

Disruptive technology is driving progress in smart manufacturing



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The manufacturing industry is a tough industry, vulnerable to impacts from the economy, geo-political events such as conflict and pandemics, and other stresses that impact the global and local supply chains and markets.

Manufacturers constantly need to seek out a competitive advantage to stay at the forefront of this competitive sector. Smart factories and the integration of disruptive technologies are one way that manufacturers can drive growth, not just for their own companies, but across the sector.

Smart manufacturing leverages recent advances in technology to improve quality, equipment efficiency, reliability and decision making. It is fuelled by data, integrating information from multiple sources to provide a real-time view of business operations.

Disruptive technologies such as Artificial Intelligence (AI) and Internet of Things (IoT), more particularly Industrial IoT (IIoT), are enabling smart manufacturing practices. Importantly, these technologies are growth drivers for the manufacturing industry.



AI is transforming skills in manufacturing. The new AI revolution presents a great opportunity for manufacturers to retain their staff and attract younger employees by providing new skills for the future world of business where the role of AI will play a greater part. Caption & image: <https://za.syspro.com/>

Technology drives efficiency

Smart manufacturing processes improve the efficiency, quality and sustainability of traditional manufacturing, and allow manufacturers to become more agile and resilient through data-led decision making. And while completely autonomous manufacturing is still a way off from happening,

increasing digitalisation comes with many benefits to manufacturers. AI and manufacturing automation technologies are contributing to decreased operational costs while improving service levels and speed in many areas of manufacturing.

IIoT is connecting intelligent devices across the supply chain, creating interoperability between machines, devices, and sensors and providing a wealth of data points for manufacturers to draw from when looking for insights and analysis of their business operations. IIoT devices help connect the business instead of having siloes of information, which helps drive data-led decision-making that can directly benefit the business.

With IIoT devices providing a multitude of data points throughout the manufacturing process and the supply chain, this data can produce analytics and insights across the broader enterprise that, when applied, can make manufacturing processes run more smoothly. When this stream of real-time data is available for everyone working in the environment, whether it's a manager on the factory

floor, or a business decision-maker, it surfaces anomalies, trends patterns and developments that can be acted on.

Data brings value through analysis

Data without analysis is not going to bring value to the business. AI is still in the early phases of being integrated into manufacturing and ERP systems, but there is no question that we will see continuous advancements in this space. For manufacturers, AI can already enhance production planning based on real-time data and demand forecasts, while predictive analytics can pre-empt unplanned downtime and maintenance, improve performance and increase machine uptime. AI forecasting algorithms can aid planning and scheduling track things like seasonality and current trends, while this technology can also help manufacturers optimise their production planning and scheduling using real-time data and demand forecasts.

Both AI and IoT are both enablers and drivers of smart manufacturing. Using this technology with an ERP system that provides data insights and analysis from the huge stream of data that IoT devices and sensors are generating, manufacturers can reduce costs, downtime and errors, and manage their inventory more efficiently.

Replacing a manually operated legacy system with increased functionality and analytics will allow best practise material management throughout the company.



Technology is a powerful tool for the metal fabrication industry. By investing in automation and advanced and integrated technologies, companies can reduce costs, improve efficiency, and boost productivity. Caption & image: <https://za.syspro.com/>

Cloud is an enabling technology for smart manufacturing. Cloud-based ERP platforms offer cost-effectiveness, scalability, security, the ability to adopt new technologies, and exploration of new opportunities. Cloud applications enable manufacturers to harness data from IIoT devices in their factories, inventories, and supply chains to define metrics and performance indicators that optimize productivity and enable faster decision-making. Modern ERP systems with mobile tools enable seamless access to full system functionality via mobile devices regardless of location.

Skills must evolve to keep pace with technology

While it's understandable that people fear that their jobs are under threat from disruptive tech like AI, it can enable innovation and differentiation. Automation and the deployment of disruptive technologies benefits not only the enterprise, but it also frees up workers from mundane manual workloads and repetitive tasks to better use their time and expertise.

However, there is a caveat – manufacturers and distributors now require a workforce that is proficient in data science, automation, and other digital skills and adept at soft skills like collaboration, problem solving, and customer engagement.

Companies must ensure an environment of continuous learning and retraining for employees to keep pace with the skills required to function optimally in a smart factory workplace, putting resources into training programmes for operating, managing and developing the technology to get the most value from both their people and their tech. While this shift will cause many current jobs to change, it will also create numerous new job opportunities.

In a highly competitive environment, manufacturers must look to adopt disruptive technologies to remain competitive. Those who delay adopting disruptive technologies will inevitably fall behind the market, with long-term consequences for profitability and longevity. **SR**

