial partners willing to cooperate in maximising the value of guayule products, it said. Bridgestone and Versalis will focus on developing proprietary, highly productive varieties of guayule using the latest genetic technologies.

National Rubber Policy in the making: Suresh Prabhu

● The Commerce Ministry is developing a national rubber policy to address various issues concerning the sector with a view to boost shipment and productivity, Union Minister Suresh Prabhu said recently.

"This policy is necessary because there are so many challenges that the sector is facing. We want to make sure that all issues are addressed through this policy. We have already had one meeting on this," the commerce minister said. He added the aim of the proposed policy would be to boost export and production of rubber, "keeping in mind farmers' interests".

A task force comprising representatives of state and central governments has been constituted for suggesting short term-solutions and long-term strategies to address the issues, he added. Major issues related to the sector include minimum support price for natural rubber, restriction on import and minimum import price.

IRI Chennai branch

IRI's Chennai branch conducted the first technical session as part of its activity with ACS at the Rubber and Plastics Technology Department of Anna University, Chennai on February 12, 2018. For the first time, the session was conducted with the students and faculty of High Polymer Department of Kamaraj College of Engineering, Virudhunagar through video internet connectivity from MIT Anna University.

KJ Janakar, IRI's Chairman, welcomed the gathering. He spoke about the commencement of the technical session involving students connected with the Rubber Technology Education at various colleges and Universities. Dr. Rajadurai Dean MIT inaugurated the session.

S. Gandhi, Head of the Polymer Technology Department of Kamaraj College of Engineering also spoke on the

occasion. PK Ghosal, Senior Manager Works and Technology Industrial Rubber Products, Chennai, gave a technical lecture on "Various types of rubbers and their applications and moulding techniques of rubber components."

The technical session at MIT Seminar Hall was flashed through video connectivity with students and faculty of Kamaraj College, Virudhunagar. At the end of the talk, there was a question and answer session with the Virudhunagar College and MIT Anna University. Governing Council Member Dr. Ranjith Matthan, Jayamani and other branch committee members also addressed the students. The young minds were asked to take up ACS Membership and pointed out the benefits of having access to technical publications as early as 80 years ago.



KJ Janakar, Chairman IRI Chennai Branch, starting the meeting as seen at the video screen at Kamaraj college, Virudhunagar



PK Ghosal delivering the lecture with Dr. Rajadurai Dean in the first row



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Versalis: New di-block polymers awarded Tire Manufacturing Innovation of the Year 2018

Versalis' breakthrough technology for new butadiene-based di-block stereoregular polymers for the development of innovative compounds (BDSP), has been awarded "Tire Manufacturing Innovation of the Year" at the Tire Technology International Awards 2018, the independent European award programme for the tire industry. The awards were judged by a panel of international tire industry experts, analysts, business members and academia. The award ceremony took place recently at the Tire Technology Expo in Hannover, Germany.

As a strategic project within the Versalis' Research and Development programme, BDSPs technology is meant to provide considerable benefits, in particular, to the tire industry, taking advantage of innovative features such as a noticeable reduction of fuel consumption and compliance with seasonal requirements. In addition, the



Sergio Lombardini, Versalis (Eni) Director of Research, Development and Technological Innovation

use of this technology will contribute to a reduced environmental impact from aged tires, which will be more easily recyclable and have all the potential applications open to a wide range of commercial segments, both in thermoplastic and elastomeric areas. It is, in fact, the single polymeric chain that can be modulated during polymerisation with an amorphous and a crystalline part, which makes the product capable of new applications and performances.

In 2017, Versalis was awarded Environmental Achievement of the Year for the bio-butadiene (bio-BDE) technology developed in partnership with Genomatica.

About the Tire Technology International Awards for Innovation and Excellence:

The Tire Technology International Awards for Innovation and Excellence, founded in 2008, reward the smart thinking and hard work of the tire design and manufacturing industry. The shortlist is compiled from nominations received from the readers of Tire Technology International, and with the input of the magazine's



Versalis Stand

editorial team. It is then sent to the independent panel of international tire industry experts for them to cast their votes and determine the winners, with the presentations being made at Tire Technology Expo in Hannover each February.

SMITHERS RAPRA named Tire Industry Supplier of the year at Tire Technology Expo

Tire Technology International has named Smithers Rapra, a world leader in rubber, plastics and composites testing expertise, its Tire Industry Supplier of the Year as part of the Tire Technology International Awards for Innovation and Excellence 2018. The award was presented during the Tire Technology Expo 2018 in Hannover, Germany.

Nat Leonard, President of Smithers Rapra, was on hand to receive the award on behalf of the company. The company made multiple new investments in 2017, from upgrades to the analytical chemistry offering, a 35% increase in testing capacity in China, to a partnership with global tire manufacturers to expand the Tire and Wheel Test Center in Ravenna, Ohio, and the addition of new buildings and track surfaces at the Smithers Winter Test Center in Brimley, Michigan.

"Smithers is honoured to receive the Supplier of the Year Award at Tire Technology Expo 2018. We are driven



Nat Leonard, President, Smithers Rapra

by our commitment to being the best global partner for our clients," said Leonard. "Each of our investments was made to offer additional technical depth along every part of the tire development cycle, as well as geographic breadth to our global clients allowing us to provide the highest level of support for their tire development efforts."

"Few companies have packed as much into the past 12 months as Smithers Rapra. Its investments in test facilities around the world include an innovative partnership with tire makers to bring a new Flat-Trac laboratory to Ravenna, Ohio," said Graham Heeps, editor, Tire Technology International and chairman of the judging panel. "These new developments reconfirm a place at the forefront of the industry for one of the oldest names in tire and rubber testing."

Smithers also exhibited at Tire Technology Expo, and Bruce Lambillotte, Vice President of Technical Consulting, delivered a presentation on the present and future landscape of lightweighting in passenger car tires, titled "Lightweighting in Light Vehicle Tires: A Case Study Approach."

Smithers Rapra operates laboratories in North America, Europe, and China, covering a wide variety of testing and consulting services from material chemistry and product durability testing, to tire, wheel and winter testing. Smithers' global network of ISO 17025 accredited tire test laboratories perform a wide variety of SAE, ASTM, ISO, UNECE and EC tests supporting raw material suppliers, tire manufacturers and automotive OEMs. For more information about Smithers Rapra visit www.smithersrapra.com.

About Smithers Rapra:

Smithers Rapra has been a trusted partner of the rubber and plastics industries for over 90 years. Their business is built around delivering a complete portfolio of rubber and plastic testing services to support a wide range of industry sectors including tire, automotive, polymer products, oil and gas, medical device, pharmaceutical, transport, packaging, industrial, and consumer products. By integrating science, technology and business expertise, Smithers adds value throughout the life cycle of our clients' products. Please visit www.smithersrapra.com.

Goodyear Soybean Oil Technology Wins 'Environmental Achievement of the Year' Award

The Goodyear Tire & Rubber Company has been presented the prestigious Tire Technology International Award for Innovation and Excellence in the category of "Environmental Achievement of the Year" during the 2018 Tire Technology Expo in Hannover, Germany. The awarded technology represents a breakthrough by Goodyear in applying soybean oil in the tread compound of tires, as a replacement for traditional petroleum oil.

Over the past few years, Goodyear worked with the United Soybean Board to develop soy-based technology to enhance tire performance. Following extensive analysis and road testing, this new technology is now being used in two new Goodyear tires – the Assurance WeatherReady



Dr. Michael Kerns, The Goodyear Tire & Rubber Company

and the Eagle Enforcer All Weather.

"Our work with the United Soybean Board presented a unique challenge and opportunity for our material scientists and tire engineers to employ soybean oil in the development of superior performing tires," said Chris Helsen, Goodyear's chief technology officer. "It is exciting to see that work pay off with commercially successful products, and an honour to be recognised by the industry for the environmental achievement." Goodyear discovered that soybean oil could improve tire flexibility at low temperatures, helping the rubber to remain pliable in cold weather and enhancing traction in rain and snow simultaneously. Additionally, Goodyear discovered that soybean oil mixes more easily with rubber compounds and reduces energy consumption, therefore improving tire manufacturing efficiency. "Goodyear's innovative industrialisation of soybean oil technology proves that research and development in sustainable materials can benefit not only the environment, but also tire performance. I believe that this type of 'win-win' innovation will increasingly become the norm, rather than the exception, in the tire industry of the future," said Graham Heeps, editor, Tire Technology International and chairman of the judging panel.

The Tire Technology International Awards for Innovation and Excellence was held during the Tire Technology Expo, one of the tire industry's leading technology expositions. The Expo has become a premier venue for tire companies and related companies, research institutions and other organizations from around the world to showcase innovations, products and services.

Dr. Ulf Sandberg Life Time Achievement Award

The Lifetime Achievement Award from TTI in 2018, "In recognition of a career of outstanding service to the tire industry", was given to Dr Ulf Sandberg at the Swedish National Road and Transport Research Institute (VTI).

Dr Sandberg started his career at VTI in 1974 and has stayed there throughout his career, except for a six-year part-time position at Chalmers University of Technology as Adjunct Professor in Tyre/Road Noise. He is best known for his Tyre/Road Noise Reference Book, which was co-authored with Prof Jerzy Ejsmont in Poland. This

640-page book is considered as “The Bible” of exterior tyre/road noise.

Sandberg’s activities have focused on the tire/road interaction, mostly about noise emission, both looking at quieter tires and low noise road surfaces, but also about the rolling resistance that is caused by the road surface. The work includes innovations such as airless tires, tires with a porous tread, rubber pavements and recently steel slag pavements. Dr Sandberg has also been much engaged in the tire labelling, where he was one who firmly promoted the idea of including noise in the EU tyre label.

His career also includes successes with development



Dr. Ulf Sandberg addressing the crowd

of ISO standards for measurements related to noise properties of tyres and road surfaces, where also road surface texture standards had to be produced. In total, Dr Sandberg has been project leader of development of 11 ISO standards or technical specifications.

In the future, Dr Sandberg believes that tire/road noise will be much more important when noisy engines and exhaust systems will be replaced by quiet electric motors, and tires and road surfaces will need to be designed with this in mind.

Sandberg has previously received a Lifetime Achievement Award from the International Friction Pavement Association (IFPA).

MegaRide Applied Vehicle Research

MegaRide is an innovative start-up company, linked to the activities carried out by the Vehicle Dynamics research group of University of Naples. Its expertise is oriented towards the development of models and procedures to be employed by vehicle manufacturers, racing teams and road and traffic management companies. These clients seek solutions in the fields of real-time simulations, road safety algorithms and V2V & V2I connections in smart mobility.

Over the last few years, the research group’s activities have shown how development tools and testing procedures are able to satisfy the requests of research partners, among which Ferrari F1, Ferrari GT, Ducati Corse, AUDI Sport, Porsche AG and FCA are significant names.

Pushed by such achievements, the growth of MegaRide project has been planned focusing on onboard algorithms and devices aimed to the real-time evaluation and sharing of data for the moving vehicular network.

Relevance from the “entrepreneurial activity” point of view

According to the “Connected car report 2016: Opportunities, risk, and turmoil on the road to autonomous vehicles” by PwC, the automotive industry shows a positive trend between 2015 and 2030. Its revenues will increase from \$5 trillion to \$7.8 trillion, and earnings from \$400 billion to \$600 billion, with a specific focus on software development.

MegaRide has been enjoying direct income since the first day, thanks to its significant presence in the international automotive field. The research group enjoys a scientific reputation and shares a close connection with relevant automotive, motorsport, car and tire manufacturers.

The automotive field’s increasing awareness of the technologies, concerning real-time simulations and the onboard evaluation of vehicle adherence, has opened significant market possibilities to the solutions proposed by MegaRide.



Flavio Farroni, CEO & Co-Founder (on right) and Aleksandr Sakhnevych, CTO receiving the award.

vehicle2vehicle and vehicle2infrastructure connections are defining new scenarios in the development of algorithms to make “smart mobility” a business reality. Both these fields will raise the level of physicality and productivity, requested to vehicle onboard software and “human in the loop” architectures, which are expected to represent a \$80 billion market in 2020.

Stage of development: MegaRide was founded on June 21, 2016. At present, it’s a fully operative company, producing significant profits due to the contracts signed with motorsport teams, (in exclusivity agreements with AUDI Sport in Formula E and with Ducati Corse in motoGP) who are interested in real-time algorithms for physical simulations. It also develops advanced remote diagnostics algorithms and innovative safety control logics for vehicle and tire manufacturing companies.

In February 2018, MegaRide was awarded for the World Best Tire Technology of the Year at the annual Tire Technology Conference, in Hannover. In October 2016, it received the first prize at the StartCup2016 for best practice in technological transfer from research to market. In December 2016, it won the Shark Bites award at the Italian National Prize for Innovation, involving an investment proposal by a financing fund.

Its current growth has been achieved with direct revenue from products supply and with no need of external financing. The headquarter has been set in the Mechanics building of Industrial Engineering Department, where the Tire Lab is located, in order to optimise the information transfer and the logistics operations between the two institutions. The company has been selected in the team of startups taking part in the Campania New Steel acceleration and incubation programme promoted by the Città della Scienza business innovation centre.



The project's economic and social impact:

Virtual prototyping, testing objectification and preventive safety logics are the three main areas of expertise for MegaRide, as part of which it offers solutions for cost saving and quality enhancement. The availability of onboard information for real-time evaluation of the vehicle/road interaction will have a major effect on the analysis of data from the vehicular network for monitoring asphalt roughness, for development of innovative physical-based control systems, which are aimed to increase the safety of passengers and pedestrians and for the evolution of autonomous driving and smart mobility systems.

Finally, the growth of a highly-technological project as MegaRide is proof of the possibility that an alternative scenario can be realised to strengthen the unexpressed potential of Southern Italian realities.



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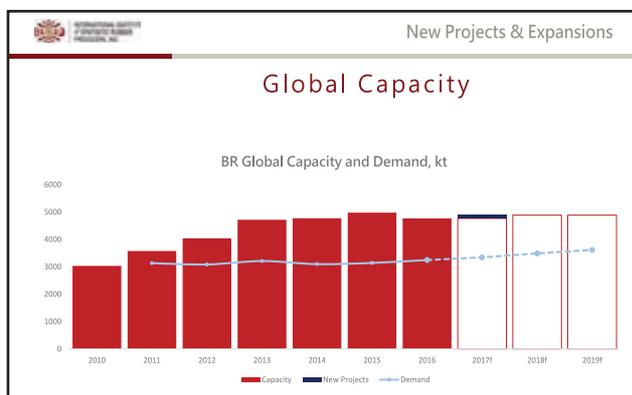
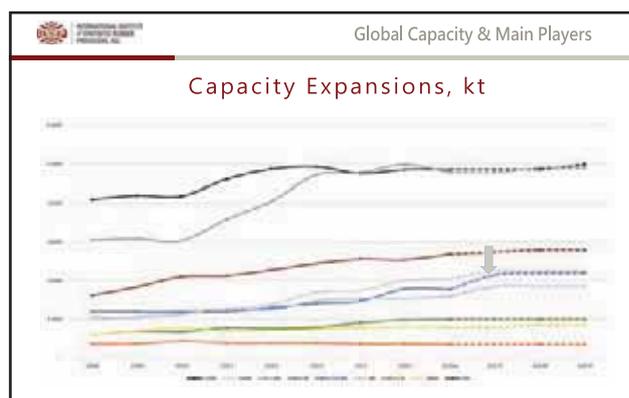
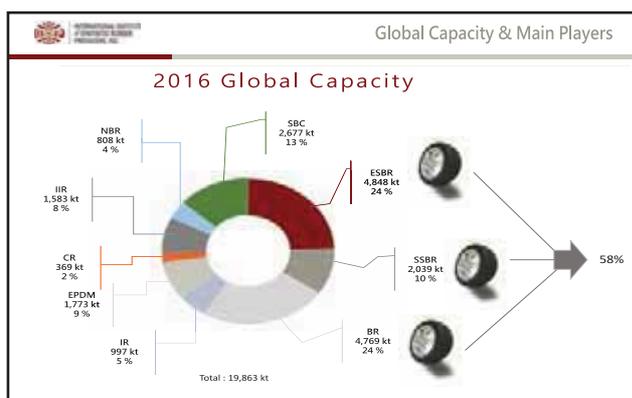
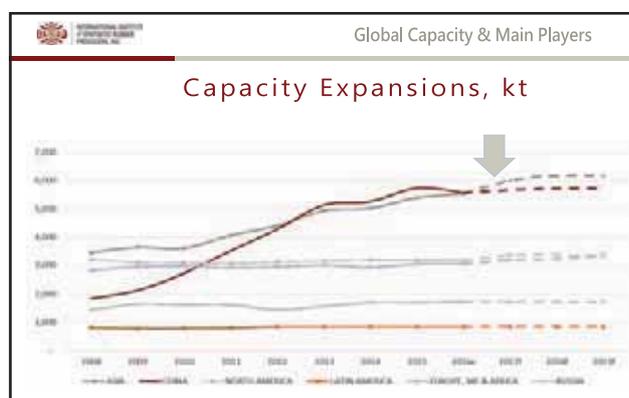
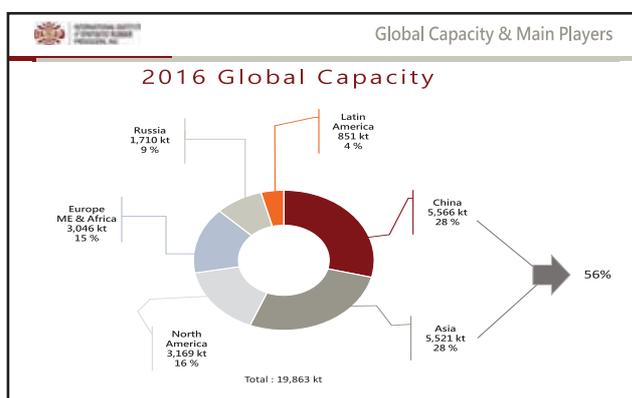
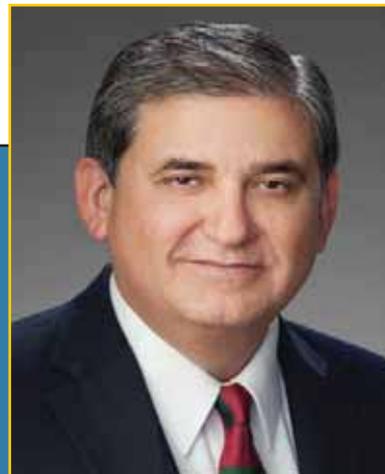
Ministry of Plantation Industries
Sri Lanka

Supporting Member Governments



Juan Ramon Salinas

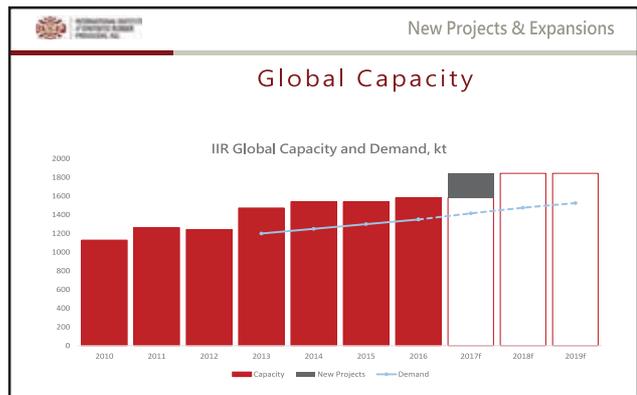
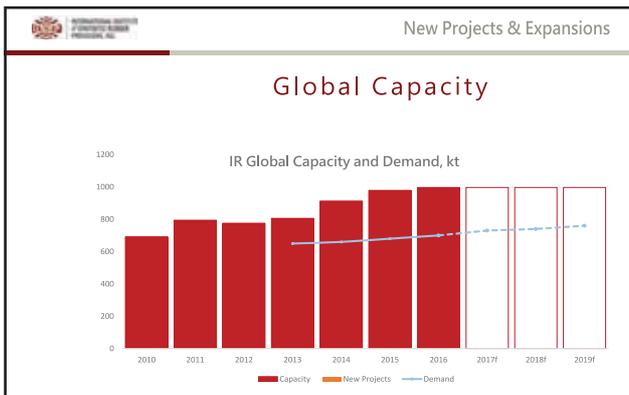
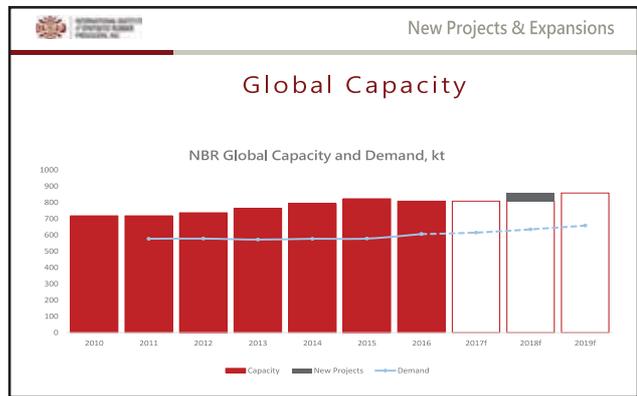
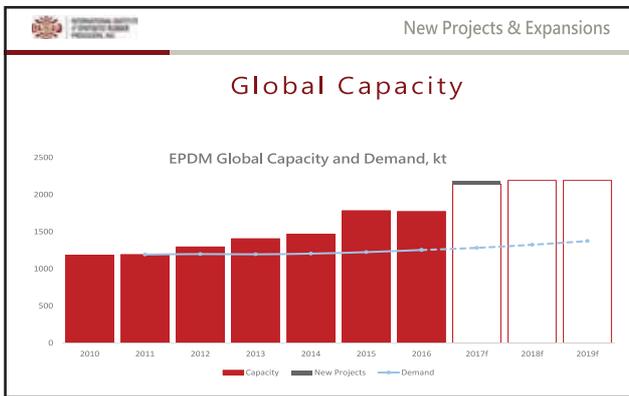
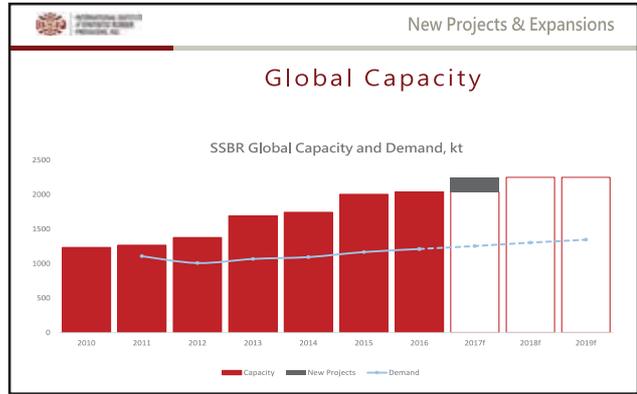
Managing Director & CEO,
IISRP (International Institute of Synthetic Rubber Producers, INC.)

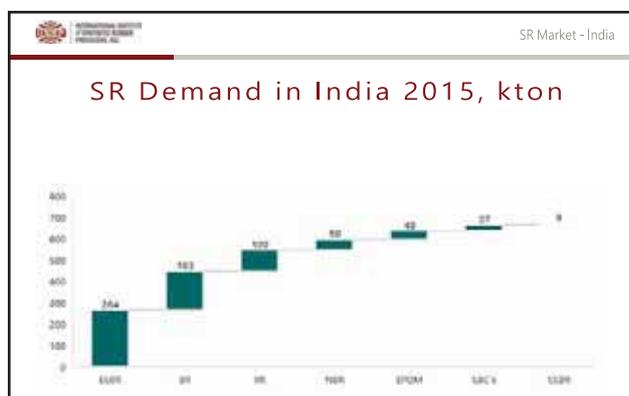
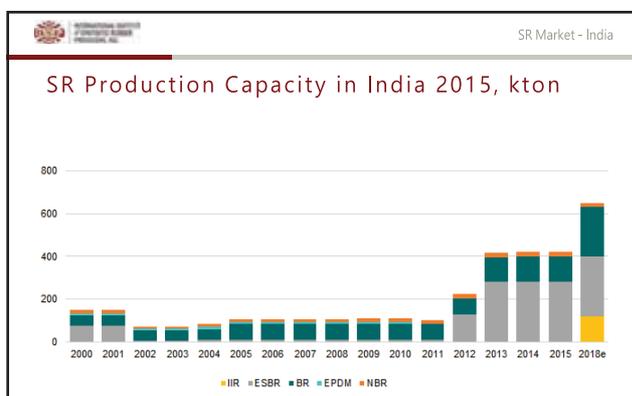
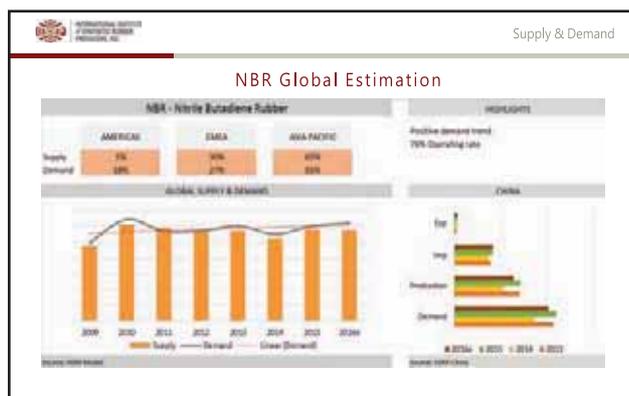
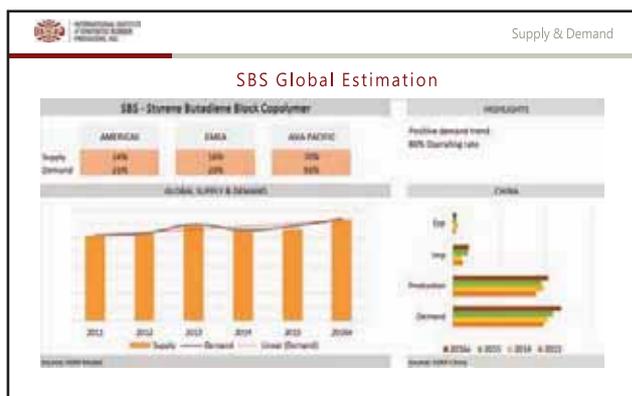
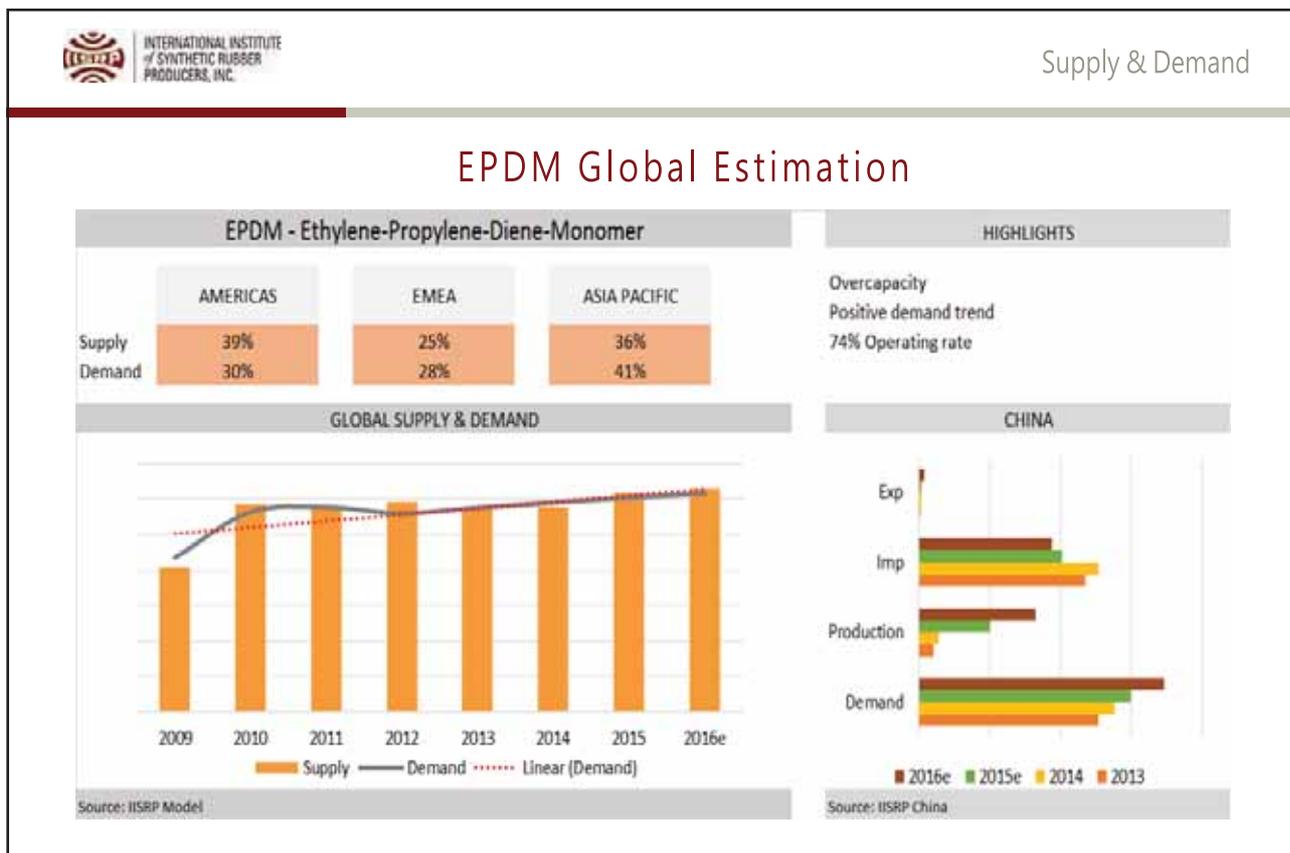


New Projects & Expansions

BR Idled facilities - China

Company	Capacity kt/yr	Idled date
Fujian Fuxiang Chemical	50	Dec - 2013
Sinopec Baling Company	60	Dec - 2013
YPC – GPRO Rubber	100	Jan - 2014
PetroChina Jinzhou	50	Mar - 2014
Shandong Wanda Chemical	30	Apr - 2015
Shandong Huamao New Materials	100	Mar - 2015
Sinopec Shanghai Gaoqiao	120	Jun - 2016





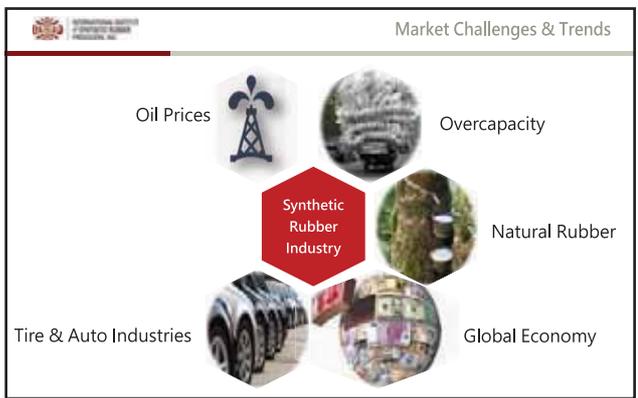
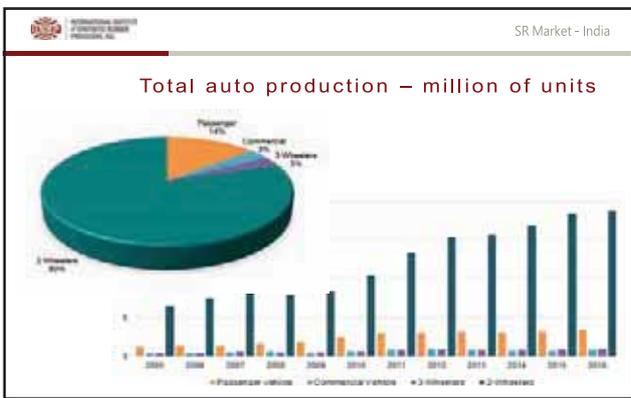
INTERNATIONAL INSTITUTE
OF SYNTHETIC RUBBER
PRODUCERS, INC.

SR Market - India

Increasing investment by Manufactures

- Planning to double its current investment level of about USD2.5 billion over the next five years
- Aims to raise its market share from 1.5 per cent in FY13 to 10 per cent by FY19
- To increase the Chennai Plant capacity to 400,000 units a year in a few years time
- On 10th September 2015, Ford has signed a MoU with the Tamil Nadu government for increasing the manufacturing capacity of its plant and for establishing new engineering and technology center at Chennai. Long term strategy to export 25 per cent of vehicles and to make India compact car global production base
- It is in the process of expanding its dealer network from 33 in January 2013 to 50 by 2014 end
- Plans to raise the number of car offerings in the sub USD48,000 category
- Plans to launch up to eight models over the next 5-6 years
- Hundai is planning to invest USD160 million in India to expand its capacity for cars and bike by the end of 2015. This will include a new diesel engine component production and a forging plant
- Expects to invest another USD163 million at Betad plant near Bengaluru
- Toyota is planning invest USD 165 million on its new engine plants and projects
- Plans to invest USD250-73million over the next two to three years to develop new products
- Increased the plant capacity of 20,000 units per year in Chakan Plant, which is the largest for any luxury car manufacturer in India.
- Expansion of MIDC and MoU, and to invest USD244 mn for capacity expansion in Chakan, Pune
- Mercedes-Benz will introduce 10 products in 2015, including products without any predecessors in India. These 10 new products are Mercedes-Benz India's biggest product initiative till date.

Source: Society of Indian Automotive Manufacturers (SIAM) / IRJ



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100+

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13 – 15 June 2018

SECC - SAIGON EXHIBITION AND CONVENTION CENTER

9:00 – 17:00 daily

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- **The ChemiCon workshop** will be held in conjunction with Pulp and Paper Industry workshop to update the market trends and advanced machinery and high technology in the world.
- **Product display:** Chemical, material, machinery, equipment, products for Pulp and Paper Industry...
- **VIP Buyer Program:** Transportation, free of 2 nights at hotel 4-5* for potential buyers

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The Trend

India is estimated to have produced 64,000 tonnes of natural rubber (NR) during November 2017, down 1.5% from the same month a year ago. The total output during the eight months ended November 2017 was 446,000 tonnes, up 3.2% from the period in the previous year. The production preliminarily estimated for December 2017 is 76,000 tonnes, up from 70,000 tonnes produced during the same month a year ago.

The country has consumed 96,500 tonnes of NR during November 2017, up 8.4% from the quantity of 89,000 tonnes consumed a month ago. The total quantity consumed during April to November 2017 was up 3.4%, year-over-year, at 714,460 tonnes. This represents a 6.3% rise in the dominant auto-tire manufacturing sector and 2.6% fall in the general rubber goods sector. According to preliminary estimate, the country has consumed 94,500 tones of NR during December

2017.

The country imported 33,944 tonnes of NR during November 2017 making the total volume of imports during the period from April to November 2017 at 297,165 tonnes as against 335,848 tonnes imported during April to November 2016. The total volume of NR exports during April to November 2017 was 4,971 tonnes compared to 1290 tonnes exported during the same period a year ago.

Based on the above estimated figures of production, consumption, import and export, the total stock held by all stakeholders of the industry, as at the end of November 2017, is estimated at 264,000 tonnes.

Coming to synthetic rubber (SR) sector, the domestic production rose 37.9% to 203,206 tonnes during the period from April to November 2017. During the same period, the consumption of SR rose 2.4% on year to 409,120 tonnes.

PRICE OF NATURAL RUBBER (Rupee per 100 Kg)

Month / Year		RSS-5	RSS-4	RSS-3	Latex	(60% drc)	ISNR 20	SMR 20
		Domestic		International	Domestic	International	Domestic	International
January	2017	13920	14666	17654	14968	18370	13683	14843
February	"	14929	15942	18451	16930	20372	14565	14804
March	"	14156	15024	15889	15935	18407	13183	13025
April	"	13939	14339	14625	15688	15885	12522	10701
May	"	12815	13073	14165	15595	15940	11916	9859
June	"	11971	12238	11627	15410	14623	11089	9228
July	"	13027	13300	11315	15290	13178	12495	9706
August	"	12571	13063	11775	13685	13747	11414	9783
September	"	13102	13424	11977	13993	14313	11743	10269
October	"	12767	13060	10889	13807	12772	11200	9414
November	"	12290	12587	10298	13788	12508	10689	9184
December	"	12794	13082	10455	15283	12633	11365	9309
January	2018	12285	12746	10755	14787	12937	11352	9602

Note: Domestic price refers to Kottayam market, international RSS 3 refers to Bangkok market and international price of latex and SMR 20 to Kuala Lumpur market.

PRODUCTION & CONSUMPTION OF NR & SR

Type-wise Production & Consumption of NR & SR	(Tonnes)					Percentage increase (+)/decrease (-) of (3) & (4)
	Nov 2017	Nov 2016	April 2017 to Nov 2017	April 2016 to Nov 2016	April 2016 to March 2017	
	(1)	(2)	(3)	(4)	(5)	(6)
PRODUCTION						
NATURAL RUBBER (NR)						
Ribbed Smoked Sheet (RSS)	43835	44985	316985	301265	473375	
Solid Block Rubber	10655	9335	68330	60845	106560	
Latex Concentrates(DRC)	7090	7700	43145	50395	83200	
Others	2420	2980	17540	19495	27865	
Total	64000	65000	446000	432000	691000	3.2
SYNTHETIC RUBBER (SR)^P						
Styrene Butadiene (SBR)	20200	6616	127206	61959	96637	
Poly butadiene (BR)	9380	9620	71680	79057	116557	
Others	675	673	4320	6304	9550	
Total	30255	16909	203206	147320	222744	37.9
Total NR & SR	94255	81909	649206	579320	913744	12.1

CONSUMPTION*

NATURAL RUBBER (NR)						
Ribbed Smoked Sheet (RSS)	43045	37375	332920	315810	486470	
Solid Block Rubber	44605	41255	314295	303875	451240	
Latex Concentrates(DRC)	6670	7050	50860	54655	82100	
Others	2180	2085	16385	16355	24265	
Total	96500	87765	714460	690695	1044075	3.4
Out of which Auto Tire Manufacturers	66411	59043	497328	467879	707335	6.3
SYNTHETIC RUBBER (SR)^P						
Styrene Butadiene (SBR)	26990	23150	197700	185690	278800	
Poly butadiene (BR)	16190	15450	119450	124935	184720	
Others	11670	11055	91970	88745	135060	
Total	54850	49655	409120	399370	598580	2.4
Out of which Auto Tire Manufacturers	37782	34284	284502	279281	417728	1.9
Total NR & SR	151350	137420	1123580	1090065	1642655	3.1
Out of which Auto Tire Manufacturers	104193	93327	781830	747160	1125063	4.6

PRODUCTION & CONSUMPTION OF RR

(Metric Tonnes)

Nov 2017 **Nov2016** **April 2017** **April 2016** **April 2016**
to Nov 2017 **to Nov 2016** **to March 2017**

	(1)	(2)	(3)	(4)	(5)
RECLAIMED RUBBER (RR)					
Production @	1 1400	10440	85215	82900	1 22895
Consumption	1 1475	10530	84650	80635	1 20235
Out of which Auto Tire Manufactures	4 132	4076	33317	33535	49635
Stock with Manufacturers (end of the Month/Year @:Indigenous purchase by Manufacturers	1 1365	10405			
NATURAL RUBBER	33944	40831	297165	335848	426188
SYNTHETIC RUBBER	27620	32526	228709	258260	379791
TOTAL NR & SR	61564	73357	525874	594108	805979
EXPORT (P)					
NATURAL RUBBER	284	640	4971	1290	20920

IMPORT OF DIFFERENT FORMS OF NR DURING NOVEMBER 2017^P (Tonnes)		
TYPE	Quantity	% Share
RSS Grades	4368	12.87
Solid Block Rubber	29471	86.82
Latex Concentrates (drc)	105	0.31
Others	0	0.00
Total	33944	100

provisional

TYPE-WISE EXPORT OF NR DURING NOVEMBER 2017^P (Tonnes)		
Type	Quantity	% share
RSS Grades	12	4.23
Solid Block Rubber	202	71.13
Latex Concentrates (drc)	54	19.01
Others	16	5.63
Total	284	100

provisional

SIAM

INDIA'S: Cumulative Production, Domestic Sales & Exports data for the period of April-February 2018 and Growth

Category	Production			Domestic Sales			Exports		
	April-February			April-February			April-February		
	2016-17	2017-18	% Change	2016-17	2017-18	% Change	2016-17	2017-18	% Change
I Passenger Vehicles (PVs)									
Passenger Cars	2,460,042	2,495,247	1.43	1,913,609	1,982,868	3.62	542,975	524,070	-3.48
Utility Vehicles(Uvs)	817,886	985,471	20.49	684,299	830,334	21.34	140,593	147,808	5.13
Vans	163,681	163,169	-0.31	166,963	174,057	4.25	2,310	1,677	-27.40
Total Passenger Vehicles (PVs)	3,441,609	3,643,887	5.88	2,764,871	2,987,259	8.04	685,878	673,555	-1.80
II Commercial Vehicles (CVs)									
M&HCVs									
Passenger Carriers	44,401	34,187	-23.00	41,022	30,799	-24.92	10,670	11,215	5.11
Goods Carriers	260,937	266,475	2.12	222,192	263,754	18.71	28,867	28,123	-2.54
Total M&HCVs	305,338	300,662	-1.53	263,214	294,553	11.91	39,527	39,338	-0.48
LCVs									
Passenger Carriers	45,308	44,703	-1.34	43,468	40,845	-6.03	4,265	3,344	-21.59
Goods Carriers	374,893	443,503	18.30	320,144	412,376	28.81	55,235	43,213	-21.77
Total LCVs	420,201	488,206	16.18	363,612	453,221	24.64	59,500	46,557	-21.75
Total Commercial Vehicles	725,539	788,868	8.73	626,826	747,774	19.30	99,027	85,895	-13.26
III Three Wheelers									
Passenger Carrier	625,269	801,300	28.15	374,079	457,719	22.36	252,563	345,432	36.77
Goods Carrier	100,774	110,338	9.49	98,800	105,514	6.80	2,387	3,905	63.59
Total Three Wheelers	726,043	911,638	25.56	472,879	563,233	19.11	254,950	349,337	37.02
IV Two wheelers									
Scooter/Scooterette	5,366,644	6,488,244	20.90	5,118,069	6,201,896	21.18	268,819	290,905	8.22
Motor cycles/Step- Throughs	11,978,990	13,776,617	15.01	10,179,288	11,468,020	12.66	1,845,708	2,259,995	22.45
Mopeds	837,718	791,937	-5.46	820,745	781,107	-4.83	18,790	15,444	-17.81
Total Two wheelers	18,183,352	21,056,798	15.80	16,118,102	18,451,023	14.47	2,133,317	2,566,344	20.30
Quadracycle	1,577	1,480	-6.15	0	0	-	1,556	1,421	-8.68
Grand Total of All Categories	23,078,120	26,402,671	14.41	19,982,678	22,749,289	13.85	3,174,728	3,676,552	15.81

Society of Indian Automobile Manufacturers (12/03/2018)

DKT 2018

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German Rubber Conference

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▶ TPE-FORUM

▶ TYRE DAY
▶ POSTER SESSION



▶ UNIVERSITY SESSION
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▶ SOCIAL EVENTS
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RubberTech Series

Tire Technology Expo 2018 (20 – 22 February 2018)

Another record-breaking Tire Technology Expo!

The 2018 Tire Technology Expo and Conference has once again set a new benchmark for the event in Hannover, Germany. With 290 exhibitors, 700 conference delegates and more than 5,800 experts during the three days, this year's show was the biggest yet.

The world's largest gathering of tire design, development and manufacturing experts was opened by a keynote address from Pierre Loiret of Michelin, who detailed the forthcoming world standards for tire RFID tracking – just one of many technological developments being presented by 180 speakers at the conference on subjects such as connected and smart tire technologies, sustainable materials innovations and disruptive change in the global tire industry.

On the exhibition floor, product announcements included Tekna's Vision Tire System 3D, a defect detection machine born of a four-year development project; Habasit's downtime-reducing, timing-belt hinge joint; 4Jet's strategic co-operation deal with LY Holding to offer laser tire mould cleaning; and Festo's brand-new Motion Terminal VTEM pneumatics automation technology. All these companies were taking

advantage of Tire Technology Expo's highly targeted attendee base, which presents a valuable opportunity to connect with new and existing customers.

At the end of Day 2, some 900 attendees enjoyed the presentation of the 2018 Tire Technology International Awards for Innovation and Excellence at a glittering gala dinner. Winners included Pirelli - Tire Manufacturer of the Year and Versalis' breakthrough technology for new butadiene-based di-block stereoregular polymers for the development of innovative compounds (BDSP), has been awarded "Tire Manufacturing Innovation of the Year". The evening further confirmed the show's status as a fantastic networking opportunity for the tire industry.

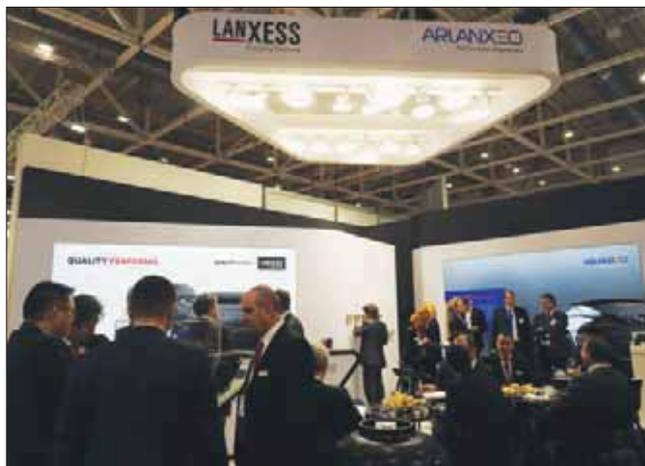
"Tire Technology Expo 2018 was bigger and better than ever!" concluded show founder, Tony Robinson. "We're delighted to say that this has been another record year, with very busy exhibition halls and fabulously busy conference rooms."

The IRJ – Indian/International Rubber Journal again had a busy stand and a great response on all 3 days of the expo.

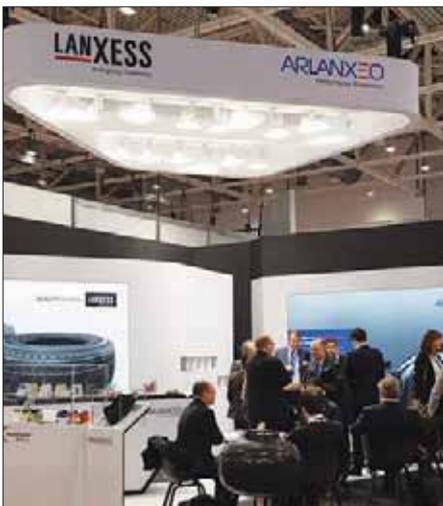
Tire Technology Expo 2019 will be held on 5, 6, 7 March 2019 in Halls 19/20/21 at Deutsche Messe, Hannover, Germany



HF GROUP: Always busy with multiple meetings going on



Prominent Stand of LANXESS AND ARLANXEO



LANXESS AND ARLANXEO



eni-Versalis of Italy



Stand of KORDSA



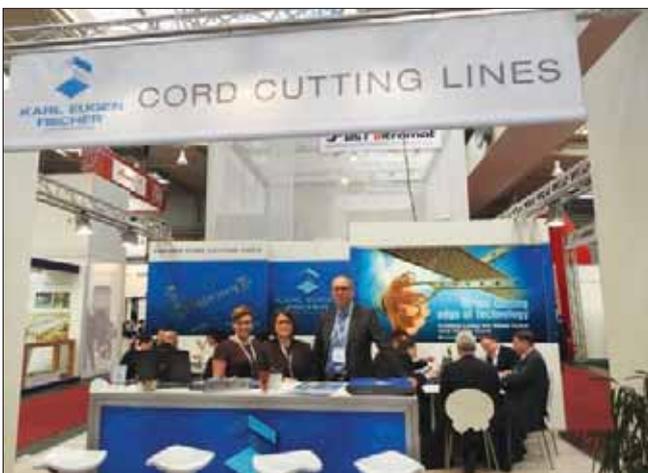
Apollo Vredestein



Schill+Seilacher-Struktol,Guido Robbe



Stand of Zeppeline



Cord Cutting Lines Specialist Karl Eugen Fischer with their stand



Stand of Larsen & Toubro: M K Suresh ,Head Marketing Customer Service and Testing , K Shashidhar, Sr.Deputy General Manager Domestic Marketing



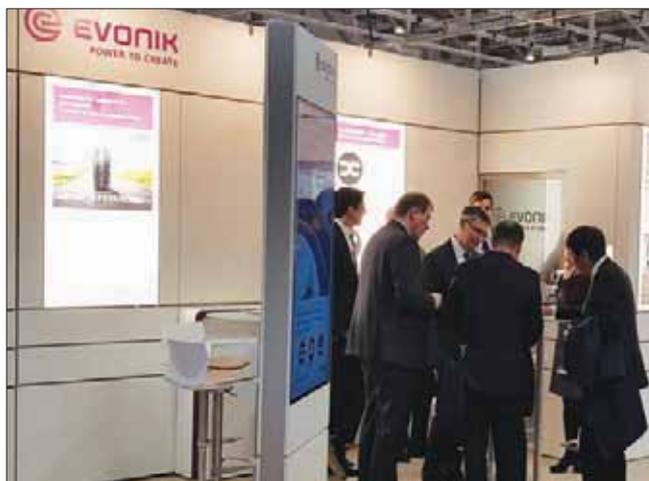
Extruder Specialist Troester of Germany



L to R: Vinod Rai, Associate Manager; D N Suvarna, Managing Director; Abid Mohib, Head-Design & Engineering of Bainite Machines from India



Nynas



Evonik



Shanghai Amino-Chem



Stand of China United Rubber Corporation (CURC)



Rodolfo Comerio



Mesnac



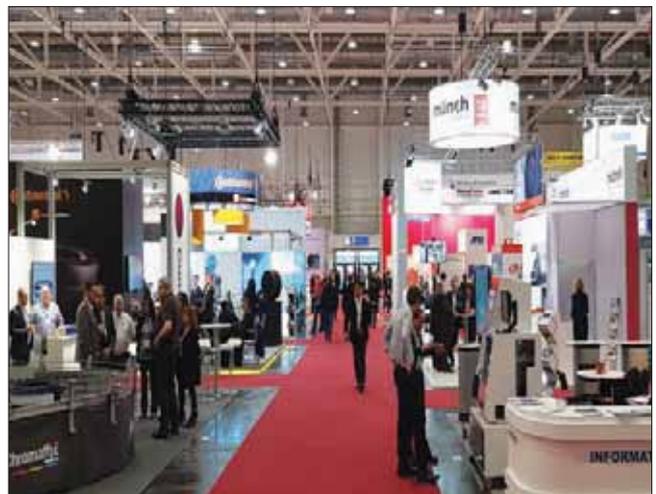
Sibur



Safe - Run



Continental

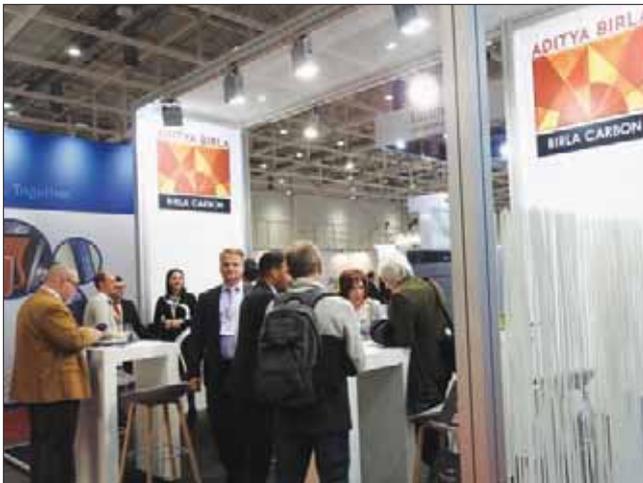




Smithers Rapra



TST of China



Birla Carbon



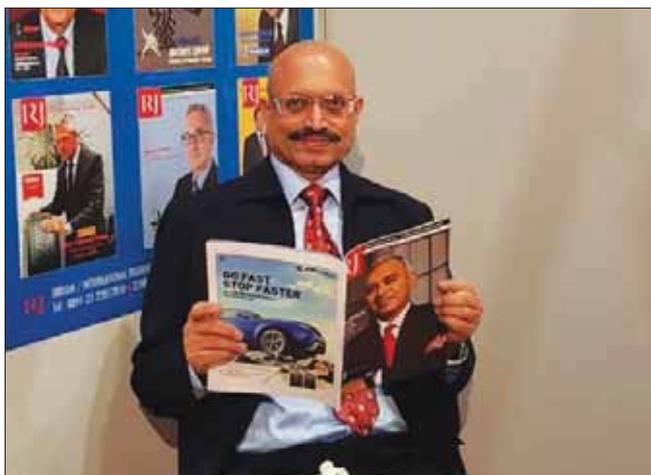
Stand of DoubleStar Rubber & Plastic Machinery Co. of China & Stand of Festo



Siemens



India Rubber Expo 2019



D N Suvarna- Managing Director, Bainite Machines at IRJ Stand



Vinod Rai, D N Suvarnar, Abid Mohib of Bainite Machines visiting IRJ Stand



Dr. Gupta Verlag : Dr. Stephanie Waschbüsch, Julian Bäumer & Lena Knebnwski at their stand



Udo Erbstofer of LANXESS together with a colleague and Farida Bharucha at IRJ stand



Visiting IRJ Stand are Guido Robbe (on left) & Collin Clarke (on right) of Schill+Seilacher with Dr. Dirk Kilian of Polymer-Technik



Dr. Richard Leblanc with Farida Bharucha at IRJ stand

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June 21-22-23

June 21-23, 2018
New Delhi

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June 13-14-15

June 13-15, 2018
Ho Chi Minh



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Organizer:



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September 19-21, 2018

Shanghai New International Expo Centre

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More Information



Driving Success Through Technology

“GREEN ECONOMY – CHALLENGES AND OPPORTUNITIES FOR INDIAN RUBBER INDUSTRY”

Dr. R Mukhopadhyay Director & CE-HASETRI Chairman, Indian Rubber Institute



Over the last few years, the concept of a “green economy” has moved into the mainstream of policy discourse across the world with India being no exception. The Green economy is a development strategy which harmonises both economic development and ecological sustainability. Political leaders and policy makers increasingly speak about the green economy. The recent interest in a green economy has been intensified by widespread disillusionment with the prevailing economic paradigm, emanating from the many concurrent and recent crises. At the same time, increasing evidence is pointing to an alternative paradigm, in which increased wealth does not lead to growing environmental risks, ecological scarcities and social disparities. Transitioning to a green economy has sound economic and social justification. There is a strong case for governments as well as the private sector to engage in this economic

transformation. For governments, this transition would involve leveling the playing field for greener products by phasing out harmful subsidies, reforming policies and incentives strengthening market infrastructure, introducing new market-based mechanisms, redirecting public investment, and greening public procurement. For the private sector, this transition would involve responding to these policy reforms and incentives through increased financing and investment, as well as building skills and innovation capacities to take advantage of opportunities arising from a green economy.

Stated objective of environment-friendly sustainable measures have so far, largely not been met in developing countries due to the overpowering need of basic development priorities, lack of fund flow from the developed world for mitigation and adaptation purposes etc. India is facing the problem of coexistence of the conventional economic growth

strategy and peace meal efforts to make the economy ready to mitigate and adapt to the climate change issue.

The general perception among people at large about the manufacturing industry, in particular rubber industry, is that they are not environment friendly and are energy inefficient. They use non-renewable resources and produce non biodegradable waste etc. To change this perception, the rubber industry has to work towards green economy through development of green technology (design for environment), green manufacturing practices including Resource decoupling - using less land, water, energy and material to maintain economic growth and impact decoupling - using resources wisely over their lifetime to reduce environmental impact.

This paper was presented at the International Conference and Exhibition on Polymers (ICEP) during NRC 2017 (23-25 February 2018) organised by AIRIA (ER) and Indian Chamber of Commerce at Guwahati, Assam.

GREEN ECONOMY- CHALLENGES & OPPORTUNITIES FOR INDIAN RUBBER INDUSTRY

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GREEN ECONOMY

- The Green Economy is a development strategy which harmonizes **both economic development and ecological sustainability.**
- Govt. as well as the private sector to engage in this economic transformation;
- For Governments this transition will **involve levelling the playing field for greener product by phasing out harmful subsidies, reforming policies and incentivize strengthening market infrastructure introducing new market based mechanism, redirecting public direct investment and greening public procurement.**
- For the private sector this transition will **involve responding to this policy reforms and incentivize through increased financing and investment as well as building skills and innovation capacities to take advantage, opportunity arising from a green economy.**



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WORLD ECONOMY – PRESENT CHALLENGES FOR BUILDING BUSINESS VALUE

- CREATE SUSTAINABLE GROWTH ORIENTED **GREEN ECONOMY**
- EMPHASIS ON SUSTAINABLE DEVELOPMENT
- BE COMPETITIVE IN GLOBAL MARKET

REQUIRE UNPRECEDENTED INNOVATION AND TECHNOLOGY, THE ONLY LASTING AND SUSTAINABLE WAY TO MAKE NECESSARY TRANSFORMATION FOR BUILDING BUSINESS VALUE THROUGH SUSTAINABLE GROWTH → WORKING TOWARDS GREEN ECONOMY.

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GREEN ECONOMY – SUSTAINABILITY & ECONOMIC CHALLENGES

Current Economic Model

- Fossil fuel
- Unbridled consumption
- Throw away product
- Inadequate concern for environment
- Volatility, Uncertainty, Complexity, Ambiguity

Future Economic Model

- Green Economy
- Innovation focusing Saving resources not labour
- Respond to the challenges of global warming and poverty
- Financial innovation circumventing regulation, taxes and accounting standards.

Green Economy Improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities

Making economies more sustainable requires three key policies:

- Valuing the environment
- Accounting for the environment
- Incentives for environmental improvement.

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GLOBALIZATION

- **ECONOMIC SNAPSHOT** – ECONOMIC ACTIVITIES PROJECTED TO INCREASE DURING 2018-20 IN EMERGING MARKETS AND DEVELOPING ECONOMIES
- **RIISING NATIONALISM AND PROTECTIONISM EG. BREXIT-UNCERTAINTY**
- **TRENDS THAT DETERMINES THE GLOBAL DEVELOPMENT**
 - RISING INCOME AND WEALTH DISPARITY
 - CHANGING CLIMATE
 - INCREASING POLARIZATION OF SOCIETIES
 - RISING CYBER DEPENDENCY
 - AGING POPULATION
- **MOST IMPORTANT RISKS' INTERCONNECTIONS**
 - UNEMPLOYMENT AND UNDEREMPLOYMENT – PROFOUND SOCIAL INSTABILITY
 - LARGE SCALE INVOLUNTARY MIGRATION - STATE COLLAPSE OR CRISIS
 - FAILURE OF CLIMATE-CHANGE MITIGATION AND ADAPTION – WATER CRISES
 - FAILURE OF NATIONAL GOVERNANCE – PROFOUND SOCIAL INSTABILITY
 - INTERSTATE CONFLICT WITH REGIONAL CONSEQUENCES – LARGE SCALE INVOLUNTARY MIGRATION.

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DEMOGRAPHICS

GLOBAL POPULATION

GROWTH PROJECTIONS: 2016 - 7.4 billion 2024 – 8.0 billion
2038 – 9.0 billion 2056 – 10.0 billion

99% of projected growth over next 4 decades will occur in less developed countries. **India will surpass China in 2022 as the largest national population**

AGING POPULATION

- Global life expectancy is projected to increase from 68.6 yrs in 2015 to 76.2 in 2050
- By 2050, about 2.1 billion people, 22% of the global population, will be older than 60
- Population aging concerns include workforce shortages, economic growth slowdowns, fiscal stress, and financial collapse of pension and health care systems.

MILLENNIALS SURVEY

- Over 50% expect to work past age 65, 27% expect to work over the age of 70, 12% say they will likely work until the day they die

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TECHNOLOGY

AUGMENTED REALITY

INTERNET OF THINGS

SELF DRIVING VEHICLES

WEARABLE TECHNOLOGY

ROBOTICS

3D PRINTING

ARTIFICIAL INTELLIGENCE

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TENSIONS FROM SCARCITY

WATER SHORTAGE

NATURAL RESOURCES

GLOBAL ENERGY DEMAND

INCREASING INCOME DISPARITY

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SHIFTING POWER AS THE WORLD'S POPULATION AGES

The world population is aging, the current median age is 28. By 2018, 65-year-olds will outnumber those with under 5. **Country like India and Brazil will relatively young now and continue to be upto 2050.** The China will grow old before it grows rich.

Share of global population by age group

Share of population over 60 years old

Source: UN Population Division HASETRI

TOP TEN ECONOMIES IN 2050 AT MARKET EXCHANGE RATES

2016

2050

Source: The Economist Intelligence Unit

GLOBAL COMPETITIVE INDEX : 2016-17 FINDINGS

	INDIA	CHINA	USA
Population (millions)	1292.7	1374.6	321.6
GDP (US\$ Billions)	2090.7	10982.8	17947.0
GDP per capita (US\$)	1617.3	7989.7	55805.2
GDP (PPP) as share (% of world total)	7.02	17.08	15.81
Global Competitiveness Index (out of 138)	39.00	28.00	3.00

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COMPARATIVE ECONOMIC GROWTH

Projections of a strong economic growth amongst global slowdown

- India remains an **oasis of growth** amongst slowing global outlook.
- India is projected to be the fastest growing **major economy in 2018** surpassing **China**.
- The trend is expected to continue at least **till 2022**.

GDP Growth Rate Comparison

Year	India	China	US
2016	7.6	6.7	2.4
2017	7.2	6.9	1.6
2018	7.7	6.8	2.3
P2019	7.8	6.7	2.5
P2020	8.0	6.5	1.9
P2021	8.1	6.4	1.7
P2022	8.1	6.3	1.6

Source: International Monetary Fund

Key Challenges:

- High debt burdens
- Higher inflation & interest rates
- Slowed real estate growth
- Geopolitical tensions
- Political uncertainty in some countries

Key Opportunities:

- Focus on digital
- Make growth more inclusive
- Improve structural & insurance reforms

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GREEN ECONOMY- WHY ?

Exposure to particulate matter with aerodynamic diameter of 10 μm or less (PM10) in 1081 cities, 2003-2010

WHO published a list of 100 most polluted cities in the world. India dominates this list with 24 cities. Central Pollution Control Board (CPCB) shows that more than 80% of the cities where air quality is being monitored exceed the national ambient air quality standard for Respirable Suspended Particulate Matter (RSPM).

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GREEN ECONOMY- WHY? GLOBAL ENVIRONMENT - AUTOMOTIVE INDUSTRY

CO₂ emissions - Global Warming

SO_x, NO_x, PM emissions - Air pollution

Resource waste - Resource extraction and production

Tyre Life Cycle Assessment for CO₂ Emission - 185/70R14

CO₂: 286.4kg-CO₂/tire (ref.: Japan Rubber Manufacturers Association)

Stage	CO ₂ Emission (kg)	Percentage
Materials	12.2	4.1%
Production (manufacturing, testing)	4.4	1.5%
Logistics	0.5	0.2%
Products use	258.0	87.0%
End of Life	21.3	7.2%

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GREEN ECONOMY - WHY? CLIMATE CHANGE - CO₂ CONCENTRATION & ENVIRONMENTAL IMPACT

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GREEN ECONOMY- HOW? WORKING TOWARDS A SUSTAINABLE SOCIETY

Two aspects of 'decoupling' by UNEP

Isolation of the causal correlation between:

- population increase / economic growth
- resource consumption / environmental impact

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SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

SUSTAINABILITY

- Continuance in the long term
- Synonymous with "triple bottom-line" (economic, environmental & social benefits)

SUSTAINABLE DEVELOPMENT

"Sustainable Development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs"

(UN Commission on Environment & Development, 1987).

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GREEN ECONOMY - CHALLENGES ENCOUNTERED BY AUTOMOTIVE & RUBBER INDUSTRY

- Sustainability & Green Mobility
- Demand of Fuel Efficient Vehicles
- Increasing Passenger Safety Regulations
- Technology Innovation challenge
- Material & Product Complexity Challenge
- Demand of Cars with Better Aesthetic Property
- Supply Chain Management
- Manufacturing Implementation Challenge
- Smart Manufacturing - Fourth industrial revolution (INDUSTRY 4.0)

MANUFACTURING

INTELLIGENT & INTEGRATED PRODUCTION

ADVANCED

PLANT-WIDE OPTIMIZATION

FACTORIES OF THE FUTURE

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SUSTAINABILITY & GREEN ECONOMY

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INDIA WILL CONTINUE TO GROW...

Average GDP growth rate: 7.0% over past 10 years and will continue to be the fastest growth rate in the world.

- 2016 – 7.6
- 2017 – 6.7
- 2018 – 7.2 (Est.)
- 2019 – 7.7 (Est.)

Growth on the back of demography, democracy, diversity leading to development

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ADVANTAGE INDIA – AUTOMOTIVE & RUBBER INDUSTRY

Growing Demand

- Strong growth in demand due to rising income, middle class, and a young population.
- Domestic sales of passenger vehicles expected to increase at a CAGR of 12.87 per cent between 2015–25.
- Utility vehicle sales increased 19.95 per cent year-on-year in April–Nov. '17.

Innovation Opportunities

- Focus shifting on electric cars to reduce emissions.
- Innovation is likely to intensify among engine technology & alternative fuels.
- Government aims to build India into an R&D hub.

ADVANTAGE INDIA

Rising Investments

- India has significant cost advantages; auto firms save 10–25 per cent on operations vis-à-vis Europe & Latin America.
- Cumulative FDI inflow of around US\$ 17.91 billion in the sector between April 2000 – September 2017.

Policy Support

- Automotive Mission Plan : 2016–26 shows clear vision of government.
- The government aims to develop India as a global manufacturing centre.
- Reforms like GST to help boost the sector's growth.

Sources: Automotive Mission Plan (2016–2026), Make in India, SIAM

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INFRASTRUCTURE DEVELOPMENT – GOVT. INITIATIVE

- Continual improvement in road infrastructure (Golden quadrilateral, N-S/E-W corridor, **Sagarmala project** connecting all ports – 7500 km coastline)
- Improvement in vehicle transmission technology
- Availability of good quality of fuel – modernisation of refineries (US\$ 4.6 bn)
- Energy - Switch over to alternate renewable sources.
- Testing & Evaluation infrastructure (NATRIP) Delivery, education & training through NSDC.

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AUTOMOTIVE MISSION PLAN 2026 - INDIA

- Vision Statement AMP 2026: **"Vision 3/12/65"**.
"By 2026, the Indian automotive industry will be among the **top three** of the world in Engineering, Manufacturing & Export of vehicles and auto components. Growing in value to **over 12% of India's GDP** & generating an **additional 65 million jobs**".
- By 2026, Indian automotive industry to grow from US\$ 75 bn to 300 bn & Auto Component industry to grow from 38 bn to US\$ 110 bn.
- AMP envisages to implement End of Life Policy for automotive vehicles and components, Road transport and safety bill, International Safety standard from 2017.
- Govt. of India speeded up the introduction of BS VI emission norms by 2020 leapfrogging BS V emission norms.

AMP aims to make Indian automotive & tyre industry to be the engine of 'Make in India' and 'Start-up-India' programme and significant contributor to the "Skill Development".

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CHALLENGES – INDIAN AUTOMOTIVE & RUBBER INDUSTRY

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CHALLENGES INDIA IS COMMITTED TO ADDRESS

- Preparedness to meet international regulations and legislations for rubber industry
- Infrastructure Deficit
- Talent Crunch
- Scaling-Up the industry
- Access to World-class Technology and Quality Practices
- Remaining cost competitive
- Access to and availability of cost-effective capital
- Trade Policy

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GREEN ECONOMY – RUBBER INDUSTRY AND CUSTOMER NEEDS

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SOLUTIONS FOR GREEN ECONOMY - RUBBER INDUSTRY

3 Dimensions of the New Eco-system

- Regulatory Innovation Frontier (Government)**
 - New policies (including subsidy policy) to support the commercialisation of green transportation technologies
- Technical Innovation Frontier (Auto Industry)**
 - Partnerships among key players to define clear, scalable solutions for future green transportation
- Business Innovation Frontier (Cross Industry-Value Chain)**
 - Partnerships between other industries and auto makers/innovators to develop new business models for future green cars

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LEGISLATIONS & REGULATIONS

Growth of tyre related legislations around the world...

- **TREAD Act :**
 - Transportation, Recall Enhancement, Accountability and Documentation Act
- **REACH:**
 - Registration, Evaluation, Authorization and restriction of Chemical
- **End of Life Vehicles – EU legislation**
- **Labeling of Tyres – EU legislation**
- **Uniform Tire Quality Grade (UTQG) Standards**
- **Global Technical Regulation on Tyres – under consideration**

These stringent global regulations throw up challenges of adherence and...
...optimizing various product performance goal conflicts...

GREEN ECONOMY - TECHNOLOGY TRENDS FOR EMISSIONS REDUCTION

Efficiency enhancement of conventional powertrains

- Driveline / engine friction reduction
- Start-stop
- Advanced injection technologies
- Downsizing with turbo charging
- Transmission optimization
- Selective Catalyst Reduction (SCR)
- Exhaust Gas Recirculation (ECR)

Particulate filters

Non-powertrain enhancements

- Aerodynamics optimization
- Braking system optimization
- Accessories and loads optimization
- Weight reduction
- Tire Labeling Criteria (RR, Dry & Wet Traction & Noise)
- Active & Passive Safety System

Use of greener powertrain technologies

- Hybrid electric vehicles
- Electric vehicles
- Fuel cell

Use of alternate fuels

- Low sulphur gasoline/diesel
- Biofuels (ethanol/biodiesel)
- CNG
- LPG
- Hydrogen Fuel Cell

TOTAL ENERGY LOSS IN A VEHICLE – ROLE OF TYRE

Component	% Loss	
	IC Engine (Petrol/Diesel Operated)	BEV (Battery driven Electric Vehicle)
Engine Losses	62	10
Accessories	2	1
Stand by	17	0
Drive line	6	28
Aero dynamic	3	14
Tyre (Rolling loss)	4	19
Brakes	6	28

Tyres play a small but significant percentages of total energy loss in the vehicle. Changing to an electric motor in place of IC Engine is shown to promote the tyre in the priority list for improvement in Rolling Resistance.

GREEN ECONOMY : E-MOBILITY & ITS CHALLENGES

Goal

- Emission-free mobility and decoupling mobility from fossil fuels.

What does it include?

- The electrification of the drive train and the adaptation of all materials and compounds to new requirements.
- It also involves specific infrastructure and innovative mobility concepts.

How to implement it successfully?

- Government, industry and academia must work together for a gradual transition towards new e-technologies.

How tyre industry will be effected?

- **Rolling Resistance** – Tyre RR contribution (in terms of %) to overall vehicle loss is going to increase
- **Traction** - Tyre has to provide sufficient traction to counter high vehicle torque.
- **Noise** - Tyre noise contribution (in terms of %) to overall vehicle noise is going to increase (Tyres require higher noise at lower speed and lower noise at higher speed!!)

E-MOBILITY INDIAN PERSPECTIVE

Proposed Vision for E Mobility – India:

- All new vehicles sold in the country to be 100% pure electric (BEV & Fuel Cell Vehicles) on the 100th Anniversary of India's independence (in 2047)

Road Map to Achieve the Vision:

- All new vehicle sales for Intra-city public transport fleets to be pure EV by 2030.
- 40% of new vehicle sales in the country to be pure EV by 2030.
- 60% of new vehicle sales in the country to employ greener technology like HEV and other alternate fuels by 2030.
- To sustain the transition to cleaner fossil fuel vehicles, the IC Engine upgradation must continue over decade.
- Finally all new vehicle sales to be pure EV by 2047.

Vehicle Technology Segment	Potential for xEVs (M Units)
BEV 2W	3.5 – 5
HEV Vehicles (4W, Bus, LCV)	1.3 – 1.5
Other BEV Vehicles (3W, 4W, Bus, LCV)	0.2 – 0.5
Total	5 – 7

THE CHEMICAL INDUSTRY PLAYS A DECISIVE ROLE IN TACKLING THE E-MOBILITY CHALLENGE

- The material mix in cars is steadily changing
- In particular, the special material demands of e-cars call for innovations and new materials, such as:
 - Flame retardants for higher safety
 - Lightweight materials for weight reduction
 - Further optimization of "Green Tires"
 - High-tech chemicals for batteries

Contributions from the chemical industry are essential to the progress of e-mobility

GREEN ECONOMY

RAW MATERIAL DEVELOPMENT TRENDS IN RUBBER INDUSTRY

TYRE INDUSTRY SUPPLY CHAIN

MATERIALS USED IN RUBBER INDUSTRY

Stable material	Reactive Material
Polymer	Silanes (coupling Agent)
Carbon Black/Silica (Filler)	Adhesives
Mineral Oil (Plasticizer)	Accelerators
Resins	Sulphur (Cross linking agent)
Waxes	Stearic Acid (activators)
Zinc Oxide (Activator)	Retardars
Processing Aid (Fatty Acid, Easers, glycol derivatives)	Antioxidants Bonding agent



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ENERGY AND GREENHOUSE EMISSIONS ASSOCIATED WITH THE RAW MATERIALS USED IN RUBBER INDUSTRY

Material	Energy (MJ/kg)	Greenhouse (kgCO ₂ /kg)
Natural Rubber	8	0,4
Synthetic rubber	110	5,0
Carbon black	125	5,7
All other additives	100	8,2
Fabric	45	2,1
Steel tyre cord	36	3,2
Manufacture (per kg tyre)	11.7	1,9
Reclaim	2,1	0,1



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GREEN ECONOMY – RAW MATERIAL CHALLENGES

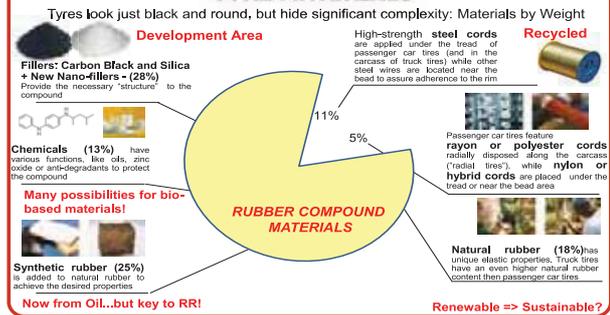


- It is possible to produce a tire with > 95 % non-crude oil base
- However, the application range today is still limited



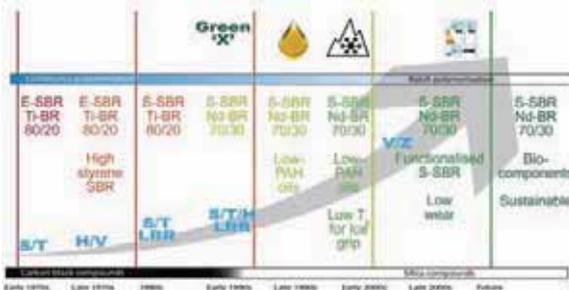
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TYRE MATERIALS



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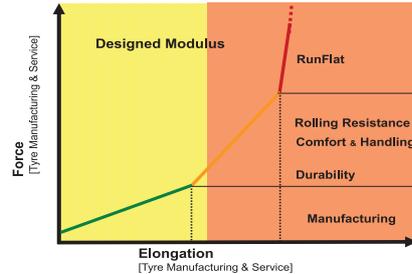
GREEN MOBILITY ADVANCES IN TYRE MATERIALS (SR)



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INNOVATION RUBBER MATERIAL

Fibre – Key property : Modulus



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INNOVATION – RUBBER MATERIAL

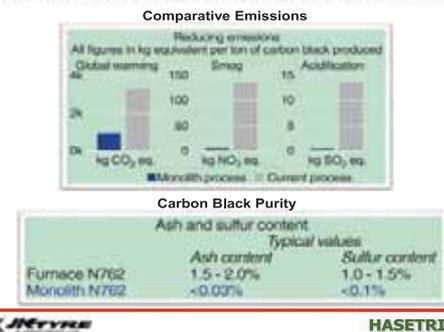
FILLER

- Carbon Black, Silica treated carbon black (SCC), Carbon Silica Dual phase filler (eco black), Nano Structure Carbon black, Inversion Black & Latex Carbon Black Master Batch.
- Replacement of C-black by pptd, Silica/ highly dispersible silica (partially/fully).
- Based on the principle of bionics natural materials are under investigation, eg. Natural Silica, Nano clay, Nano Calcium Carbonate, Montmorillonite Clays (MMT), Carbon Nano Fibers (CNF), Polyhedral Oligomeric Silsesquioxanes (POSS), Carbon Nano Tubes (SWNT & MWNT)
- Treated Corn powder as filler material → Bio-degradable
- Leather powder, organic fibre → Better performance and highly degradable.

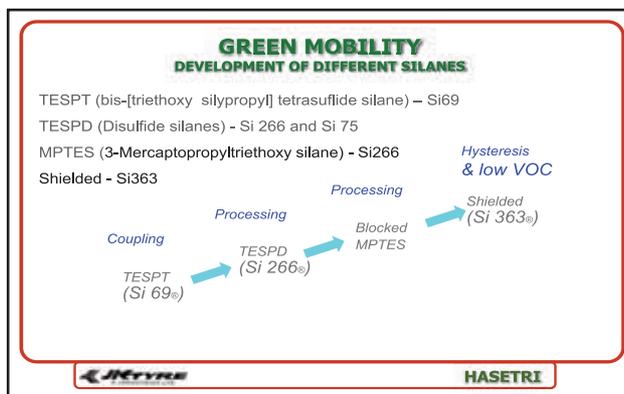
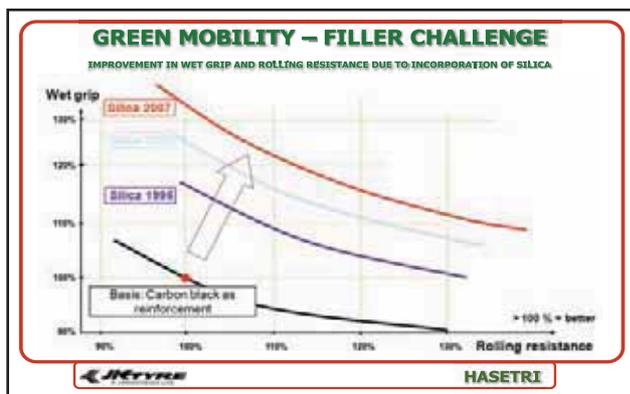


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NATURAL GAS: DRIVING TYRE & CARBON BLACK PRODUCTION



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INNOVATION – RUBBER MATERIAL

STEEL CORD – TRENDS (Cost Optimization and prolonged life cycle)

- Corrosion Resistant, Zn-Cu-Co, Zn-Co, Zn-Mn & Mixed Silane Coatings
- From normal tensile to UHT steel (light weight tyre)
- New constructions to improve fatigue and corrosion
- From normal thickness to thinner Steel Cord.

TEXTILE CORD – TRENDS (Cost Optimization & prolonged durability)

- Stiffness and compression modulus equal to steel.
- Easy Processing
- Rubber Compatible (adhesiveless)
- Calender Ready
- Consistent Quality
- Fatigue/Impact resistance/high melting point

INNOVATION – RUBBER MATERIAL

ACCELERATORS

- High performance accelerators providing better scorch and fast cure characteristics.
- Package capable of curing at low temperature (as low as 100°C for retention of better properties and low energy consumption).
- MBT based accelerators might be phased out (toxicity issue)

ANTIDEGRADANT -

- Non Discolouring
- Partly Saturated polymer or non-PPD based antioxidants
- Reactive blending of EPDM for tyre sidewall compound

INNOVATION – RUBBER MATERIAL

ADHESION PROMOTOR

- Replace/reduce/eliminate cobalt salts (heavy metal)
- Eliminate methylene donor/acceptor systems.
- Use silane coated steel cord (plasma polymerization)

PROCESSING AIDS

- Low PCA Oil (TDAE)
- Vegetable oil
- Natural processing aids

OTHERS

- Network stability under aerobic and anaerobic environment
- More and more use of recycled/ regenerated/ environmental friendly material.

NANO MATERIAL DEVELOPMENT TRENDS IN RUBBER INDUSTRY

Technology	Loading (phr)	Technology readiness	Application
Carbon black	50-100	Mature	•Improve mechanical properties
Silica + Silane	30-80	Mature	•Lower rolling resistance without compromising performance in wet traction, grip and tread life.
Montmorillonite Clay (MMT)	1-10	Market entry/ Prototype	•Decrease gas permeability, •Improve handling & comfort, •Better thermoplastic stability & reduced decay, •Reduced weight % polymer •Lighter and cooler running (lowering RR).

NANO MATERIAL DEVELOPMENT TRENDS IN RUBBER INDUSTRY

Technology	Loading (phr)	Technology readiness	Application
Core/shell Polymer Nanoparticles	<20	Market entry	•Improvement in cornering and steering response •Reduced heat generation. •Weight reduction since the core-shell particles are significantly less dense than carbon black or silica fillers.
Carbon Nanotubes (Single Wall)	1-10	Basic /Applied Research	•Reduce RR through reduced heat generation. •Improve durability – possibly even past the life of the car. •Improved tensile, tear and hardness of the composites, by almost 600%, 250% and 70% respectively compared to pure styrene-butadiene rubber.

NANO MATERIAL DEVELOPMENT TRENDS IN RUBBER INDUSTRY

Technology	Loading (phr)	Technology readiness	Application
Graphene	0.1-5	Basic/Applied Research – tyre applications since 2008	•The graphene can be produced at a much lower cost than carbon nano tubes. •More durable tyres due to better heat dissipation.
POSS*	3.5		•Increase wet traction without sacrificing rolling resistance or abrasion resistance.
Rubber nanoparticles		Market entry	•Improves dry road grip by between 10% and 15%. •Significantly cuts wear
Silica carbide	5-30		•Improve wet grip •50% reduction in abrasion

* Oligomeric Silsesquioxanes

POTENTIAL FILLERS & CHEMICALS FROM BIOMASS

Non-food / waste biomass

- Softwood
- Wheat straw
- Annual plants (Arundo Donax)
- Bagasse of Sugar cane.....

PROCESS

- Kraft → Cellulose for paper
- Soda Pulping → Bio-Fuel (bio-ethanol)
- Crude LIGNIN (By-product of Kraft and Soda Pulping)

Properties of Crude LIGNIN:

- Biomass feedstock available in huge amount (>50Mio tons/year)
- Low-cost material : crude lignin <1€/kg
- Low density (1,5 > d (g/cm³) >1,30) vs silica/CB

POTENTIAL TARGETS

- Reinforcement with tyre weight reduction
- Antioxidant properties
- Carbon black by pyrolysis?

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GREEN ECONOMY ENERGY MANAGEMENT IN RUBBER INDUSTRY

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INDIA'S ENERGY DEMAND TO SURPASS CHINA'S BY 2035

- India is likely to surpass China as the largest source of energy demand growth in the world by 2035.
- India's energy demand expected to grow by 132%, while China and Brazil's energy demand will grow by 71% & Russia's by 20%.
- India consumed around 536 MT of coal, 42 MT of lignite, 212 MT of crude, 46,5 Billion cubic metre of natural gas and 755,847 gigawatt hours of electricity in 2012.
- **India and china will together account for half of the energy demand growth in the world till 2035.**
- **Over the next two decades, India's energy consumption is expected to grow at a rate of 11%. This will compelled India to be dependent on import of fossil fuels.**
- **India's energy import bill may reach US\$ 300 bn by 2030.**

Source: BP Energy Outlook 2035

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GREEN ECONOMY MATERIAL AND ENERGY BALANCES – RESOURCE OPTIMISATION

The material and energy balances are not only used to identify the inputs and outputs of mass and energy but their economic significance is related to costs, such as:

- Cost of raw material in waste
- Cost of final product in waste
- Cost of energy losses
- Cost of handling waste
- Cost of transporting waste
- Cost of solid wastes disposal
- Cost of pollution charges and penalties

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PRIMARY ENERGY SOURCES ALTERNATIVES TO OIL

TOO LITTLE

- Conservation / Efficiency -- not enough
- Hydroelectric -- not enough
- Biomass -- not enough
- Wind -- not enough
- Wave & Tide -- not enough

CHEMICAL

- Natural Gas -- sequestration?, cost?
- Gas Hydrates -- sequestration?, cost?
- Clean Coal -- sequestration?, cost?

NUCLEAR

- Nuclear Fission -- radioactive waste?, terrorism?, cost?
- Nuclear Fusion -- too difficult?, cost?
- Geothermal HDR -- cost?, enough?
- Solar terrestrial -- cost?
- Solar power satellites -- cost?
- Lunar Solar Power -- cost?

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GREEN ECONOMY - ENERGY MANAGEMENT

- **Reducing electrical supply costs**
 - Demand
 - Consumption
 - Power factor
- Raw material storage
- Mixing
- Processing (mills, calenders and extruders)
- Curing / vulcanisation processes
- Scrap, waste and rework
- Finished goods storage
- Boilers and steam distribution
- Compressed air
- Cooling water
- Electric motors
- Envelope/Curing Bags
- HVAC (Heating, Ventilation and Airconditioning)
- Lighting

HASETRI

MANUFACTURING TECHNOLOGY TRENDS IN RUBBER INDUSTRY

Some of the more significant changes:

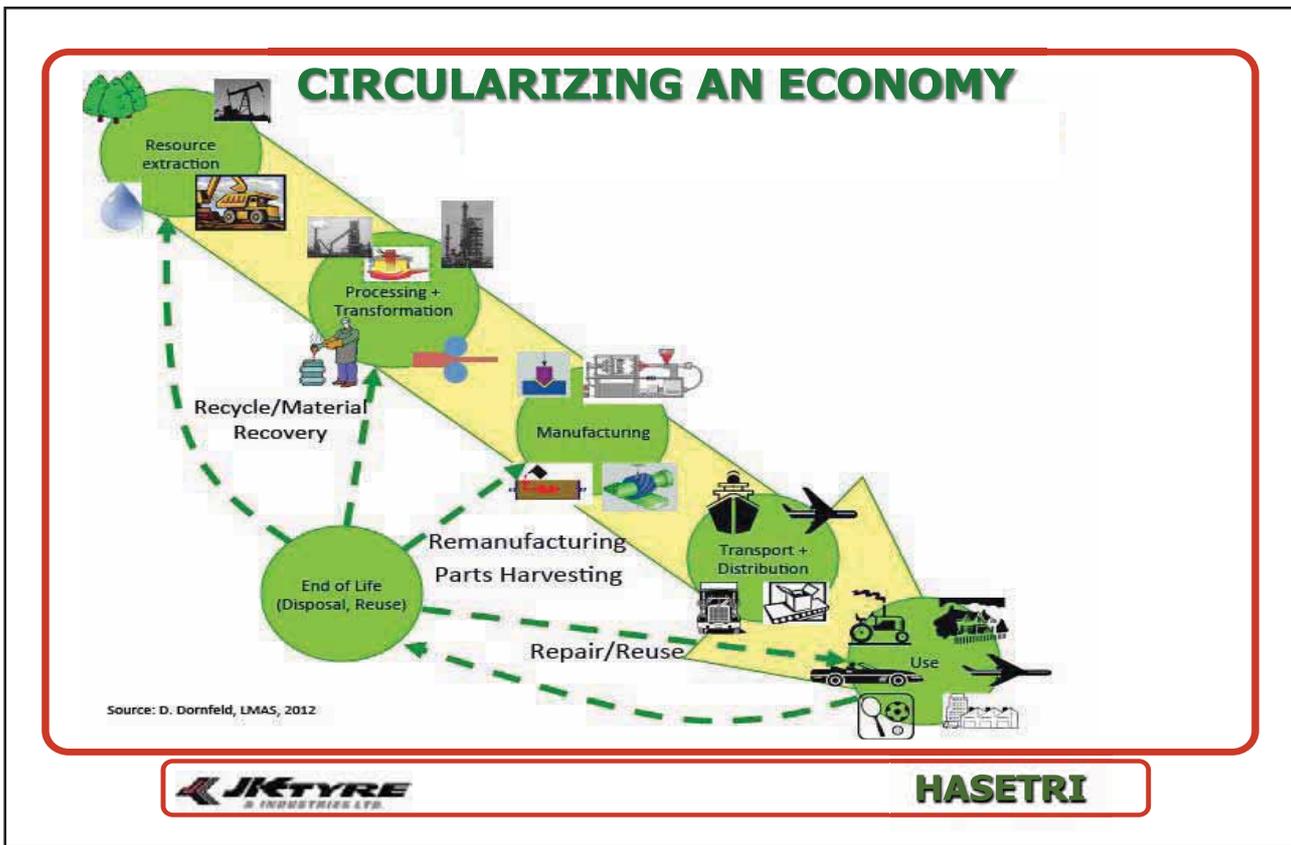
1. **Mixing** - complete change in mixing concept, continuous instead of batch
2. **Extrusion** - No large tread and sidewall extruder lines, These lines including the cooling racks will be replaced by strip winders
3. **Calendering** - No steel cord calenders and calender trains. Steel cord will still be used, but mainly with Steelasticycle belt and ply production lines and/or moving to Aramid materials.
4. **Innerliner calenders** - They are all being replaced by extrusion roller die and thermoplastic foils replacing innerliner.
5. **Bead winders** - In the future carbon beads will replace steel beads and/or hard rubber mixed with materials like Aramid will become the contact between the wheel and the tire with a different design of apexing and flipping.
6. **Curing** - No high-pressure, hot water systems for curing and completely different presses and bladders (Steam/Hot Water → Steam/Nitrogen)
7. **Mold cleaning**. New plants will not replace molds in presses and cleaning will be done with dry ice and laser.

HASETRI

FUTURE RUBBER PRODUCT MANUFACTURING PLANT

1. The scarcity and price of land.
2. The need to be in a strategic location to reduce transportation costs and shipping.
3. The need to specialize in a certain type of tire rather than multi-types and sizes as in the past.
4. Efficient logistics for handling.
5. The increased use of outsourcing of critical components particularly compounds.

HASETRI



GREEN ECONOMY - TECHNOLOGY CHALLENGES

8 - Optimization of end-of-life system

- Reuse of product
- Re-mfg./refurbishing
- Recycling of materials
- Clean incineration

7 - Optimization of initial life time

- Reliability and durability
- Easy maintenance and repair
- Modular product structure
- Classic design
- User taking care of product

6 - Reduction of the environmental impact in the user stage

- Low energy consumption
- Clean energy source
- Few consumables needed during use
- Clean consumables during use
- No energy/auxiliary material use

1 - New Concept Development

- Dematerialisation
- Shared used of the product
- Integration of functions
- Functional optimisation of products & components

2 - Selection of low impact materials

- Non-hazardous materials
- Non-exhaustable materials
- Low energy content materials
- Recyclable materials

3 - Reduction of material

- Reduction in weight
- Reduction in volume

4 - Optimization of production techniques

- Fewer production processes
- Low/clean energy consumption
- Low generation of waste
- Few/clean production consumables

5 - Efficient distribution system

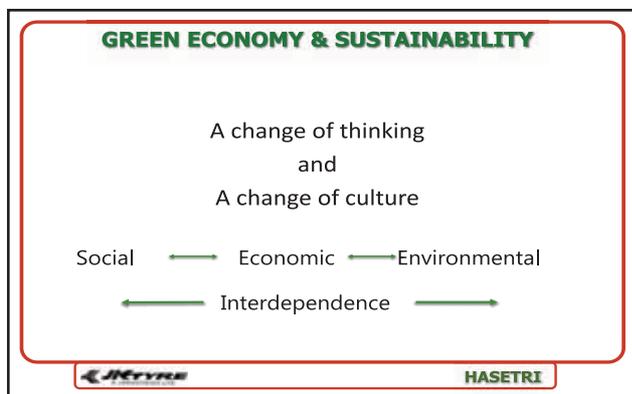
- Less/clean packaging
- Efficient transport mode
- Efficient logistics

GREEN ECONOMY THRUST AREA - INDIAN RUBBER INDUSTRY

- Higher productivity on a sustained level (labour productivity, mobility, equipment, management process, energy, cost optimization)
- Quality (Management System and Practices)
- Cost and Utilisation of funds i.e. increase the efficiency of capital (utilisation of capital, raw material holding, through put time, finished inventory and receivables)
- Technology and R&D for Reengineering and Innovation (technology upgradation)
- Adherence to environmental concern/issues (sustainability)
- Export focus
- Product specialisation (cluster approach)
- Skill development and ease of education

GREEN ECONOMY – RUBBER INDUSTRY ALTERNATIVE MATERIAL TO REDUCE BURDEN ON ENVIRONMENT

Synthetic Rubber	➔	Natural rubber/modified NR/ Functionalised SR/Biobased SR / recycled material
Petroleum derived Carbon	➔	Natural Gas/Coal derived Carbon Black /Pptd. Silica / Natural Silica/ Nano fillers
Synthetic polyester/Nylon Fiber/Steel Tyre Cord	➔	Recycled rayon fiber/Vegetable fiber / Ultra High Tensile Steel Thinner Corrosion resistance Tyre cord
Petroleum derived oil/ Processing aid	➔	Vegetable oil/ Natural processing aid / Low PAH Oil / REACH Compliance
Rubber Chemicals	➔	REACH compliance



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Kia Motors' first car in India to roll out next year

●Kia Motors, the South Korean automotive company, recently announced its plans to invest about \$2 billion in the greenfield plant that is coming up in Anantapur district of Andhra Pradesh.

The first phase of the plant, which will see an investment of \$1.1 billion, will begin commercial production with the rollout of SP Concept, SUV showcased at the New Delhi Auto



Kia Motors CEO Han-Woo Park and AP Chief Minister Chandrababu Naidu at the infrastructure framework inaugural ceremony at Penukonda in Anantapur on February 22

Show. The company expects to roll out the cars with maximum localisation.

Installation ceremony

The Korean company, which has 14 factories, and has global sales of over \$45 billion, held a framework installation ceremony for its first Indian manufacturing facility in Anantapur.

The company's new plant covers 23 million sq ft (213.7 hectares) and, once fully operational, will provide approximately 3,000 jobs and produce 300,000 cars annually.

Currently one month ahead of schedule, the construction process is planned for completion by the end of the first quarter of next year, with vehicle production earmarked to begin later in 2019.

"I believe Kia will bring amazing change and hope to Andhra Pradesh and entire India. We are here to build more than just great cars. We aim to set a new standard of automotive lifestyle experience by providing Indian consumers with world-class

products and service, but also deeply engaging with the Indian people and giving back to the community whenever possible," Han-Woo Park, President and CEO of Kia Motors Corporation, said.

Global presence

The 75-year-old company, and the eighth largest automotive company with sales close to 3 million units a year, expects to cover the entire global presence with the India factory. It is already present with plants in the US, China, Europe and Mexico. "Our sister concern Hyundai Motors India Ltd, which began its India journey in 1996, has invested about \$3.4 billion in India," he said.

The company plans to roll out a small car and a sedan after the SUV production.

Job potential

Kia Motors India will soon start recruiting 3,000 employees needed to operate the plant. The company is currently in discussions with the Andhra Pradesh

government to start a joint training programme to develop the necessary manufacturing skills among local residents.

Mercedes-Benz looks to sustain double-digit growth

●Mercedes-Benz, the top luxury-car brand in India, expects to sustain double-digit growth in 2018, provided there aren't any more policy disruptions during the year to add to the budget proposal to increase the duty on imported kits and components. To build on the momentum from 2017, when its India sales rose 16% to 15,330 units, Mercedes-Benz will be launching 10 products this year. "We have a certain plan in place. If we don't see many interruptions, then we would like to achieve a similar kind of growth seen last year, which will help us retain our No. 1 position," India managing director Roland Folger said. In 2017, the overall luxury-car market, too, grew in double digits to an all-time high of about 40,000 units, after a fall in sales the previous year. Folger said the numbers were misleading. The 2017 sales might look very good, but that growth was on the back of 2016 "which was a deplorably bad year," he said. "It is not as if we should pat our back (for the 2017 performance) and say 'good job done'. It was just catching up on what we had lost out in 2016," he added. Now a natural recovery is expected and there is pent-up

Lamborghini expects India sales to outpace rest of the world

●Supercar maker and auto mobile giant Lamborghini expects its India sales to outpace the rest of the world.

The Italian company, which sold 23 super sports cars in India in 2017, is hoping to top the 100 mark in the coming two-three years. Globally, it expects sales to expand just over two-fold to 7,500 units in the same period.

Chairman Stefano Domenicali predicted the new Urus to drive sales of super SUVs at a disproportionately quick pace.

"The launch of the Urus has helped us open up to new set of younger buyers," Domenicali said, speaking on the sidelines of the Geneva International Motor show.

"Globally over 60% of our Urus buyers have bought into the brand for the first time, but the share in India is much higher (75-80%), the SUV has opened up access to more number of people in countries like India," he added.

While the company expects the Urus, which was launched late 2017, to bring in incremental volume in India, Domenicali is confident of sustaining the volumes of supercars at around 25 units a year. It intends to launch facelifts and lifecycle upgrades of existing cars like Aventador, Gallardo and Huracan in the coming years.

demand, he stated. Mercedes-Benz has now got down to monthly planning, instead of making quarterly, half-yearly or annual plans as seen in the past. The Indian luxury-car market has been hit badly by several factors in recent years, from a ban on large diesel vehicles in New Delhi to demonetisation, chopping and changing of GST rates and the recent hike in the duty of completely knocked down kits that companies like Mercedes-Benz import. Folger said Mercedes-Benz will continue to ensure that its product portfolio remains robust, with constant refreshes, facelifts and addition of new models despite the higher duty on CKD units. "We are going by about 10 new models that we will be bringing this year. It not only drives volume per say, it also helps us to stay in contact with the customers," he said. This year, the company has already launched the new Maybach and the S Class. It will now add an all-terrain vehicle from the E Class range during the course of the year, as well as a few more AMG models and the new C Class by the end of 2018.

Rolls-Royce rolls out 8th generation Phantom, starting at Rs 9.5 crore

●Vasanthi Bhupathi, MD, Rolls-Royce Motor Cars Chennai, and Paul Harris, Asia Pacific Regional Director, were seen at the launch of new Phantom in Chennai. It was launched for the Indian market at a starting price (standard wheelbase) of Rs 9.5 crore (excluding taxes).

The extended wheelbase of Phantom will start at Rs 1.35 crore, inclusive of a four-year service package, regional warranty and 24-hour roadside support.

Rolls-Royce's models, which are sold in India, include Phantom, Ghost, Wraith and Dawn. The new Phantom is the most expensive car of the company in the country as of now. These cars attract a high import duty and GST.

"The new Phantom is 10-12% more expensive, 10% quieter (at 100 km/hour) and 30% sturdier than its predecessor," said Paul Harris, Asia

Pacific Regional Director, Rolls-Royce Motor Cars, during the launch.

The 8th generation new Phantom is based on the company's all-new aluminium spaceframe structure, described as Architecture of

Luxury by Rolls-Royce, the British super premium car brand now owned by BMW. It is the first of a new generation of Rolls-Royces to be created based on the new platform, which offers lightness, increased stiffness, efficient production of standard and extended wheelbase bodies and robust exterior surface design.

The super premium car is powered by an all-new by 6.75 litre twin-turbocharged V12 petrol engine that will deliver a maximum power of 563 HP and 900 Nm of torque from just 1700 rpm, capable of achieving 0-100 km/h acceleration in just 5.4 seconds with the help of seamless 8-speed and satellite-aided transmission.

Rolls-Royce has started to attract a new range of entrepreneurs and young professionals into the brand's fold in India. While the global average age of Rolls-Royce customers is 39 years, it is little lower in India.

"We see a good number of people in their 20s and 30s buying Rolls-Royce though this ultra-luxury car is used by their families," said Vasanthi Bhupathi, Managing Director, Rolls-Royce Motor Cars Chennai (Kun Exclusive).

Tractor industry on course to register highest-ever domestic sales in FY-18

●Encouraged by the continuing momentum in sales, the tractor industry hopes to end the current fiscal with highest-ever domestic volumes close to 6.8 lakh units.



Rolls-Royce Motor Cars

The industry's previous highest domestic number was in 2013-14 when domestic sales stood at 6.34 lakh units.

Tractor companies and industry analysts project a growth rate of 17-18% for the current fiscal. During the last fiscal, the industry registered domestic sales of 5.8 lakh units.

Tractor makers have said that while the industry's Q3 performance was better than expected, the sales momentum continued in January, and hence, they expect Q4 to be equally good. Leading players such as Mahindra & Mahindra, Escorts and Sonalika Tractors reported more than 40% growth in their January domestic volumes.

During the first 10-month period of this fiscal, the domestic tractor volumes are reported to have grown by about 18%. During this period, Mahindra and Escorts reported a growth of 18% and 17.5%, respectively.

"In Q3, the tractor industry has performed better than what we had expected. When we started the quarter, we were thinking that it will be flat to may be just marginally positive. But, the industry ended with 8% growth. This is obviously on the basis of very good production of kharif crop, positive sentiment in rural area and government's thrust in agricultural and rural segments," Pawan Goenka, Managing Director, Mahindra & Mahindra said.

"January has seen a 38% increase (domestic and export) and the industry growth will be between 15% and 18% in Q4. This year, we expect the industry to end with highest-ever volume," he added.

Escorts expects domestic tractor volumes to touch 6.80 lakh units in the current fiscal.

T Karthikeyan, Senior Analyst – Corporates, India Ratings & Research, said domestic tractor sales grew by 17% at 6.59 lakh units during April 2017-January 2018 and the growth was on account of two consecutive years of normal-to-good monsoons, improved crop production, easy availability of credit to farmers and increasing use of tractors in non-agricultural sectors.

Rating agency Crisil has projected that the tractor industry will achieve domestic sales of 6.5 lakh units in FY-18 and attributed the volume boom to the prospects of a successive normal monsoon, declining interest rates and farm loan waivers by states.

Auto companies unveil 50 electric and hybrid vehicles

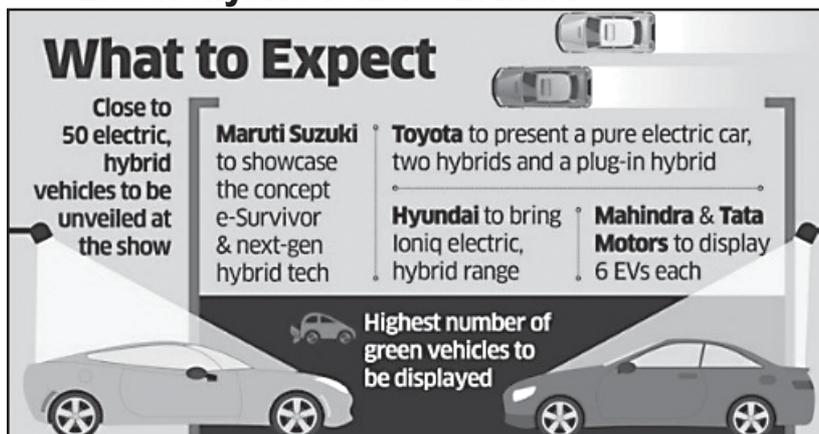
● Nearly 50 electric and hybrid vehicles were unveiled at Auto Expo 2018, which was held from Feb 9-14 in Greater Noida, in what was an affirmation of automakers' commitment to India's ambitious goal on electric mobility.

Most of these vehicles were working models that were two or three years away from making their way on to the road, unlike other auto shows where electric vehicles are largely seen in concept forms. These products would also be relevant to India, with a majority of them positioned in the affordable segment.

While they were sceptic initially, the automobile industry has now taken the government's direction on electric-mobility seriously — that a majority of new vehicles on the roads should be electric-powered by 2030 — to reduce vehicular pollution and cut the bill on crude oil imports.

Automakers from Maruti Suzuki, Hyundai Motor to Mahindra & Mahindra, Tata Motors, Toyota Motor, Renault, BMW and Mercedes-Benz showcased electric-automotive technologies at the Auto Expo. Electric mobility specialists like Sweden's Uniti and two-wheeler makers such as Honda Motorcycle & Scooter also brought their products to the exposition.

Electric hybrid vehicles in India



Maruti Suzuki, which is working on a 2020 launch of its first affordable electric car, showcased the futuristic concept e-Survivor at the show. It also displayed a working model of its next-generation hybrid technology, which powers the Suzuki Solio in Japan.

"We have to improve electrification of vehicles, not only the pure electric vehicles but also other alternatives (hybrids)... We have to try to improve the fuel efficiency of vehicles and reduce pollution," Maruti Suzuki managing director Kenichi Ayukawa said. "What is of foremost importance is it has to be acceptable to our customers."

The company has commenced market surveys and is engaging with partners to set up an ecosystem for electric vehicles in India, he said.

Hyundai Motor's Indian unit displayed vehicles from the Ioniq range — both pure electric and hybrid vehicles. The Korean company is likely to introduce an electric vehicle in India in 2019, a year ahead of Maruti Suzuki.

"We want to test the acceptance of electric vehicles in the Indian market," Hyundai Motor India managing director YK Koo said. "We will start with imports of completely knocked down units in 2019. We will look at local manufacturing as the market matures."

Home-grown Mahindra & Mahindra and Tata Motors showcased half-a-dozen electric vehicles each at the expo. Toyota Kirloskar Motors displayed a pure electric vehicle, two hybrids and two hybrids and a plug-in-hybrid, while Kia brought a pure electric vehicle and two plug-in hybrid vehicles. French carmaker Renault had its Zoe e-Sport on display, while BMW

had the i8 and the i3s while Mercedes-Benz had the concept EQ.

Only Mahindra had showcased EVs in the previous edition of the show in 2016. But this time around, almost all automakers will be bringing such vehicles.

No automobile manufacturer who has a sizeable business can afford to miss out on this wave, said Mahindra managing director Pawan Goenka.

"Vehicles showcased at the Auto Expo were right for India and different from those for the rest of the world," he added.

The Western world talks about the range of 300 kms and above, which is not relevant for India, Goenka said. He stated that the vehicle range can be extended, but that will make them expensive. What makes it extremely challenging to sell electric cars in India is the price. Fleet and government purchases are likely to gain pace before personal buyers come to market, he added.

"Electric vehicles are inevitable," said Renault India managing director Sumit Sawhney. "Once the policy roadmap is in place, we can get an estimate of volumes and work on bringing an electric car quickly to India."

Globally, the Renault-Nissan alliance has plans to introduce a dozen EVs by 2022. Work is also on for an electric variant of the small car Kwid, which will first be introduced in China.

Among others, Sweden's Uniti has formed a strategic alliance with the Bird Group for its India entry.

Bird Group executive director Ankur Bhatia said they displayed a two-seater electric car at the exhibition to gauge consumer sentiment. "We plan to bring

Startup Rush at Auto Expo 2018

This year's edition of the Auto Expo, which opens on Friday to the public, is expected to see a record participation of start-ups, reflecting the increasing global focus on electric vehicles. More than a 100 exhibitors are talking part this year. Sharmistha Mukherjee has the details of the electric show...

Auto Expo 2018 to be on Feb 9 in Delhi-NCR

2016 | 2018

Vehicles on display	108	100
Vehicles exhibitors	65	52
Total no. of exhibitors	88	101

BIG ATTENDEES

- Talishio Pacheco CEO, Honda Motor Company
- Ravi Viro Ford President, India
- Takafuma Suzuki Chief Engineer, Suzuki Motor Corporation
- Pratik Keshavji VP, Lotus & Chairman, Mahindra
- Renee Wiltonsenpeter Mini Head of Sales, South Asia, Europe Region

NEARLY A DOZEN START-UPS, THE HIGHEST SO FAR, WILL PARTICIPATE THIS YEAR. IN 2016, JUST TWO VEHICLE START-UP COMPANIES—REVVER & BEAST BIRD MOTORS—CAME TO THE SHOW

Notable debutants include Aia Motors

Missing In Action
AUTO MANUFACTURERS WHO DID NOT PARTICIPATE THIS YEAR INCLUDE
 FOREIGN: *VOLVO GROUP *FIAT *MAZDA *DAEWOO
 DOMESTIC: *BAIJAJ AUTO *EXETER MOTORS

MARKETSTATS

2016	2018
6.01 lakh	7 lakh

EXPO BEING HELD AT A TIME WHEN DOMESTIC MARKET IS UPHEAV

STATE OF THE INDIAN MARKET

8.85%	12.43%	8.43%
Growth in passenger vehicles sold in 2017	Sales growth of commercial vehicles in 2017	Sales growth of two-wheelers in 2017

Lyft In New Agreement for Driverless Car

● The ride-hailing service Lyft has entered into a new partnership which aims to make its autonomous vehicle technology available to any car manufacturer. The US-headquartered company has reached a deal with Magna International, a Canadian auto parts maker which is one of the world's biggest auto suppliers, to jointly develop and manufacture self-driving car systems. They will work together to introduce autonomous vehicles to Lyft's ride-hailing network, but Magna will be able to sell the driverless-car technology to any customer, as well as to other technology companies.

Magna plans to invest \$200 million in Lyft's latest fund-raising round, lifting the ride-hailing service's valuation to \$11.7 billion.

Lyft has opened its ride-hailing network to other companies working on self-driving cars, including Ford and General Motors, a major Lyft investor, in order to get real-world experience by picking up passengers and collecting data. Meanwhile, the company's main rival, Uber, has been mainly developing self-driving technology on its own. Waymo, a Lyft partner, is introducing its own ride-hailing service using autonomous Chrysler Pacifica minivans equipped with Waymo's own hardware and software.

Magna already supplies a wide range of driver-assist technology to its customers, including a system for staying in lanes, automatic emergency braking and rearview cameras, in addition to building entire vehicles for BMW, Mercedes-Benz and Jaguar. The company has already been working on hardware for self-driving cars, including radar and lidar (light detection and ranging), which helps the vehicle see the world around them.

"The question isn't whether autonomous vehicles are going to happen but how long the transition is," said Swamy Kotagiri, Chief Technology Officer at Magna. Under the partnership, Lyft would take the lead in developing self-driving car technology while Magna would oversee manufacturing of the systems. Development costs and the resulting intellectual property will be shared.

on road a product customised to market requirements here in the next two-three years," he said.

Companies like Aftok Motors, Desmoto Electric, Goldstone Infratech, Greenrick, Hero Electric and Tuk Factory also displayed their prowess in the field of electric vehicles at Auto Expo 2018.

M&M to invest Rs 500 crore (\$80 million) to set up EV unit in Maharashtra

● Mahindra & Mahindra (M&M) has proposed investment of Rs 500 crore for electric vehicle (EV) production in Maharashtra, just a week after the state Cabinet came up with a policy to promote such investment.

The company will soon zero in on the manufacturing site either at Nashik or Igatpuri.

A senior state government official confirmed that M&M was so far the first automobile company to communicate its proposal for investment in the EV space since the policy for the production and sale of

the battery-charged vehicles, or EVs, was cleared by the state Cabinet on February 6.

The state industries department official stated M&M has said the proposed Rs 500 crore investment in Maharashtra will be in addition to the Rs 600 crore the company has invested in its EV venture.

"The company has informed that it proposes to increase EV capacity from the present level of 200 units to 1,000 units by the end of 2018 and to 5,000 by 2020," the official said.

As per the state's EV policy, the incentive to the first one lakh EVs (70,000 two-wheelers, 20,000 three-wheelers and 10,000 four-wheelers) will be provided for a period of five years. Private owners will have to pay 15% less than the total cost, with a maximum limit of Rs 5,000 for two-wheelers, Rs 12,000 for three-wheelers and Rs 1 lakh for cars. They will get this amount in their bank account within three months of purchase.

EVs will be exempt from road tax and registration fees. They will also be charged as per the residential rate.





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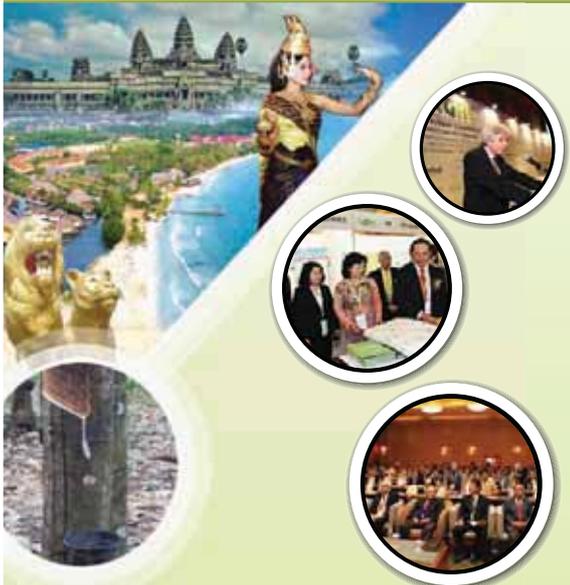


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Exhibit Scale

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Forex Reserves

●At \$421 billion India's forex cover is 80% of external debt and less than 11 months of imports. This is down from 138% of debt and 14.5 months of imports before the global financial crisis of 2008.

Airbus sees demand for 1,750 new aircraft in the next 20 years

●European aerospace major Airbus has predicted India will require 1,750 new passenger and cargo aircraft over the next 20 years to meet the exponential growth in both passenger and freight traffic. For the demand growth over the next 20 years, Airbus has said India will need 1,320 new single aisle aircraft and 430 wide-body aircraft with an estimated book value of \$255 billion.

According to Airbus executives, much of the air traffic growth is expected to be driven by the fast expanding economy, rising wealth and urbanisation and ambitious Government-backed regional connectivity for air travel.

By 2036, Indians will each make four times as many flights as today. As a result, passenger traffic serving the Indian market is forecast to grow 8.1% per year over the next 20 years, Joost van der Heijden, Vice-President Marketing, Asia and North America, said.

Outlining the forecast and business prospects, he stated, "The domestic India traffic is expected to grow five-and-a-half times over the next 20 years during 2017-2036, reaching the same level as US domestic traffic today, thereby, making it (India) one of the



Joost Van der Heijden (left) Vice-President Marketing, Asia and North America, Airbus, and Srinivasan Dwarkanath, President, Airbus Commercial Aircraft, India, at Wings India 2018 in Hyderabad

world's fastest growing (aviation) markets."

"Make in India is at the heart of our strategy. Airbus has the largest footprint in India of any international aircraft manufacturer, nationwide across all aircraft programmes," Srinivasan Dwarkanath, President, Airbus Commercial Aircraft, India, said. "Our sourcing volume has grown 16 times over the past 10 years. It is currently at more than \$550 million annually and we have done more than \$1.5 billion (of sourcing) in the last three years," he said.

Boeing quadruples sourcing from India to over \$1 billion

●Aerospace major Boeing Company expects to further consolidate its presence in India, including its sourcing business, as it steps up its



Leanne Caret, Executive Vice-President at Boeing

engagement with the Tatas and other suppliers.

Leanne Caret, Boeing's Executive Vice-President and President and Chief Executive Officer of its Defence, Space & Security unit, said: "We've invested tremendously in India because the future here is extremely bright. We've quadrupled our sourcing from India in the past two years to more than \$1 billion."

"We are investing in talent, training and skills development to get frontline factory workers and technicians ready for advanced aerospace manufacturing and ready to deliver world-class quality around the globe. The company is expanding its partnerships in India beyond products and services to build a diverse talent pool for future growth," she said.

Speaking at the Tata Boeing Aerospace facility at Adibatla, about 45 km from here, where Apache helicopter fuselages and aero structures will be made, Caret said, "I am thrilled to be here as we celebrate this next step, not only with a ribbon-cutting for this beautiful facility, but with the continued, on-going advancement of aerospace manufacturing in India."

Spends in India burn \$3bn hole for Amazon in 2017

●Even though Amazon stocks rallied past its record fourth quarter results with \$1 billion of profits, the ecommerce giant ended 2017 with an international loss of \$3 billion — largely attributed to its India spends. For the same period a year ago, Amazon had reported losses of about just over \$1 billion.

According to the latest results filed by the Seattle-based company, it

India pulls ahead of China with 7.2% Q3 GDP growth

●India's GDP grew 7.2% in the third quarter, surpassing expectations and wresting back the mantle of the fastest-growing economy from China on the back of a rebound in industrial activity, especially manufacturing and construction, and an expansion in agriculture. China grew 6.8% in the quarter and is expected to grow at that pace for the entire year.

Experts also pointed to the growth in gross fixed capital formation (GFCF) as a sign that investment, which has been a laggard, may be resurgent, although the slowing of private consumption was a concern. The numbers indicated the economy had shaken off the effects of demonetisation and came to terms with the goods and services tax (GST).

Mumbai is world's 12th richest city

● India's financial capital Mumbai, with a total wealth of \$950 billion, is among the top 15 wealthiest cities globally, while New York tops the list, says a report.

According to a report by New World Wealth, the economic hub of India is the 12th wealthiest city, followed by Toronto with a total wealth of \$944 billion, Frankfurt (\$912 billion) and Paris (\$860 billion).

Total wealth refers to the private wealth held by all the individuals living in each city. It includes all their assets (property, cash, equities and business interests) less any liabilities. Government funds are excluded from the figures. Mumbai also features among the top 10 cities in terms of the population of billionaires. The city is home to 28 billionaires, individuals with \$1 billion or more in net assets.

Regarding Mumbai, the report said, "Total wealth held in the city amounts to \$950 billion. Mumbai is the economic hub of India. It is also home to the Bombay Stock Exchange, the 12th largest stock exchange in the world. Major industries in the city



Mumbai is expected to be the fastest-growing city (in terms of wealth growth) over the next 10 years

include financial services, real estate and media."

Going forward, Mumbai is expected to be the fastest-growing city (in terms of wealth growth over the next 10 years), it added.

The list of 15 wealthiest cities was topped by New York with a total wealth of \$3 trillion.

London ranked second in the list with \$2.7 trillion, followed by Tokyo (\$2.5 trillion), and San Francisco Bay area (\$2.3 trillion).

reported a \$919-million loss in the first quarter of 2017 in its international business, which is marginally less than the third quarter loss of Amazon at \$936 million.

As reported earlier, due to the growing intensity of its local battle here with homegrown rival Flipkart, Amazon had already incurred losses to the tune of \$2.1 billion for its global business.

The company has been aggressively

investing in India to build infrastructure and bring popular global products at discounted rates.

Amazon has introduced Prime and Alexa at promotional rates and is in final stages of launching Prime Music and its audio book business Audible in the country. "India continues to be a good story for us. In fact, more Prime members joined India's Prime programme in

the first year than we've seen in any other country in the history of our world," said Brian Olsavsky, CFO, Amazon.

RATES OF INDIAN RUPEE

Currency	27.03.18	31.01.18	22.12.17
1 US \$	0.01539	0.01572	64.0458
1 Euro	0.01241	0.01264	75.9030
1 Pound	0.01091	0.01107	85.7284

"2017 is the inflection year where we have seen that not just cricket but other sports have also seen a massive growth. So while cricket continues to grow, on-ground sponsorship for football grew 64%. Today, we have 10+ leagues, 365+ days of live sports, 300+ onground and team sponsorship options. This is only going to grow from here on," says Vinit Kamik, business head, ESP Properties.



INDIAN SPORTS SPONSORSHIP INDUSTRY			TEAM SPONSORSHIP 2017-2018	
	2017 (₹ cr)	2016 (₹ cr)	2017	2018
Total	2,300	6,400	14	14
Media Spend	4,065	3,511	16	16
Ground Sponsorship	1,337	1,165	15	15
Team Sponsorship	819	700	17	17
Franchise Sponsorship	684	548	25	25
Athlete Sponsorship	395	476	-17*	-17*

CRICKET	FOOTBALL	OTHER SPORTS
₹518 cr	₹429 cr	₹172 cr
Growth: 21%	Growth: 51%	Growth: -5%



Salary of Senior Executive (Non Promoters) (FY17)

Company	Executive	Designation	Remuneration (₹ Cr)	YoY Change (%)	Median to average employee
Larsen & Toubro	A M Naik	Group Chairman	78.91	19.29	1102.00
Dr Lal PathLabs	Om Prakash Manchanda	Whole Time Director & CEO	33.20	12.00	NA
TCS	N Chandrasekaran	Chairman	30.16	17.55	514.00
Larsen & Toubro	S N Subrahmanyam	Managing Director & CEO	23.71	7.17	330.00
Tata Motors	Guenter Butschek	Managing Director & CEO	22.55	NA	338.00
ITC	Yogesh Chander Deveshwar	Chairman	21.17	58.00	508.00
Torrent Power	Markand Bhattacharya	Whole-time Director	21.00	-31.00	587.00
Hindalco Inds.	D Bhatnagar	Vice Chairman	19.77	NA	NA
Hindalco Inds.	Satish Pai	Managing Director	17.51	25.43	349.00
Tata Comm	Vinod Kumar	Managing Director & Group CEO	16.87	17.60	48.46
Godrej Consumer	Vivek Gambhir	Managing Director & CEO	15.95	-18.00	377.00
DLF	Mohit Gujral	Whole Time Director & CEO	15.20	1.00	NA
Larsen & Toubro	R Shankar Ramam	Managing Director & CEO	14.35	4.83	200.00
P & G Hygiene	Al Rajwani	Managing Director	14.30	3.35	94.56
Hind. Unilever	Sanjiv Mehta	Managing Director & CEO	14.20	0.00	138.44

Remuneration to Senior Executive (Promoters) (FY17)

Company	Executive	Designation	Remuneration (₹ Cr)
Sun TV Network	Kalanithi Maran	Executive Chairman	77.93
Sun TV Network	Kavery Kalanithi	Executive Director	77.93
Hero Motocorp	Pawan Munjal	CMD & CEO	59.66
Lupin	D B Gupta	Chairman	47.66
Divi's Lab	Murali K Divi	Chairman & MD	46.47
Apollo Tyres	Onkar S Kamwar	Chairman & MD	45.74
Shree Cement	H M Bangur	Managing Director	38.22
Amarar Raja Batt.	Jayadev Galia	Vice Chairman & MD	38.06
Balkrishna Inds	Arvind Poddar	Chairman & MD	36.10
Apollo Tyres	Neeraj Kamwar	Vice Chairman & MD	30.89
Bharti Airtel	Sunil B Mittal	Chairman	30.14
Balkrishna Inds	Rajiv Poddar	Joint Managing Director	29.21
Alembic Pharma	Chirayu R Amin	Chairman, MD & CEO	25.92
Bajaj Auto	Rajiv Bajaj	Managing Director	25.59
CESC	Sanjiv Goenka	Chairman	23.47





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Comments from last event, Sept 2016 in Abidjan

"Very good opportunity to meet the professional of palm oil activity" - PALMCI

"This has been a good experience and we have been able to make some good networking" - Milindia Ltd

"Great experience with the opportunity to learn from the experiences/challenges and solutions of others" - Benso Oil Palm Plantation Limited

"Very instructive and fruitful discussions" - Sogescol FR s.a.

"It was very interesting to meet different players of the Oil Palm Chain"

- Société des Caoutchoucs de Grand-Béréby (SOGB)

"Instructive and eye-opening" - Cikar SA

"Excellent opportunity for networking" - Cameroon Development Corporation (CDC)

"Good moment to share experience and contacts and also ideas" - Yara Cote d'Ivoire S.A.

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Palm oil producers - from CEOs, MDs to Plantation Advisors, Agronomists, Scientific Officers, R&D Dept Heads to Sustainability Directors, Millers, Palm Oil Traders, Independent Agronomy Advisors, Plantation Consultants, IT Solution Providers, Milling Technology, Equipment Suppliers, Fertiliser Companies, Palm Oil Research Institutes, Agriculture Depts, Researchers, Crop Science and Agri Biotech Cos

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- Palm & Rubber plantation developments & investments updates
- Downstream opportunities and adding value to palm and rubber
- Availability of financing and development programs to progress the industry
- RSPO certification & implementation progress in Africa
- New Promising Clones with High Yield Potentials
- Brand owners perspective on sourcing challenges

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- Tropical Rubber Cote d'Ivoire
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China sets 2018 GDP target at 'around 6.5%'

●China set its 2018 economic growth target at "around 6.5%" on March 5, in line with its expectations but lower than the 6.9% increase registered last year.

The target, which is the same as last year, was presented by Premier Li Keqiang in a report for March 5's opening session of the annual National People's Congress, the rubber-stamp parliament.

The figure, along with an inflation target of 3%, is "fitting given the fact that China's economy is transitioning from a phase of rapid growth to a stage of high-quality development" and will allow the country to "achieve relatively full employment", the report said.

China beat forecasts in 2017 as the world's second-largest economy. It grew by 6.9%, picking up steam for the first time since 2010 despite a battle against massive debt and polluting factories.

Beijing has largely relied on debt-fuelled investment and exports to drive its tremendous economic growth of the past four decades but it is now seeking to move to more sustainable consumption-based growth.

In its report, the country vowed to "cut overcapacity, reduce excess inventory, deleverage, lower costs and strengthen areas of weakness".

China will cut its steel capacity by 30 million tonnes and coal by 150 million tonnes in 2018, according to the report.

The country is also facing pressure to prevent a credit crisis, with the local government's debt growing from 7.5% last year to \$2.56 trillion, according to figures in January.

"China's economics and financial risks are on the whole manageable," the report said.

But it pledged to "see that internal risk controls are tightened in financial institutions," adding that Beijing plans to crack down on all kinds of financial shenanigans that have seen some of the country's largest corporations teetering on the brink of collapse in recent months.

"There will be a serious crackdown on activities that violate the law like illegal fundraising and financial fraud," it said.

US will be world's largest oil producer by 2023: IEA

●US shale oil output is set to surge over the next five years stealing market share from Opec producers and moving the country, once the world's top oil importer, closer to self sufficiency, the International Energy Agency (IEA) said on March 6.

A landmark deal in 2017 between Opec and other oil producers, including Russia, to curb output and reduce the global oversupply, improved the outlook for other producers as oil prices rose sharply throughout the year, the IEA said.

As a result, US oil output has resumed sharp growth over the past year and is expected to rise by 2.7 million barrels per day (bpd) to 12.1 million bpd by 2023, as growth from shale fields more than offsets declines in conventional supply. Natural gas liquids will add another 1 million bpd to reach 4.7 million bpd by 2023.

With total US liquids production set to reach nearly 17 million bpd in 2023, up from 13.2 million in 2017, the United States will be by far the world's top oil liquids producer. "The United States is set to put its stamp on global oil markets for the next five years," Fatih Birol, the IEA's executive director, said in a medium-term market outlook.

Oil production growth from the United States, Brazil, Canada and Norway will more than meet global oil demand growth through 2020, the IEA said, adding that more investment would be needed to boost the output after that.

The non-opec production is set to rise by 5.2 million bpd by 2023 to 63.3 million bpd with the United States alone, accounting for nearly 60% of global supply growth.

Growth will be led by the Permian Basin in Texas and New Mexico, where output is expected to double by 2023. Last year, the IEA forecast US shale production to grow by 1.4 million bpd by 2022 with oil prices of up to \$60 a barrel and by up to 3 million barrels with oil at \$80 a barrel.

By contrast, output from OPEC producers will grow at a much slower pace, the IEA said, adding it expected Venezuelan production declines to accelerate offsetting gains in Iraq.

As a result, OPEC's crude oil capacity will grow by just 750,000 bpd by 2023.

China has moved aggressively over the past year to slam the brakes on companies like private insurer Anbang, which ran up gargantuan debts to fund pricey overseas acquisitions.

Late last month, Beijing took over heavily leveraged Anbang, confirming some analysts' fears about the toxic levels of debt plaguing China's economy.

The looming danger is just one of the many strong headwinds the country faces as it attempts to achieve its GDP target this year.

The country is also facing a potential trade war with the US, which levied tariffs on steel and aluminium imports last week and has been considering taking direct measures against Chinese products.

US President Donald Trump is determined to change the balance of trade between the two countries.

China's trade surplus with the US swelled 10% to \$275.8 billion last year, a record high.

"China doesn't want a trade war with the United States," Zhang Yesui, spokesman for the National People's Congress, told a news conference recently.

"But if the US takes actions that hurt Chinese interests, China will not sit idle," he warned.

Time to delete Facebook: Whatsapp co-founder

●WhatsApp messaging service co-founder has urged users to "delete" Facebook amid a massive data harvesting scandal in which information of 50 million people was leaked allegedly to influence the 2016 US presidential elections. WhatsApp co-founder Brian Acton left Facebook in September last year and joined a foundation.

"It is time. #deletefacebook," CNN quoted Acton as saying. Acton co-founded WhatsApp with Jan Koum that was acquired by Facebook in February 2014 for \$19 billion. Momentum gathered behind the #DeleteFacebook campaign, with several media outlets publishing guidelines to permanently delete your Facebook account, CNN reported.

Academic says he has been made a scapegoat in Facebook data case

●An academic, who developed the app used by Cambridge Analytica to harvest data from millions of Facebook users, recently said that he had no idea his material would be used in Donald

US Fed raises interest rates by 25 bps to 1.75%, signals 2 more hikes in 2018

●Federal Reserve officials, meeting for the first time under Chairman Jerome Powell, raised the benchmark lending rate a quarter-point and forecast a steeper path of hikes in 2019 and 2020, citing an improving economic outlook. Policy makers continued to project a total of three increases this year.

“The economic outlook has strengthened in recent months,” the policy-setting Federal Open Market Committee said in a statement on March 21 in Washington. Officials repeated that they anticipate “further gradual adjustments in the stance of monetary policy.”

The upward revision in their rate path suggests Fed officials are looking through soft first-quarter economic reports and expect a lift this year and next from tax cuts passed by Republicans in December. Financial conditions have tightened since late January as investors look for signs that the central bank might raise rates at a faster pace, while forecasters predict stronger US growth and tight labour markets.

Trump’s 2016 presidential campaign and that he’s being made a scapegoat in the fallout from the affair.

Alexandr Kogan, a psychology professor at Cambridge University, told the BBC that both Facebook and Cambridge Analytica have tried to place the blame on him for violating the social media platform’s terms of service, when he had been assured that everything he did was appropriate. Kogan told the BBC that Cambridge Analytica approached him about the app and, in retrospect, he should have asked the company more questions about how the data would be used.

Tesla Investors said to OK \$2.6 billion award for Musk

●Tesla Inc. shareholders are said to have approved the board’s proposal to grant Chief Executive Officer Elon Musk stock options valued at \$2.6 billion, paving the way for him to reap a big windfall if the electric-car maker maintains its growth trajectory over the next decade.

Investors holding a majority of the shares, which were voted on March 21 in a special meeting in California, supported the performance award, according to a person familiar who asked not to be identified. The board needed majority approval to make the grant, which is the largest one-time compensation deal ever awarded. Tesla had said Musk and his brother Kimbal, who’s a company director, wouldn’t vote their shares.

The award, which won’t rest unless a set of ambitious financial goals are met, has been cheered by some large Tesla investors who said it would help the CEO drive the business forward. Critics, including the two largest proxy advisors, said it was too costly and questioned why Musk, a billionaire who has about half his wealth tied up in company stock, needed more equity to stay motivated.

A Tesla spokesman didn’t immediately respond to a request for comment.

Tesla has said in regulatory filings that Musk’s award could yield him more than \$50 billion if all goals are achieved. Some large investors have said the package aligns with their interests, signaling they don’t mind if Musk gets wealthier, as long as they

also see big returns.

Google pledges \$300 million to clean up false news

●In a move to combat the epidemic of false and unreliable information on the internet, Google is pledging to spend \$300 million over the next three years to support authoritative journalism.

Google’s campaign will be known as the Google News Initiative. Among the initiative’s goals are making it easier for Google users to subscribe to news publications, and giving publishers new tools to create fast-loading mobile pages. The project is Google’s most ambitious attempt yet to improve the quality of information it shows to users at a time when tech companies have come under criticism for letting hoaxes and misinformation bloom on their services.

As part of its efforts, Google is helping to create a Disinfo Lab in partnership with the Harvard Kennedy School’s First Draft, which will attempt to identify false news during critical breaking news situations. Google and YouTube, the video site owned by Google’s parent company, have been criticised for allowing conspiracy theories and unreliable partisan sources to filter to the top of search results for breaking news.

British-Indian steel tycoon Sanjeev Gupta makes bid for French firm

●British-Indian steel tycoon Sanjeev Gupta has made a formal bid to acquire the only French manufacturer of aluminium wheels, AR Industries.

Gupta’s global industrial group, GFG Alliance, submitted the bid to the court administrators for AR Industries (ARI)

at Chateauroux in the Centre-Val de Loire region of France.

If GFG Alliance is successful in its bid, it could help save nearly 400 jobs as part of a plan to rescue and revive ARI, the only French manufacturer of aluminium wheels. The offer was made by GFG Alliance member, Liberty Group, which is also currently in the process of acquiring Aluminium Dunkerque, Europe’s largest aluminium smelter from Rio Tinto as part of a drive to establish France as a major operating hub for the group.

The Dunkerque installation is already a major supplier of raw materials to ARI.

“ARI fits perfectly into our plans for the creation of an integrated value-added business that makes both upstream and downstream operations competitive, sustainable and above all, protects skilled jobs,” said Gupta, who has been on an acquisition spree to bolster his GreenSteel plans to make the steel industry more sustainable.

The Wales-based businessman believes that the European and global car market, which has grown by over 50% in the past decade, is set to grow further in the years ahead with aluminium playing an increasingly prominent role in that market. He characterised the acquisition of ARI, following the purchase of Aluminium Dunkerque, as an “exciting, strategically important and logical step” for the fast-growing business.

US DOLLAR RATES

Currency	27.03.2018	31.01.2018	23.12.2017
1 INR	0.01539	0.01573	0.01561
1 Euro	0.01241	0.01263	1.18629
1 UK £	0.01091	0.01106	1.33617
1 Yen	0.61452	0.582425	0.00882

NATURAL RUBBER (INDIA)

(Rs./Quintal, Ex-Kottayam)

Grade	March 2018	January 2018	December 2017	August 2017
RSS 4	12200	12311	13100	13350
RSS 5	11850	11750	12850	13050
ISNR 20	11100	10850	11450	11600
Latex (60% drc)	8085	8610	9090	8350

(Source: Rubber Board)

NOCIL Limited

(BASIC SELLING PRICE w.e.f. 01-01-2015)
Basic price excluding excise duty/cess, sales tax
and any other charges.

Product	Price (Rs./Kg)
Accelerators	
Pilcure MBT	290.00
Pilcure MBTS	310.00
Pilcure F	330.00
Pilcure CBS	360.00
Pilcure NS	410.00
Pilcure DCBS	480.00
Pilcure MOR	425.00
Pilcure ZDC	200.00
Pilcure TMT	190.00
Pilcure ZMBT	300.00
Pilcure ZDBC	275.00
Pilcure ZBzDC	405.00
Antioxidants/Antidegradants	
Pilflex 13	350.00
Pilnox TDQ	235.00
Pilnox SP**	219.10

Prevulcanisation Inhibitor

Pilgard PVI	415.00
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NOTE:

- 1) All prices except Pilnox SP are basic prices, exclusive of excise duty, education cess.
- 2) Price of Pilnox SP is inclusive of excise duty and education cess.
- 3) Sales tax and other levies will be extra as applicable.

Rubo Chem Industries Pvt. Ltd.

(Price of Rubber Chemicals as on 15-03-2017)

Material	RATE(Rs./KG)
ACCELERATOR TMTD	200.00
ACCELERATOR ZDC	224.00
ACCELERATOR CBS	360.00
ACCELERATOR MBT	250.00
ACCELERATOR MBTS	285.00
ACCELERATOR ZDBC	297.00
ACCELERATOR ZMBT	305.00
ANTIOXIDANT SP	219.00
ANTIOXIDANT TDQ	225.00
ALUMINIUM SILICATE	13.00
BITUMIN	41.00
BONDING AGENTS	ON REQUEST
CALCIUM SILICATE	13.50
CHINA CLAY	6.50
CALCIUM CARBONATE PRECIPITATED	15.00
CALCIUM CARBONATE ACTIVATED	17.00
CRUMB RUBBER-TRC 40	23.00
CARBON BLACK-ORDINARY	40.00
CARBON BLACK-(HAF/GPF/FEF/SRF/ISAF)	ON REQUEST
D.O.P./D.B.P.	ON REQUEST
EBONITE DUST-(BROWN)	55.00 95.00
EBONITE DUST-(BLACK)	32.00
FACTICE - BROWN	99.00
FACTICE - WHITE	90.00
GRAPHITE POWDER	50.00
LIGHT MAGNESIUM CARBONATE	ON REQUEST
LIGHT MAGNESIUM OXIDE	ON REQUEST
PINE TAR - Synthetic	68.00
PARAFFIN WAX	ON REQUEST
PROCESS OIL	ON REQUEST
PETROLEUM JELLY (WHITE)	100.00
PETROLEUM RESIN	86.00
PRECIPITATED SILICA	52.00
RECLAIM RUBBER-BLACK	35.00
SULPHUR	24.00
SYNTHETIC RUBBERS	ON REQUEST
SYN.RED OXIDE	50.00
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STEARIC ACID(GODREJ)	78.00
SILICONE EMULSION	70.00
TALCUM POWDER	10.00
TITANIUM DIOXIDE	ON REQUEST
WHITING POWDER(P&W)	6.50
WOOD ROSIN	108.00/115.00
ZINC HYDROXIDE	20.00
ZINC STEARATE	65.00
ZINC OXIDE-(RUBBER GRADE)	125.00
ZINC OXIDE (WHITE SEAL)	199.00

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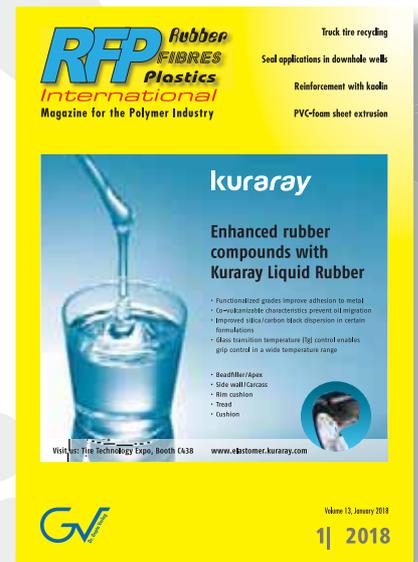


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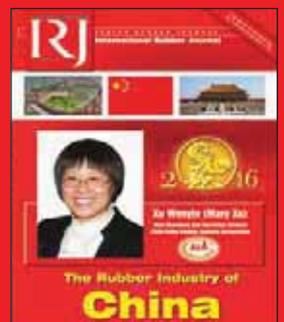
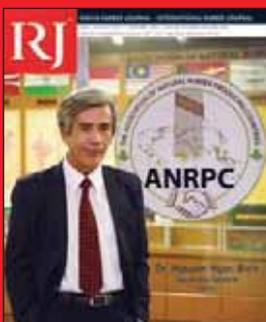
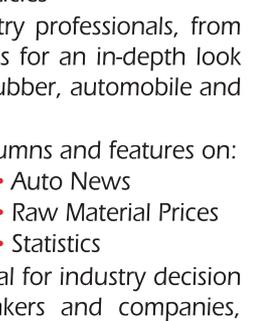
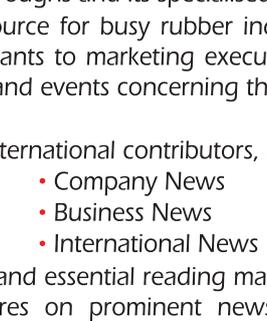
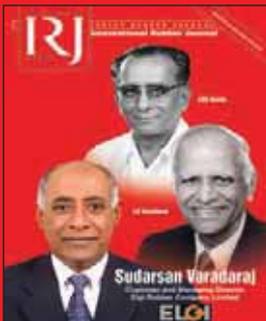
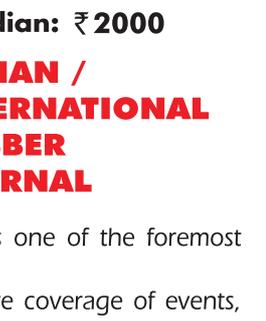
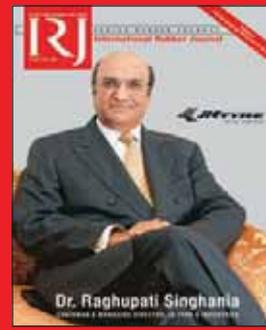
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