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CONVERGENCE AT ITS BEST

PRODUCTION, PLANNING AND QUALITY MANAGEMENT MUST INTERLINK FOR BETTER VISIBILITY ACROSS THE SHOP FLOOR. A ROBUST BACK-END IT TOOL HELPS COMPANIES ACHIEVE THAT.

BY **BINDU GOPAL RAO**

EVERY MANUFACTURING PROCESS HAS MANY activities and operations that is monitored and controlled at several levels of pre-, during- and post-production. A modern manufacturing system has to be able to adapt to quick internal and external changes. To this end, a variety of successful models and control techniques have been developed in the last few years, which are based on the principles and tools of information technology (IT) and management science. At the technological level, the current developments in manufacturing systems stem from the

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advances in machine tools, robotics and controllers. Both direct numerical control (DNC) and computer numerical control (CNC) use adaptive techniques to optimise machine operations, while robotic systems provide new solutions for manufacturing tasks such as material handling, assembly, welding, and spray painting. The market has a plethora of manufacturing technologies for the industry. Digital Manufacturing helps in virtual design for simulation and collaboration and engineering data integrated to production while manufacturing execution helps in integration across automation, MES, ERP, SCM, dynamic scheduling, decentralised control and M2M communications. Manufacturing analytics helps in plant/equipment condition monitoring, predictive maintenance & quality, and predictive demand while factory IoT (Internet of Things) and collaboration aids in an IoT platform for machine data, Cloud platforms for data exchange, analytics and Augmented Reality based HMI.

BACK-END IT SYSTEMS

It is important for manufacturing companies to redesign and redefine manufacturing processes with the use of available technologies to sustain and grow in the market. “Cosmo Films is on the path of redefining the manufacturing process with the use of new technologies like IoT and machine learning. At Cosmo, Cloud-based solutions are preferred for process automations. SAP is used as an ERP solution. All the business processes are defined in ERP with a lot of key controls which ensure no excess production and low inventory carrying cost,” explains Jagdip Kumar, CIO, Cosmo Films Ltd.

The company has defined key processes like production, planning and quality management, etc in such a way that they are interlinked and needs minimum inputs to complete the transactions. It has tried to develop an error-free system. This means if the user is able to complete the transaction it is validated at run time and later on no further validations

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1. The market has a plethora of manufacturing technologies for the industry.

2. Manufacturers adopt automation to acquire maximum data from the shop floor.

are required. “We have set predictive alerts so that our team has control on all processes. All the key information is generated through the system by using the Business Intelligence tool and does not require any manual intervention. For example, input output ratio, production hand over report, various inventory reports, line efficiency, etc. By doing this we are able to achieve more productive time of our resources. We have adopted a process of identifying the NVA’s (No Value Adding activities) and if they required being performed automating them with the use of technology,” he added.

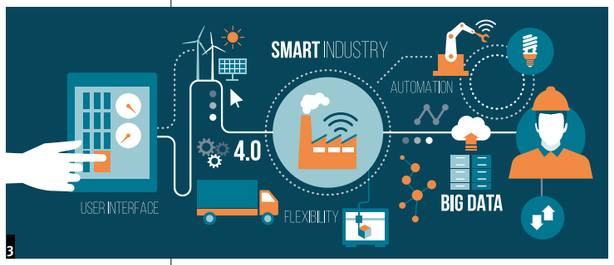
IT systems in manufacturing setups are mainly used to provide relevant and timely information for decision making at different levels of the company hierarchy. “Our strong IT infrastructure seamlessly ties in one layer with the other so that all the layers are interconnected in real time. Such a system is absolutely necessary for not violating regulatory or safety norms, to improve performance and quality via real-time process monitoring improving reliability through proper maintenance and up-to-date information on equipment status,” avers Prasanna Samant, vice president, corporate IT, Grauer & Weil (I) Ltd.

3. Setting predictive alerts helps the team to control all processes.

4. Data-driven manufacturing allows track maintenance and quality and minimise risks.

DATA ANALYSIS

A key element is that these systems are capable of generating large volumes of data and this must be used effectively to give desired results. “Data helps us get easier access to information about the way our business is running and the improvements that need to be made. Data-driven manufacturing allows us to correct maintenance and quality issues and minimise safety and business risks throughout the operation. We are able to make better use of employee skills and time as well as make improvements to avoid wasteful mistakes. This not only fosters transparency across the board, but also makes the working environment more efficient,” explains Samant. “We have built a database of last eight years with the help of our Business Intelligence Tool and are able to use it to generate day-to-day reports required for middle management and shop floor team. This helps them perform their tasks more effectively. We also use the data to build the validations and define the various business rules and provide the reliable decision making dashboards for top management which helps us to define our business strategies and re-validate them time to time with changing market dynamics,” adds Kumar. Machine connectivity, machine analytics, building line monitor – control, predict failure, use machine line SPC monitor for quality control are some of the highest traction use cases in the market. “Many of our manufacturing industry clients are deploying these solutions for their green field as well as brown field plants. We help our clients connect old as well as new machines on a single platform, bring visibility and take action in real time. Some of the key benefit of data and analytics include reduction in machine downtime, visibility of machine status across enterprises, rapid communication to affiliates on issues and diagnoses, improvement on cycle time and increased equipment efficiency by remote monitoring and management,” says Nilesh Auti, VP, automotive & discrete industry vertical head, Tech Mahindra.



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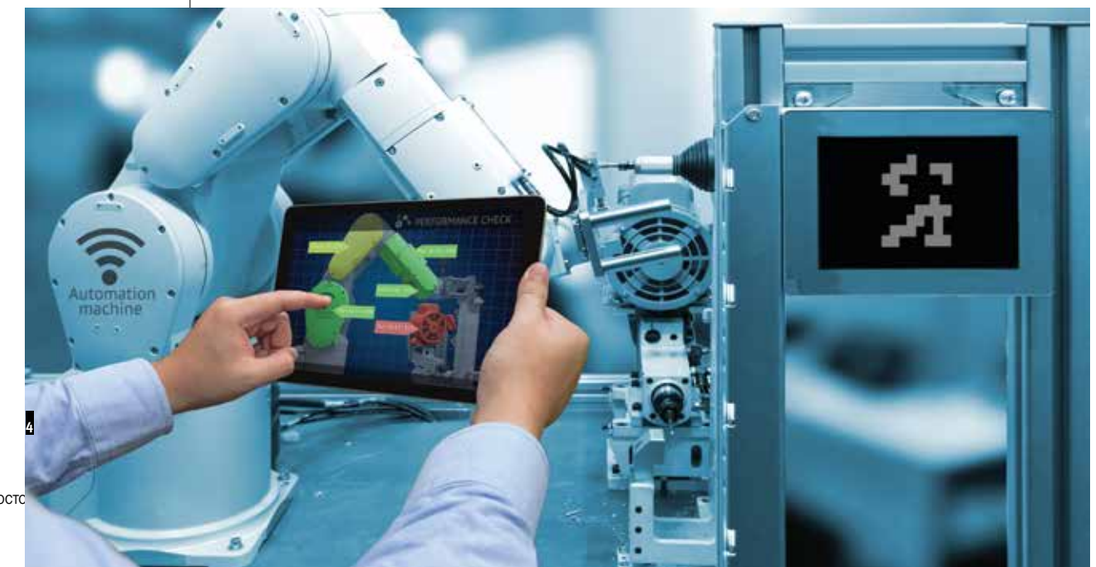
BEFORE INVESTING IN ANY TECHNOLOGY, ORGANISATIONS MUST ENSURE THAT ALL ITS STRATEGIES ALIGN.



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UPGRADE & REFINE

Technology gets obsolete fast and the software product life cycle is reducing day by day. Organisations are highly impacted due to these changes and face a challenging time to maintain the pace. Before investing in technologies, it is a must for any manufacturing organisation to ensure that IT strategies align with business strategies. As the market is dynamic and business strategies are bound to change, IT strategies should be flexible enough to change as per business needs. “In Cosmo, we prefer to use the products v/s custom developments and keep exploring the new technologies with start-ups. It helps us to explore new technologies in less time and investment and security is one of the key criteria for technology selection,” says Kumar. Deciding when the business needs to make an upgrade depends on signs that we look out for and one of them is the noticeable disconnect between technology practices at work and employees' personal lives. “Another sign we look for is whether IT operations are becoming increasingly inefficient, time consuming and costly. Most processes should be seamless, and when we notice this starting to change that is our biggest indicator for IT upgrade. If the upgrade will mean someone in the business will spend less time doing mundane tasks and more time on important customer-facing activities, then we consider this a good reason to upgrade,” avers Samant.

INNOVATION MATTERS

Innovation is the key to success for any industry. Traditionally manufacturing industry would take the maximum advantage out of it, automotive industries used to be ahead of time in this race. Now other industries are in the race to make the most of these innovations to be more competitive. There are technology solutions in the market ranging from robotics, automation, IoT, AR-VR, machine learning, advance analytics and many a times there is a confusion as to where to start, what technology to deploy and give best RoI. “At TechM, we have built an assessment toolkit to find gaps between existing factory landscape and compare with Industry 4.0 architecture. Second step is then we prioritise these gaps and provide solutions based on business use cases. The third step is to draw reference architecture which can be used over a period of time to help clients gain the full picture. We ask our clients to take an agile approach and use a case driven approach to deploy the right technology,” says Auti. “Cosmo Films has used technology innovations in inventory management with the help of bar code & RFID systems. It has helped us in inventory traceability, reduction in container loading time and ensuring no wrong dispatch which later on turns into a quality claims or sales return and increase the logistic cost. Cosmo Films is on the way to implement a fully automated system without manual inputs of the raw material consumption and production booking. We have digitally transformed our sales processes because our manufacturing processes are robust and reliable. Cosmo has a vision to become a paperless organisation and contribute towards green,” opines Kumar.


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CONCLUSION

In an industry that automates, IT helps make the manufacturing process less cumbersome and more automated. It helps drastically in delivering just-in-time insights, swift visibility, and seamless innovation for implementing new age solutions. Intense competition is one of the key points of concern for the manufacturing industry. Manufacturers have to develop and deliver cost-effective decisions, which are sure to stand the test of time. “With IT increasing the flexibility in global operations, the manufacturing industry is ready to simplify and standardise their automation systems and support organisations. The latest trends indicate various multi-dimensional services spanning IT that aim to transform businesses, change design, and boost value-added services including infrastructure management and the like,” concludes Samant. MT

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5. Deciding when businesses need to upgrade depends on signs that companies look out for.