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LEADING AUTO COMPONENTS MANUFACTURERS'  
JOURNEY TOWARDS EXCELLENCE

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LIST 2018



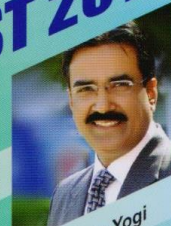
Jan-Oliver Roehrl  
Bosch Ltd



Sriram Viji  
Brakes India



Prashanth Doreswamy  
Continental Automotive Components



Shrikrishan Yogi  
Brose India



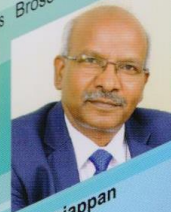
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WABCO India



## Being 'smart'

As the Industry 4.0 revolution hits the manufacturing, the industry is going smart. Industry leaders speak to The Machinist about advantages and challenges.

By Swati Deshpande

Since 2011 when Industry 4.0 was conceptualised, it has been transforming the manufacturing industry. Speaking on the same, V. Anbu, Director General and CEO, IMTMA mentions, "Internet has been transforming lives better than ever before. Like human lives, manufacturing industry is also undergoing some sweeping transformations in the technology driven world. Industries are deploying internet of things, big data, robotics, artificial intelligence, and many more contemporary technologies to ramp up production. This is building momentum for achieving manifold growth in years to come. Smart manufacturing is synonymous with Industry 4.0 and it is revolutionizing the way manufacturing is done worldwide. The concept which first came to light at Hannover Messe fair in 2011 has now become a norm throughout the globe. It is heralding a new way of organizing the means of production by setting up 'smart factories'. In these 'smart factories' everything is connected. There is constant interaction between products and machines as well as between machines and machines. Humans, machines and materials are all linked together on a network and the network in turn is connected to outside world. There is ceaseless communication. The overall objective is to convert data into information and knowledge in real time to make the process productive, flexible and ensure quality. The stakes are high both in terms of technology and economically and culturally as well. Smart factories make it possible



up to improving Productivity.

**Kaustubh Shukla**, Chief Operating Officer - Industrial Products Group, Godrej & Boyce

It is a fascinating evolution. Pursuit of Productivity has been a perpetual target for all manufacturers. Reducing waste and improving efficiency, repeatability, reliability, yield & safety all add to

to respond to challenges of globalization and sourcing of raw materials and energy resources besides offering control over security of industrial information systems."

Seconding the same, C. P. Vyas, Head of Electrification Products, ABB India says, "The manufacturing sector has changed rapidly in the last five years. The disruptive technologies of digitalization with cloud and mobility solutions with imperatives like energy efficiency, software as a service and a churning workforce has made smart manufacturing or connected factories a stepping stone for success and customer satisfaction. Smart operation combines different elements enabling continuous monitoring of the production process through visualization of operational data, to increase efficiency and flexibility of the operational process. This is important at a time when companies are collaborating with customers to arrive at solutions which will address their issues/requirements rather than look at selling one size fits all. The smart operation line can track and monitor operational performance parameters across the entire manufacturing chain in real time. The factory also has digital lifecycle management with inter-



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connected automation components, machines as well as data about processes and products. This helps archive expertise and experience and collaborate with different regions and markets to arrive at optimal solutions for different geographic domains. Real-time feeds monitor the entire manufacturing process. Remote access and wireless communication with Radio Frequency Identification Devices (RFID) and connected robotics process automation solutions manage the operation process, work orders and testing parameters. This entails providing real time service to customers to intimate them before the downtime can occur, the customers can witness testing of equipment remotely in real time with the help of VR technology."

According to Kaustubh Shukla, Chief Operating Officer - Industrial Products Group, Godrej & Boyce, "It is a fascinating evolution. Pursuit of Productivity has been a perpetual target for all manufacturers. Reducing waste and improving efficiency, repeatability, reliability, yield & safety all add to up to improving Productivity. Need for mass customisation is another trend that has influenced the way manufacturing has evolved. Smart Manufacturing enabled by technologies of sensing, processing and controlling have immensely changed the way we manufacture and this is only the beginning. With rapid changes and evolution of enabling technologies - AI and Machine Learning, the 'Smartness' will only increase. Sectors engaged in mass manufacturing stand to gain the most and thus will be the early adapters."

**Smart India**

One of the major advantages of these technologies is they do not require heavy investments but needs accurate planning and vision. "A lot of improvements can be done as a complement to or with minor tweaks to the existing system. It is also great for the workforce as it provides a platform for up-skilling of older workers, archiving their expertise and leveraging the skills of millennial ones who are digital natives. It also provides a platform for both to collaborate and feed off each other's

strengths. At a time when India is looking at enhancing quality and productivity - providing a structured approach and seamless shift transitions with defined skill matrix for each job and redefining energy efficiency, smart factories can be a great catalyst to fully realize the potential of programs like Make in India," said Vyas.

Speaking on the implementation of such technologies in India, Dr. Andreas Wolf, Joint Managing Director, Bosch Ltd., asserts, "In India we need standardized solutions, which are adaptable and have quick return on investment. The feasibility of such solutions depends on the nature of problems that they set out to improve. In a country like India, there are many challenges for manufacturing including productivity and quality mindset. Hence, smart automation methods like Process automation, Karakuri Kaizen (Japanese system used to handle materials using natural principles like gravitation force, centrifugal force, etc), Pick and place mechanisms, Vibratory feeders and conveyer systems, Co-bots (collaborative robots), Vision systems and Gantry mechanisms can be game-changers if implemented properly."

He further adds, "India has a high degree of connectivity so it is possible to connect shopfloor associates easily. The large SME base in the country is also open to new technological solutions. Bosch also plans to roll out solutions to our supplier base, thus making the entire value chain more productive. The Indian market offers a great space for smart manufacturing solutions with positive GDP growth and an increasing openness for businesses to operate in."

As per Shukla, "While there is a substantially large and growing demand due to domestic consumption, the growth of manufacturing will also call for focussing on exports. So India will have to rapidly evolve the maturity and sophistication of Manufacturing to be as good if not better than the rest of the world. Having said that, the deployment of such technologies is still in nascent stage and will grow over time. The Process Industry was the first to adopt Smart Manufacturing and we foresee that discreet manufacturing sectors that require mass production and mass customisation will be the next to adopt



The best thing about smart manufacturing is that since it is a mix of various elements - one can choose elements as per the reality of one's operational processes, timelines and market specifications and

deploy accordingly to provide minimal disruption to production schedule.

C. P. Vyas, Head of Electrification Products, ABB India



Tips to adapt new technologies

Speaking on the how Bosch India adapted new technologies, Dr. Andreas Wolf, Joint Managing Director, Bosch Ltd. narrates his experiences.



- Any technological change is based on the business case evaluation, use cases and on the value stream. Machines or processes are enhanced as a part of the daily task and don't negatively affect the process.
- Secondly, industry wide change must begin at the top and work its way down. In this sense, the Industry 4.0 Academy of Bosch trains senior industry leaders on the implementations and benefits of smart manufacturing and Industry 4.0. This leads to tangible change across processes and enables organizations to alter their strategies based on smart manufacturing principles.
- India is the IT hub of the world today. If you also want to act on the issue of manufacturing, we need to go for automation which can improve our productivity levels significantly. In the Indian industry, in many parts, we still have a gap of at least 20 percent- with respect to productivity. Automation level is far below. And, this differs from industry to industry.
- In Bosch Bidadi we have at least six smart automation

solutions running. In the plant earlier there was manual loading of heating units in different operations like cutting and chamfering, knurling, resistance checking. Now a simple automated loading system has been incorporated for these operations. The resistance checking has been integrated in the last station. This is a good example of improving productivity and quality.

- In the Chassis system plant in Chakan, all the lines in the entire international production network have been connected resulting in full transparency of line performance.
- We are also heading towards zero defects. The issue in the last decade was that we accepted quality which was just "fine". Importance was given to low cost. Now, affordability yes, but additionally customers want zero defects. Automation will help us achieve a sustainable and zero defect quality. Another example from the Bidadi plant is an introduction of an early warning system. If the number of defective parts in one shift exceeds a certain limit, an automated signal is created in the smart phone of the front manager. The front manager will react as soon as they notice the signal. No matter where he is – in the canteen, meeting, etc.

Smart Manufacturing Technologies.”

Elevating the processes

Bringing technological change in the plant is similar to upgrading an airplane while it is in the air. In such a scenario, the smooth transition is important. Speaking on the same, Vyas asserts, “The best thing about smart manufacturing is that since it is a mix of various elements – one can choose elements as per the reality of one’s operational processes, timelines and market specifications and deploy accordingly to provide minimal disruption to production schedule.”

Seconding the same, Shukla adds, “Naturally, it would be easier for greenfield projects to embrace Smart Manufacturing. However even for the brownfield projects, inculcating smartness is possible, albeit a far more challenging task, like upgrading an aircraft from propeller to jet, in-flight! One will have to take up some installations as Proof of Concept or Technology Demonstrators, and then roll out the plan. Indian manufacturers have the wherewithal to undertake such a transformation.”

On a larger scale

Evaluating the scenario on a larger scale, Vyas mentions, “In order to increase the contribution of manufacturing to the national GDP, India has to stride ahead in terms of global competitiveness when it comes to quality, efficiency and focus on

clean energy. In order to fully realize the potential of our demographic dividend of younger populace, we need to provide them with improved job opportunities. Smart factories can be the bridge to achieve these goals by enhancing productivity, efficiency, minimizing downtime and improving customer service. One aspect of smart manufacturing, remote monitoring and data analytics is one area where India could leapfrog and become a leader just like it did with software in developing the global delivery model. However success will largely depend on the ability to combine the transition to smart manufacturing with a robust industrial apprenticeship/training model and also create frameworks as per the characteristics of different industry segments and scope of operations (SMEs).”

On a concluding note, Anbu says, “India can ensure its place on the top in the global list of countries that excel in manufacturing only by setting up smart factories. India’s manufacturing sector GVA growth for 2017-18 from manufacturing sector was estimated at 5.1 percent as per Ministry of Statistics & Programme Implementation. India has a humungous job in hand to realize its vision of being the world’s preferred manufacturing destination. India’s manufacturing sector has realised that smart manufacturing will enable them achieve this and are adopting technologies in their production lines. This is aiding them to meet the surging needs of customers who demand price competitive products. Smart factories are also helping manufacturers to garner profits.”