



# AUTO CUES

CONSIDERING THAT CAPITAL GOODS HAVE LONG LEAD TIMES, THESE COMPANIES ARE THOUGHTFUL IN THE WAY THEY IMPLEMENT AUTOMATION

BY BINDU GOPAL RAO

1. This industry is not only looking at automation but also looking at optimising existing processes, becoming more efficient, and moving towards digitisation.

**NOT TOO LONG AGO, THE AUTOMOTIVE** industry was one of the largest investors in automation. While most of these are in place at their plants, sadly there's little investment happening in this sector. However, no automotive plant in the country and world can work without automation. From robots to Artificial Intelligence (AI) to collaborative cobots, the industry employs them all.

## AUTOMATION DEPLOYMENTS

For some time now, the capital goods industry in India has moved from semi-automated or manual to fully automated. Today, this industry is not just looking at automation but further looking at optimising existing processes, becoming more efficient, achieving higher productivity and last but not the least moving towards digitisation. In doing so, the Indian capital goods industry is eyeing not only Indian markets but also global markets and are emphasising on technology and staying ahead in competition. While one adopts automation solution, they should stick to few basic rules. Explaining the same, **Sandhya Sule, vice president, engineering services GBL, Capgemini**, opines, "The automation strategy should align with business and operations strategy. It should address four key objectives: improving worker safety, reducing costs, improving quality, and increasing flexibility, but the balance of benefits may vary with different technologies and approaches. The right balance for any organisation will depend on its overall operations strategy and its business goals."

In this regard, narrating the ground level scenarios, **Ninad Deshpande, head - marketing & corporate communication, B&R Industrial Automation**, says, "Automation deployed differs based on the application areas in the capital goods industry. We see an increased usage of robots, cobots – human and robot collaboration, human and equipment safety, asset monitoring even from remote locations, predictive maintenance, energy monitoring, vision inspections and efficient product transport for replacing conventional conveyors amongst others. These are just a few notable deployments."

"Collaborative robots, robotic arms and the IoT coupled with AI are already producing a large part of the automobile chassis and power trains. Now robots are handling even the most complex manufacturing tasks, and completing them several times faster than human workers. Advanced robotics, combined with automation technologies and learning modules, are performing jobs with more precision than ever and increasing industrial productivity," Sule adds.

## TAXING TIMES

With the progressive unveiling of the GST regime, the implementation of the National Capital Goods Policy 2016 framework and clarity on regulatory issues concerning carbon emissions, we are headed in the right direction. India is on course to being a \$1 trillion economy and the manufacturing sector has the potential to anchor this economic growth. "The manufacturing sector in India can achieve scale through the progressive adoption of cutting edge technologies like procurement automation, AI and IoT led manufacturing to generate higher economic and technical efficiencies and release resources from programmable tasks. The automotive industry has



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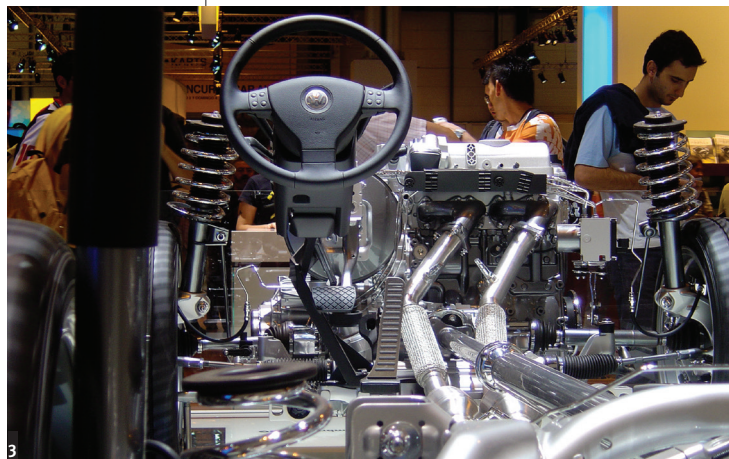
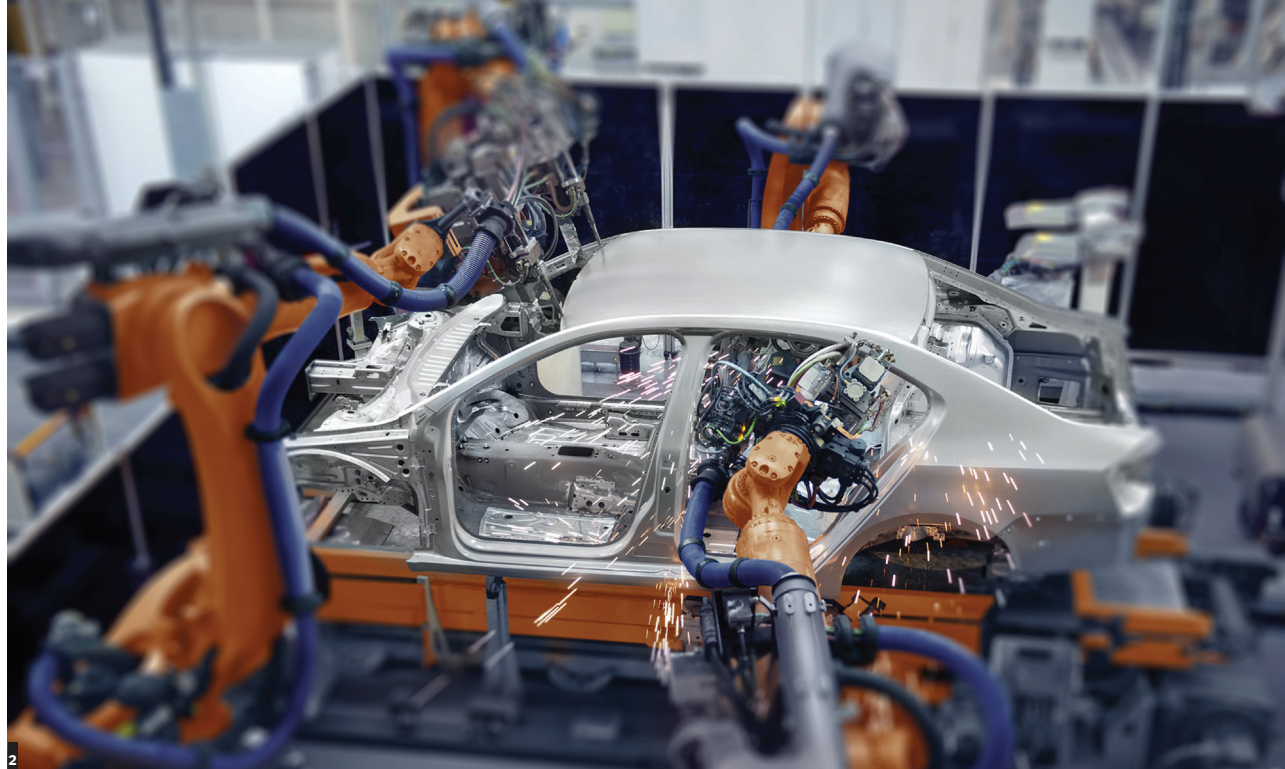


"The future of the companies will depend on how quickly they are able to take countermeasures."  
— Abhishek Jain



"Some of the key automation deployed by car makers are IIoT based solutions enabling end-to-end traceability & quality inspection."  
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2. Automation renders the shopfloors the agility and flexibility of realising on demand manufacturing.

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## AUTO INDUSTRY IS THE MOST RELEVANT PROTOTYPE OF FACTORIES OF FUTURE.

deep understanding of the organisation's processes and manufacturing systems," says Sule.

The automotive manufacturing industry is one of the most relevant prototypes of 'Factories of Future' driven by automation. Automation renders the shop-floors the agility and flexibility of realising on demand manufacturing as well as many more benefits such as reducing downtime, decreasing frequency of sudden failures, improving changeover efficiency and real-time data based predictive maintenance, to name just a few. **Sameer Gandhi, MD, Omron Automation, India,** says, "Some of the key automation deployed by the automotive makers are the IIoT based solutions enabling end-to-end traceability and impeccable quality inspection which are critical functions in ensuring zero-defects manufacturing. Robots have also made inroads into the automation layer in the form of connected robots, cobots and mobile robots. All these solutions are delivering many values in terms of product inspection supplemented with real-time collation of data and images, reducing development time, and by replacing activities which are mundane, high-precision, hazardous, burdensome, or the tasks that do not require critical thinking. Regarding the sourcing,

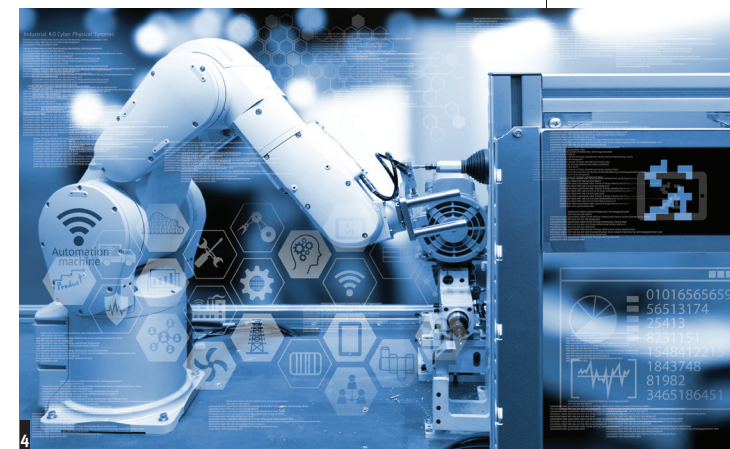
it is either through machine builders (for new plants) or from automation solution providers (like, Omron) mostly for Kaizen activities."

### AUTO SLOWDOWN IMPACT

The automotive industry today has most of their automation needs already taken care of, as it is one of the front-runners when it comes to new technology adoptions. However, factories are further looking at optimising operations, improving quality, reducing wastage and thus the ecological footprint. They are also moving towards evaluating and implementing edge architectures for achieving connected assets and seamless vertical and horizontal connectivity. These edge architectures provide the best IT / OT convergence mechanism coupled with open source networks such as OPC UA and MQTT. B&Rs factory automation solutions with edge architectures provide an extensive possibility for such convergence and enables automotive factories to embark on their digital transformation journeys cost-effectively. "However the auto industry is not retracting on the key productivity enhancement long-term plans they had charted out before the slowdown sneaked in. This includes deployment of industrial automation led applications and solutions at the shop floors to add value to many aspects like speed, quality, efficiency, safety, agility and flexibility – the whole dynamics of which will certainly emerge as a game changer when the growth trajectory resumes. To sum up, there seems to be continued flow of automation expenditure, and this is going to help them a lot to tackle the turn of tide with better capabilities," says Gandhi.

### CONTEMPORARY TONES

Efficient product handling, improved product quality, mass customisation, inspection systems, connected assets, digitisation of isolated machines, business intelligence, machine learning, artificial intelligence, virtualisation are amongst the new technologies being demanded by machines and factories. These are playing a vital role in improving product quality as well as system performance and efficiency. Higher product quality is being demanded by consumers, hence factories need to focus on better manufacturing practices and various inspection mechanisms to reduce market rejections and provide better quality products. Mass customisation and efficient product handling together with efficient operations are achieved by replacing conventional conveyors with intelligent product transports systems such as ACOPOStrak and SuperTrak from B&R. Edge architectures enable asset performance monitoring, central process data acquisition together with condition and energy monitoring. Another aspect being focused by factories is end-to-end traceability from raw material to final product with connected supply chain and operations ranging from internal to exter-



nal stakeholders. The new trends and technologies, in the automotive production domain, majorly belong to the Industry 4.0 domain (AI, IIoT, machine learning and robotics). There has been a change in the way automation is perceived by the manufacturers. They have started understanding its role in attaining compliance with the global standards, towards improving operational excellence, to achieve zero defects, and realise productivity and quality improvement.

### MAKING THE CONNECT

Having tie-ups with international firms to build up capacity or improve quality to aid in exports are also pretty commonplace. B&R Industrial Automation is combining state-of-the-art technology with advanced engineering to provide customers in virtually every industry with complete solutions for machine and factory automation, motion control, HMI and integrated safety technology. "With our offerings, we are able to help machine builders and factories become automated, smart and digitised. With our advanced automation concepts, machine builders and factories are able to improve quality, increase performance, efficiency and productivity, become more profitable and globally competitive," avers Deshpande. "We partner with suppliers across the globe primarily in China, Taiwan, and the Middle East, both private-label and international brands to service the domestic demand for industrial supplies in India. We are offering MRO supplies to multinational corporations in India that are engaged in EXIM trade," adds Garg.

### TECHNO PUSH

Elaborating on technological aspect, Sule explains "The auto industry is adding more sophisticated robots, exploring 3D printing technology and integrating other cutting edge technologies. Also, they are using Industry 4.0, where "connected" machines communicate with each other and with human operators. The good point on automation is not only replicating



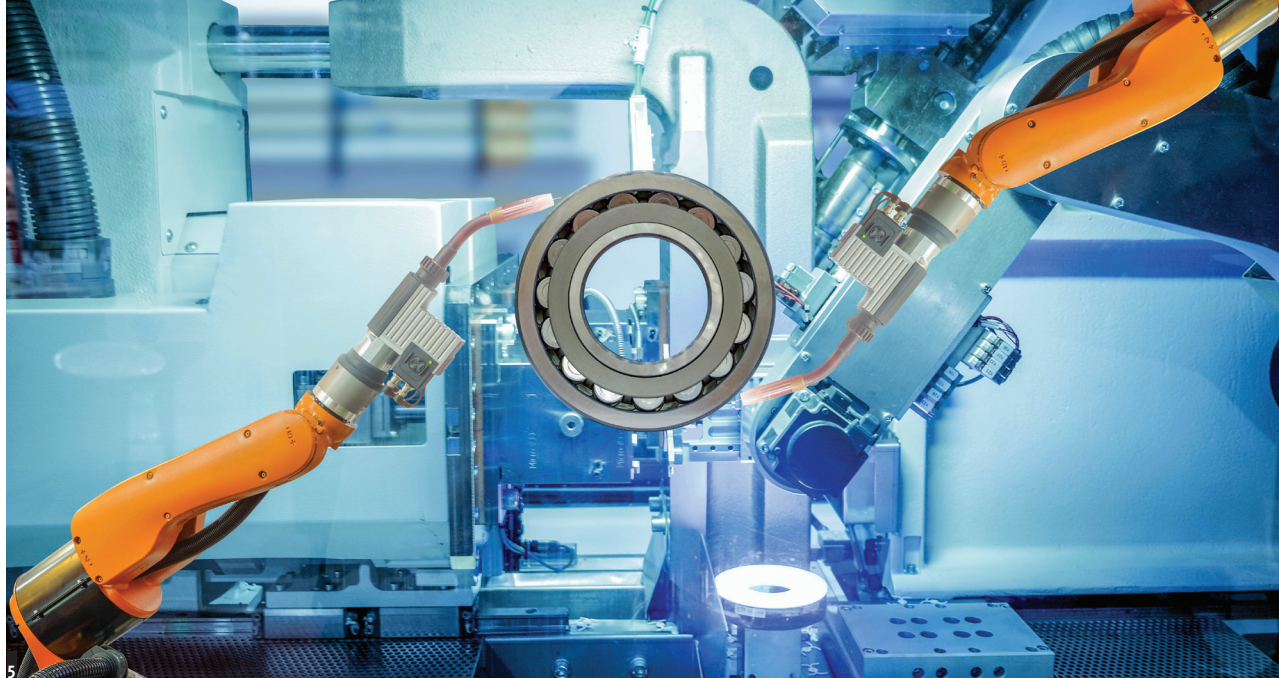
"We see an increased usage of robots, cobots – human & robot collaboration, human and equipment safety, asset monitoring."  
– Ninad Deshpande



"With greater clarity on carbon emission rules and steady economic growth rates, consumption in the automotive sector shall pick up soon."  
– Rahul Garg

4. Manufacturers are getting more data from the automation and more control over the total manufacturing system.





human physical effort but also connecting it to other cyber and physical systems both inside and outside the plant. That means manufacturers are getting more data from the automation and more control over the total manufacturing system—not just control over individual automated stations.”

Seconding the same, **Abhishek Jain, CEO and MD, PPAP Automotive**, says, “The industrial revolution has entered its fourth phase where Data Analytics will play an important role for decision making. The future of the companies will depend on how quickly they are able to take countermeasures for any variations which may happen in the production and management processes. The creation of virtual factories which show Parts and Information Flow along with performance parameters, will become the new norm for survival of companies. In the near future, Artificial intelligence, when machines start communicating with each other, to adjust to variations of material and process conditions, may become a new normal.” In the Automotive segment, there is a push for development of Electric Vehicles. There is a lot of investment as well as research going in this field. Along with this, there is significant development being seen in developing Autonomous as well as Connected Cars. In the connected smart factory of the future, such machines should have automated features that facilitate remote monitoring and controls. With higher computing power and Machine Learning engines/models becoming easier to embed in these machines, such smart machines can now detect anomalous events and perform automated diagnostics and self-correction (to some extent). Further, they also help in creation of their digital twin that becomes a digital replica of the physical machine. “While building the future equipment, it is important that capital goods manufacturers ensure that such automation is in complete alignment with the established standards to enable easy plug-and-play and remote upgrades with newer features. Standards-compliant automation of these machines is a key requirement for the future infrastructure of smart facto-

ries,” says **R Venkateswaran, senior vice president, IoT solutions at Persistent Systems**.

### FUTURE PERFECT

Adoption of 3D printing in the automotive industry will bring in the ability to quickly try new designs and prototypes, without going through an elaborate manufacturing cycle. This could be a game-changer that can bring in innovative features faster to the automotive industry. Further, such systems can help bring in a high degree of personalisation in tune with the needs of the individual buyers. Today, construction equipment manufacturers are offering advanced technologies such as GPS, data-retrieval, health monitoring of machines, remote maintenance and much more. Automated lean manufacturing processes with ‘no-faults forward systems’ are the drivers for manufacturing technology. “With the advent of digital technologies, users can now control their entire fleet in real time and all the critical machine information is available on their smart devices in the form of digital applications such as JCB LiveLink app, JCB Smart Serve App and Smart Machine Diagnostics app. Keeping up with the trend, investments in products, technology, and plants are a continuous process at JCB, as we aim to provide advanced technology and world-class products to our customers. With wide range of smart and intelligent machines integrated with digital technology, JCB India is catering to meet the demand for Next-Gen machines. Our products now come packed with ‘Intelli’ technologies – the Intelli-Control, Intelli-Compaction, and the Intelli-Load,” opines **Subir Chowdhury, MD and CEO, JCB India**. For India to be a \$5 trillion economy, capital goods and automotive industries have to drive export-led growth. Three major economic reforms can unlock value and give a big push to the Make in India policy framework to the extent of land reforms, labour market reforms and unambiguous carbon emission guidelines. ■

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