Manufacturing gets personal in Industrial Revolution 5.0:

The Future is Now

End-to-End Logistics Innovation Partner

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Introduction

Preface

Most companies are still trying to get to grips with Industry 4.0 and already there is talk of Industry 5.0. What is the difference?

Industry 4.0 is the bringing together of robots, interconnected devices and fast networks of data within a factory environment, basically to make the factory more productive and to execute the routine tasks that are best done by robots and not best done by humans.

Because Industry 4.0 heavily favors automation and unprecedented levels of productivity, many companies have now adopted technologies such as the IoT, AI, big data, remote and cloud computing and advanced robotics.

For anyone who hasn't adopted these technologies, 4.0 is still very much in the now. However, many companies at the forefront of technology have already moved on to the next generation: Industry 5.0.

While Industry 4.0 is all about automation and digitization, the future of manufacturing is in personalization. Manufacturing 5.0, or the 5th Industrial Revolution, will focus on the co-operation between humans and robots. Although the focus remains on automation and advanced manufacturing, the human element is more important than ever.

The easiest way to explain 5.0 is that it takes the automated and efficient concept and injects it with a traditional, personalized human touch. Adopting more conventional human-based setups might sound like a step back, but there's a good reason for it. It's less a move backward or transformational shift — such as 4.0 — and more a merger or collaborative operation.

Industry Revolution

Guide upto 5.0

The history of Industry 4.0 tracks the manufacturing industry from the industrial revolution to the digital transformation and beyond. Each new stage represents a revolution in the manufacturing process that has changed the way we think about and work in the industry.

Industry 1.0 – The Industrial Revolution (1780 : Mechanization)

Dating back to around 1760, the First Industrial Revolution was the transition to new manufacturing processes using water and steam. While it was hugely beneficial in terms of manufacturing a larger number of various goods and a better standard of living for some. The textile industry, in particular, was transformed by industrialization so did transportation.

Industry 2.0 – The Technological Revolution (1870 : Electrification)

The first Industrial Revolution represented the period between the 1760s and around 1840. This is where the second industrial revolution picked up. Historians sometimes refer to this as "The Technological Revolution" mainly in Britain, Germany and America. During this time, new technological systems were introduced, most notably superior electrical technology allowed even greater production and more sophisticated machines.

Industry 3.0 – The Digital Revolution (1970 : Automation)

It began with the first computers era. These early computers were often very simple, unwieldy and incredibly large relative to the computing power they were able to provide, but they laid the groundwork for a world today that one is hard-pressed to imagine without computer technology. Around 1970 saw the Third Industrial Revolution use electronics and IT (Information Technology) to further automation in production. Manufacturing and automation advanced considerably thanks to Internet access, connectivity and renewable energy. Industry 3.0 introduced more automated systems onto the assembly line to perform human tasks, i.e. using Programmable Logic Controllers (PLC). Although automated systems were in place, they still relied on human input and intervention.

Industry 4.0 – The Automation Revolution

The Fourth industrial Revolution is the era of smart machines, storage systems and production facilities that can autonomously exchange information, trigger actions and control each other without human intervention. This exchange of information is made possible with the Industrial Internet of things (IIOT) as we know it today. Key elements of Industry 4.0 include:

- Cyber-physical system - a mechanical device that is run by computer-based algorithms.
- The Internet of things (IoT) - interconnected networks of machine devices and vehicles embedded with computerized sensing, scanning and monitoring capabilities.
- Cloud computing - offsite network hosting and data backup.
- Cognitive computing - technological platforms that employ artificial intelligence.

> Industry 4.0 starts to move towards Industry 5.0 when you begin to allow customers to customize what they want

What Is Needed for an Industry 4.0 Factory or System?

Conceptually, Industry 4.0 consists of the following four design principles, which companies are encouraged to implement to fully harness the capabilities of current technology:

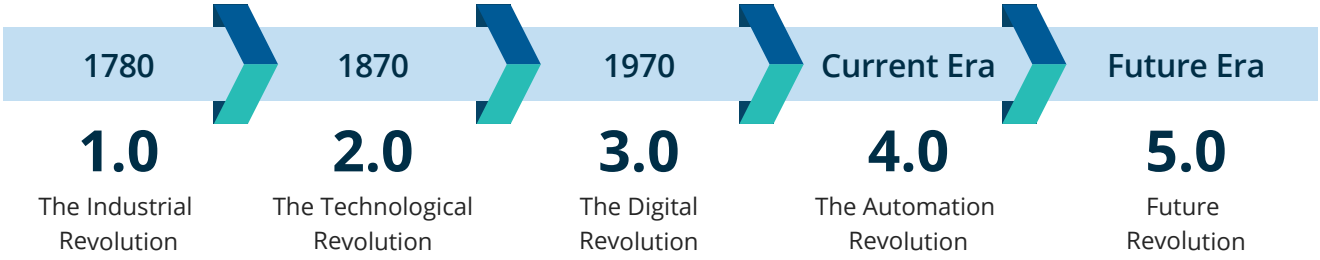
INTEROPERABILITY:
The integration of industrial machines, tools and vehicles into a computerized IoT framework.

INFORMATION TRANSPARENCY:
The ability of sensor-equipped computer systems to make virtual copies of real-world machines and objects.

TECHNICAL ASSISTANCE:
Computerized machinery equipped with artificial intelligence to assist human workers with decision making and physical work.

DECENTRALIZED DECISIONS:
The ability of computerized systems to act and complete tasks on their own.

History of Industrial Revolution



What Is Industry 5.0?

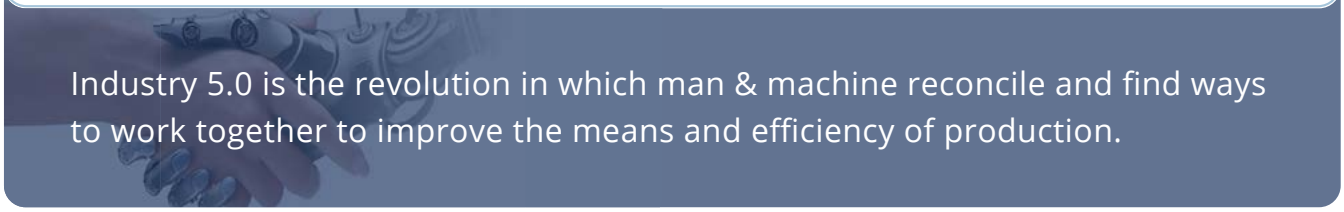
Less than a decade has passed since talk of Industry 4.0 first surfaced in manufacturing circles, yet visionaries are already forecasting the next revolution - Industry 5.0. If the current revolution emphasizes the trans-formation of factories into IoT-enabled smart facilities that utilize cognitive computing and interconnect via cloud servers, Industry 5.0 is set to focus on the return of human hands and minds into the industrial framework.

Industry 5.0 is the revolution in which man and machine reconcile and find ways to work together to improve the means and efficiency of production. Funny enough, the fifth revolution could already be underway among the companies that are just now adopting the principles of Industry 4.0. Even when manufacturers start using advanced technologies, they are not instantly firing vast swaths of their workforces and becoming entirely computerized.

Human intelligence will work with cognitive computing to produce more value-added goods. Manufacturing 5-0 will allow customers the option to personalize their order. A simple example is how customers can select exactly the kind of shoes or clothing they want. That includes choosing their own colours, style or material before it even goes into production.

Collaborative systems will be responsible for repetitive tasks such as drilling or data mining while staff take on higher-level responsibilities. They will manage and supervise these systems and make real-time decisions looking for opportunities to elevate quality and production processes.

> With Industry 5.0, you'll be able to automate the manufacturing process better, which means you'll have real-time data coming in from the field



The Bottom Line

Industry 4.0 Today, Industry 5.0 Tomorrow

As technological innovations become ever more rapid, revolutions could ultimately follow one another in quick succession over the next 10 years and beyond. Whereas the first three industrial revolutions took decades to play out, today's revolutions last only as long as it takes for industry-wide implementation to complete itself. It's important to note that Manufacturing 5.0 is an upgrade of 4.0 and not entirely new.

Overall, the developments of Industry 5.0 could prove to be the full realization of what the architects of Industry 4.0 had only dreamt of at the dawn of the 2010s. As artificial intelligence improves and factory robots assume more human-like capabilities, the interaction between computers, robots and human workers will ultimately become more meaningful and mutually enlightening.

For those fearing the Robot Revolution, it won't be any time soon and certainly not with cobots. Robots running and staffing a factory on their own remain science-fiction, even in the smart factory of tomorrow. People will remain the core focus while robots and cobots make human jobs less strenuous. They will support humans and give them entirely new capabilities.

How do you think Manufacturing 5-0 will affect your manufacturing plant? How willing are you to embrace the changes and implement the necessary technologies to bring the next Industrial Revolution to your business?

The Gateway Corp. specialize in a number of industries including automotive, transport & logistics healthcare, retail, manufacturing, fintech etc. We firmly believe in continuous improvement, investment and innovation with an eye on Manufacturing 5-0 for sure. If you need any assistance with your IT engineering project, please get in touch with us.

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