Unlocking IoT Potential to Accelerate Manufacturing Processes

How the manufacturing industry is reducing costs and creating new revenue streams through the power of IoT.

Microsoft Azure

Insight

The manufacturing plant of tomorrow

The IoT is ushering in a digital industrial revolution. Machine learning, autonomous and intelligent things, swarms of drones and other technologies that once seemed like fiction are now reality.

One of the greatest influencers of the IoT movement is Artificial Intelligence (AI). In fact, Gartner tapped AI as a key strategic imperative for 2018 to expand capabilities of IoT-connected devices and industrial systems.[1] AI is the driving technology behind intelligent things, which are physical things that behave and interact more naturally with their environment, such as self-driving cars, robots and drones.

The need for innovative software and technology is not lost on the manufacturing world.

Manufacturing companies are exploring how they can also become software companies. They want to know how they can digitally transform both internal operations and products in the field to gain market share, new revenue opportunities and cost savings.

The age of the smart factory

The IoT is enabling fully connected and flexible manufacturing systems, otherwise known as a smart factory. Intelligent things are infused into the manufacturing system, creating a constant stream of collected and shared data that enables greater agility, efficiency and flexibility.

The "things" of the IoT are myriad devices, such as sensors, integrated analytics systems, augmented reality, digital interfaces and more. Common forms of the IoT consist of:

Autonomous things – capable of responding to the real world, unassisted. For example, a machine tool manufacturing plant can operate entirely on its own 24/7, with the intelligent capability of switching tools as needed. Human workers are only required for monitoring plant performance from tablets and performing high value-added tasks.

Swarm intelligence – the result of various, unconnected devices sharing data. Swarm intelligence is integrated into factories to help with production scheduling in order to reduce bottlenecks and boost efficiencies.

Autonomous things and swarm intelligence are just two examples of how the IoT is transforming industries, and manufacturing has much to gain. Smart factories can leverage these technologies to reduce costs through predictive maintenance, improved safety and efficiency – and uncover net new revenue from value-added services.

Predictive maintenance and quality control

To maintain and grow profits, a manufacturing plant must produce quality products to quota. Defects or flaws in production are often costs consumed by the business. And for many manufacturers today, production depends on equipment performance.

Historically, plants have been forced to respond reactively to equipment failure, resulting in unpredicted downtime – and financial loss.

The IoT can help your manufacturing plant achieve greater quality outputs and prevent unexpected downtime. Sensors applied at various points of the manufacturing line can inspect products at key intervals and catch defective parts before completion, reducing waste. Machines can also be embedded with autonomous technology to perform preventive maintenance, self-regulate or report potential failures.

Augmented Reality (AR) might be a cool trend in the consumer market, but businesses are deploying AR in more practical applications. For example, a machine repair worker can use AR to get real-time data about a problem and instructional guidance during a hands-on repair. The use of AR in the field can help simplify complex machinery so that repairs are done efficiently and accurately.

Enhance the customer experience

After your products leave the manufacturing floor, how do you track them and ensure optimal performance for your customers? The IoT has a place inside and outside the factory walls. You can improve customer experience by embedding products with sensors, giving you the ability to monitor product performance and predict business opportunities for maintenance or other value-added services.

Sensors enable your company to catalogue products and track assets, which is particularly beneficial if your plant sells products to distributors and resellers. Knowing where your products end up and monitoring product health allows you to quickly locate products for service needs, prevent failures and serve your end users better.

Access to sensor data also improves field service scheduling. With rich data available ahead of time, you can ensure the right technicians and tools are dispatched before potential issues become major problems.

The IoT empowers you to create new business models that offer predictive maintenance and performance monitoring for the equipment you produce – delivering a rich customer experience and creating new revenue streams.
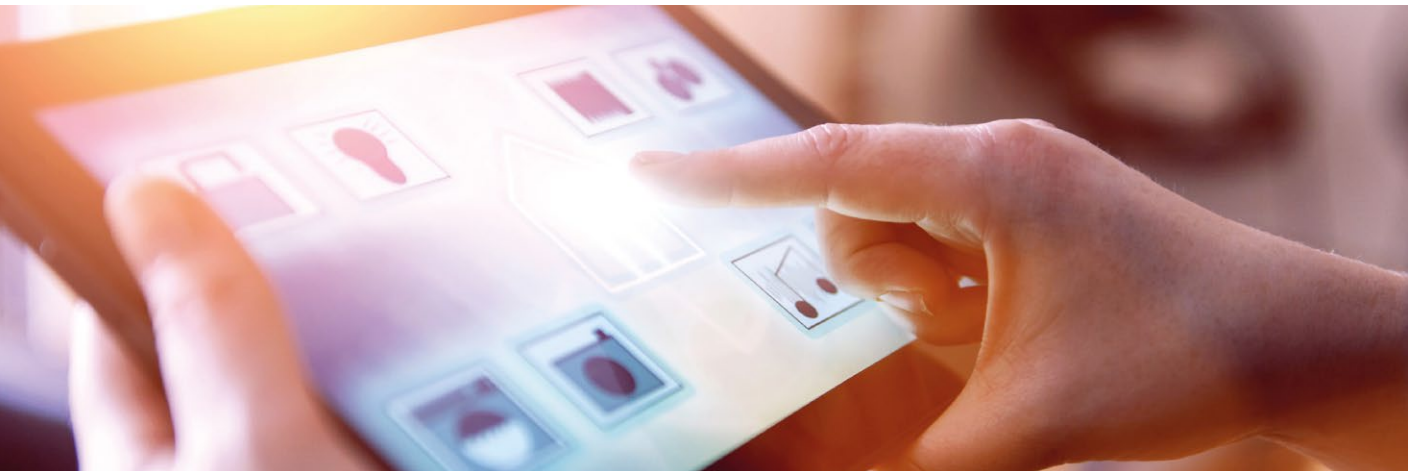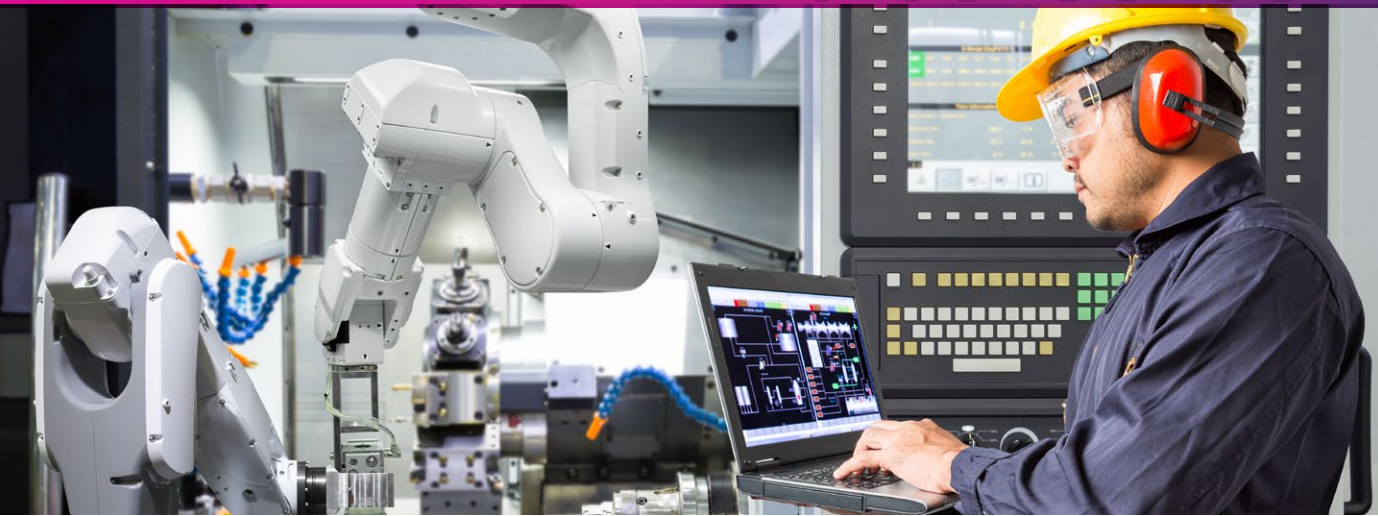
Improve safety and efficiency

The manufacturing industry reported nearly 485,000,000 nonfatal injuries and illnesses in 2017/18.[2]

Wearable technology has enormous implications for worker safety. Sensors embedded in items such as hard hats and wristbands can collect and process data to provide real-time alerts if a worker's health is in danger or if safety protocols are not being followed.

Unlike popular consumer wearables, advanced wearable technology specifically designed for worker safety is capable of cognitive computing using multiple data points. For example, heart rate, skin temperature and movement analysed individually may not sound any alarms, but when the data is assessed together, it can indicate heat stress.

Factories can also improve safety using industrial cameras equipped with image processing capabilities that can capture and analyse visual information. Acting as the eyes of the factory, image processing cameras can quickly scan specified visual areas and efficiently detect potential dangers or problems.

How to prepare for your digital transformation

The IoT introduces endless possibilities. And this is perhaps where most businesses face paralysis by analysis. The applications for the IoT are overwhelming. So where do you start?

Insight recommends beginning by prioritising your short- and long-term opportunities. For example, are your immediate objectives aimed at improving operations, efficiencies or safety? Or are you focused on future-state gains and value-added services, such as putting products in the field with a strategic digital imprint that enables you to reduce overhead costs of support and enhance customer engagement?

Leveraging the IoT is a huge task and requires a lot of planning to ensure you cover all of your bases. Working with a partner such as Insight will help you identify and prioritise your goals, create a strategic plan for the IoT and execute successful implementation with minimised disruption. With an effective IoT project in place, you can experience the financial gains of a manufacturing company that's running smarter.

Why Insight?

Solutions that Meet Your Business Needs.

To remain competitive in today's market, innovation is vital. Using proven IoT, Advanced Analytics and AI technologies, we can help you develop market differentiation by building bespoke, transformative solutions that meet your success criteria.

Our Digital Innovation solutions help manufacturers streamline and simplify their operations, enabling faster innovation, more efficient output and greater revenue.

These solutions are developed in the cloud, on the Microsoft Azure platform, to ensure short time-to-innovation, huge scalability and cost savings.

To learn more, visit **nl.insight.com/maakindustrie**

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1. Gartner Top 10 Strategic Technology Trends for 2018. Gartner.
2. Labour Force Survey, annual average 2015/16 - 2017/18. Health and Safety Executive.