Chapter 1

IoT and Smart Manufacturing

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ABSTRACT

Internet of things (IoT) is a concept of providing uniquely identifiable objects connectivity to the internet. Under the roof of IoT, it is predicted that above 28 billion devices will be connected to the internet by the year 2020. When billions of things connect, it will be difficult to manage and analyze huge amount of data as each object will send and retrieve data. Smart manufacturing is an emerging concept where the manufacturing process is supported by technology and the required information is made available during the manufacturing process to get the flexibility and the product as per customer changing needs. Internet of things (IoT) may provide a good platform to enhance the manufacturing process into smart manufacturing. The advantages of smart manufacturing include the higher quality of a product, improved productivity, increased energy efficiency, enhanced scalability in manufacturing process, etc. This chapter presents in depth the IoT and smart manufacturing concepts, their requirements, relevance, and available solutions.

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THE CONCEPT AND VISIONS OF IoT

There are various definitions that are available in the literature. The core concept was proposed by Kevin Ashton that was based on well-known Ubiquitous Computing concept proposed by Mark Weiser in 1989 (Weiser, 1991). The vision of IoT based on core concept progressed with the time that leads to several visions based on advancement in technologies.

The Concept of IoT

The term “Internet of Things” was coined by Kevin Ashton in 1999. IoT concept is dreadfully simple (refer to figure 1) and it will be realized when all objects used in daily life will be uniquely identified and will have the ability to communicate with each other and react on the occurrence of any event.

Ashton presented IoT concept in an article of RFID journal (Ashton, 2009). As per the concept, the technologies like RFID and sensors will enable computers to observe, identify and understand the world of their own without the intervention of humans. Such computers will be able to provide their own status like when to repair, replace and discard. IoT concept is also presented by other.

As per dictionary definition of Oxford:

*Figure 1. The Internet of things for Everyone, Every Where, Any Thing*
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