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Industry 4.0 – A Tool to Transform a Standard Factory into a Smart Factory

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Industry 4.0 – A Tool to Transform a Standard Factory into a Smart Factory

Brief Description

Industry 4.0 is a contemporary subject that concerns today's industrial production.

It enables the manufacturing sector to become digitalize with built-in sensing devices virtually in all manufacturing componentsproducts and equipment.

Industry 4.0 serves a role to help integrate and combine the intelligent machines, human actors, physical objects, manufacturing lines and processes across organizational stages to build new types of technical data, systematic and high agility value chains.

Abstract

The purpose of this article is to present an overview of industry 4.0. The goal of this presentation is to give a brief perspective of what Industry 4.0 is, its challenges in today's manufacturing environments. Many researchers have mentioned that implementing industry 4.0 is a response to the current challenges in fast changing environments. In this paper, I have provided a comprehensive introduction and definition about this Industry 4.0 concept, transformation steps and explain the technologies involved in Industry 4.0 ecosystem. After that, I have presented several points about challenges and issues of Industry 4.0, then the most relevant and potential benefits of this new industrial paradigm. Lastly, I have ended this presentation by drawing a conclusion.

Manufacturing has undergone several eras of change from the first industrial revolution - use of steam power and mechanical production, to the second - use of electricity and mass production and a third era - defined by increased automation of manufacturing processes due to the use of information technology (IT). A fourth era of change – Industry 4.0 – is driven by trends on connectivity, service orientation, advanced materials and processing technology, and collaborative advanced manufacturing networks; networks of advanced manufacturing devices controlled by computers combining them into a physical – digital environment. According to Mckinsey Digital, Industry 4.0 seen as a digitization of the manufacturing sector, with embedded sensors in virtually all product components and manufacturing equipment, ubiquitous cyber physical systems, and analysis of all relevant data.

The successful path to transformative Industry 4.0 depends on having a vision and enterprise-wide strategy, rather than taking a piecemeal approach to implementing technology solutions. Focus on business drivers, tech enablers that overcome pain points, and working with the right partner ecosystem to accelerate sustainable transformation for greater business value and opportunity outcomes. A transformative Industry 4.0 approach helps organizations overcome the challenges they currently face, and it also enables them to become future-ready to build anything, anytime, anywhere.

Industry 4.0 provides a new way of doing business and a new source of creating value, especially for traditional manufacturing companies. Manufacturing organizations need an enterprise-wide strategy to gain the full business value of Industry 4.0, including productivity, sustainability, and competitive edge. Now in competitive market, it is more likely a company will be more profitable and create jobs when it produces products with higher flexibility, quality and technology content and applying Industry 4.0 than by competing on low-price products. In addition, companies can take advantage of the broad range of aspects of Industry 4.0, including smart products, smart assets, and optimized factories operating sustainably and creating optimal conditions for empowered workers.

The goal of Industry 4.0 implement is to enable autonomous decision-making processes, monitor assets and processes in real-time, maintaining improved quality and enable equally real-time connected value creation networks through early involvement of stakeholders, and vertical and horizontal integration.