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IIoT is a big step towards Industry 4.0

By CIO Dialogues Team (<https://www.ciodialogues.com/index.php/author/cio-dialogues-team/>) | July 13, 2020



Mudit Agarwal, VP-IT, UFlex Group discusses how IIoT can help expedite the digital journey of discreet manufacturing companies

IIoT plays a big role in heralding the era of Industry 4.0. As the discrete manufacturing sector gears up for Industry 4.0, it is faced with newer market challenges. The product lifecycles are getting shorter and the number of product variants is increasing rapidly. Consequently, discrete manufacturing companies need to reduce the time to market and shorten the lead time. To respond to these challenges, the discrete is focused on rationalizing operational costs, and achieving higher levels of efficiency in production and supply chain.

With these business imperatives, the adoption of IIoT has become critical for the industry. With the usage of IIoT sensors, automation, and data-driven insights, discrete manufacturers can make their products, operations, shop floor activities, business processes, components, machines, and, information systems can become data-driven and smart.

IIoT can be applied in the discrete manufacturing environment in multifarious ways. IIoT sensors can improve asset management and maintenance. Predictive maintenance of plant machinery is far more beneficial than routine inspection and post breakdown replacement. Staff in the production line, plant managers, plant operation and maintenance can rely on the real-time data from the sensors based plant floor to predict and prevent equipment failure, improve reliability, and reduce downtime. Any improvement in the production downtime can result in significant improvement in the efficiency and speed of the production cycle.

IIoT can result in a significant improvement in the production process by making it more efficient. It curtails wastage by reducing the defects in products and curbing erroneous production. With better quality control, there is a direct impact on the efficiency of operations.

Data from the sensors can help identify failure patterns and proactively recognize performance issues. This can help discrete manufacturers improve their production and significantly reduce downtime. That leads to increased customer satisfaction and fewer warranty claims.

IIoT can optimize the consumption of energy. Optimization of energy consumption is all about reducing wastage. Smart lighting, learning thermostats, and sensor-based HVAC systems can be designed to automatically maintain the perfect conditions in spaces (industrial, commercial, and domestic) and keep energy use at the optimum level.

Equipped with different sensors (light, movement, humidity, CO2 level, etc.) these systems can dynamically adjust the regimes depending on the changing conditions and minimize the energy wastage. Smart lighting dims depending on the amount of daylight available in the room and automatically turns off once the room is empty. Learning thermostats precool the space before the heat comes to avoid using expensive energy at the peak load time.

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Overall Equipment Effectiveness (OEE) is a metric that is widely monitored and utilized to measure the effectiveness of the manufacturing operations. IIoT solutions help to improve OEE in many ways. Analyzing the historic process and performance data can help optimize maintenance planning, schedules, and resources. Enterprises can get warnings in advance about the degradation of their machines, with predictive maintenance to avoid downtime leading to lower maintenance costs, reduced material and supplies, and greater equipment availability. The production line quality is carefully monitored. It helps in monitoring process parameters, finding out the calibration, temperature, speed, and production time of the machines.

The challenge of adopting IIoT is that there is a certain dichotomy to the process of implementation. Traditionally, operation technologies have been managed by the production staff. But IIoT deployment falls within the purview of IT because of its technology-intensive nature. The collaboration between IT-OT personnel can be a challenge. Also, in pure-play technology terms, IT-OT integration can be a challenge since the OT technologies can be quite archaic at the plant level. For IIoT to be successful, it is imperative that both IT and OT integrate both at the technology and the human level. Many times organization structures and cultures become the limiting factors for people to work collaboratively. Most of the OT systems are proprietary and follow protocols that pose a challenge in integration with IIoT systems. Security of information is another area of concern that needs rigorous treatment while deploying an IIoT solution.

Securing real-time data emanating from the IIoT platforms is another challenge. Most discrete manufacturers do not have networks that can secure such massive amounts of data.

Technology service providers can ease the implementation challenges by providing us a complete ecosystem that handles everything right from the IIoT sensors to manage the real-time data, building analytics on top and it, and securing the entire data lifecycle.

Technology service providers are yet to evolve as 'one-stop-shop' as far as IIoT solutions are concerned. Most of the time they offer only either an analytics platform, the sensor solutions, or IIoT gateways/integration solutions. The ownership for the effectiveness of the overall solution is found lacking. Moreover, the commercial agreements need to be such that there risks and rewards are shared mutually between the service provider and the client organization.

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