



Smart Manufacturing

Building smart factories using 5G

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We witness major transformations and innovations both in the way of production and in the organization of structures. Innovative Smart Manufacturing techniques, integrate the tools offered by the IoT (Internet of Things), and contribute to improving industrial performance at several levels.

"Intelligent manufacturing" or **"Smart Manufacturing"**, is nothing but a new global industrial method that relies steadily on the evolution of the newest technologies based on the means of production during the manufacturing process. In any industrial environment that concerns the principles of Smart Manufacturing, everyone seeks to automate as many operations as possible so that they are carried out with highest efficiency. The main concern is to have them carried out more quickly, guaranteeing the product quality and profitability at a lower cost. Despite making the process simpler and faster to detect sources of error, disruption, poor quality or slowness, it also helps the manufacturers to use the same information to simulate the processes and improve the working directions with all necessary modifications. This technology is generally known as "enabler," which helps in optimizing the complete manufacturing process and thus increase overall profits. Companies persistently invest and explore how to procure benefits through the implementation of enablers. Enablers, when contemplated, beholds that they are either generating data, accepting data, or doing both. This data analysis helps the production process to be efficient, transparent and flexible.

Smart manufacturing is not extensively implemented; however, it is partially performed in certain organizations. The basic design of machines or a factory system can not be changed to implement all the sensors and other related technologies. This makes the implementation of IoT in current or old manufacturing facility, quite difficult and in some cases impossible.

"The IoT in manufacturing market size is projected to grow from USD 12.67 billion in 2017 to USD 45.30 billion by 2022, at a compound annual growth rate (CAGR) of 29.0% during the forecast period of 2017–2022."

Manufacturers nowadays, are adopting smart technologies to improve efficiency in their factories. But many companies are still stuck in the early stages of adoption. According to them, launching a Smart Manufacturing project is labor-intensive, time-consuming and expensive. A common obstacle manufacturers witness is the incorporation of multiple technologies. In the forthcoming years, the contribution of Smart factories might be as much as \$500 billion to the global economy, according to Capgemini's Digital Transformation Institute. The reason is that Smart factories can produce efficient products with lower costs.



Other benefits of smart manufacturing include:

- 1. Automated data:** Smart technology automates data collection and provides production analytics so that managers can make more informed decisions. In a smart industrial environment, manufacturers can tie their operations technology with business systems to measure their key performance indicators against business goals.
- 2. Anticipated maintenance:** Smart manufacturing helps in predicting and resolving maintenance issues before they lead to product-quality hurdles.
- 3. Cost reduction:** Smart Manufacturing helps in identifying waste and increasing forecast accuracy when the operations and organization systems are connected. Manufacturers can have a better insight to supply chain issues, such as inventory levels and delivery status, as well as demand cycles. Thus, it helps in reducing costs related to excessive inventory or unexpected production volume.
- 4. Fewer Workforce challenges:** Automation in smart factories, helps the manufacturers to initiate and accomplish projects with fewer workers. Immediate access to data across multiple platforms liberates the workers to focus on core responsibilities. This helps the manufacturers to innovate faster without investing in additional resources.

In short, it helps in generating huge amount of data with low-cost sensors, storing data in low-cost systems, and processing data at affordable rates.



All these have made it possible to be implemented in manufacturing shop floors. Earlier, manufacturing was done by low-cost countries, where it was very difficult to justify the high cost implementation of manufacturing ecosystems. But due to an increase in wages, it is now possible to implement it even in countries such as China, which is known as the factory of everything. China is now making a notable amount of investments in smart technologies especially for manufacturing purposes.

The modern industrial environment has already become complex with advanced technologies. By removing the need for wired connectivity, 5G will boost the high-speed manufacturing environment with a substantial degree of flexibility. The richness of the 5G-enabled factory, will have the ability to perpetuate connections among more sensors than the wired or wireless facilities, and also offers the potential to connect about anything.

Manufacturing companies focus on many key advantages to get the most out of 5G investments and advanced technologies in the challenging economy. It includes significant automation, increased and smart supply chains. The emergence of 5G has assisted in many options for factories that wishes to automate all the operations, boost productivity and increase low cost productions.

By using 5G to satisfy key challenges in digitalization for industries like manufacturing, telecom operators can act as quite network developers, addressing new revenue streams by becoming service enablers and even service creators. Digitalization of industry-specific business processes creates a huge opportunity for telecom operators to supply their customers not only ICT services but also a replacement strategic direction using 5G technologies to enhance efficiency and competitiveness – laying the inspiration for growth.

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