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Technology Trends in Manufacturing Industry for 2021

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Abstract

Just like any other sector, the pandemic hit manufacturers hard leading to forced shutdowns, production slowdowns in addition to raising serious questions about whether companies could withstand this disruption. Manufacturing gained some momentum in early 2020; however, the US industrial production registered a month-over-month decline of [4.5%](#) in March. The same was followed by a deeper decline of [11.2%](#) in the next month: April.

Industry Insights

Technological advancements are transforming nearly every industry and the way they function. Manufacturers are on a constant lookout for the latest and greatest inventions, strategies, and systems that can help them stay relevant to the consumers.

In 2020, many companies made swift moves either towards Industry 4.0 or the ongoing automation of old industrial and manufacturing practices. Time is money; hence, there is no time to waste. If manufacturers want to stay competitive, they need to serve their customers in new ways: ways that are more agile and flexible and can attract the right skills and talent. Here's how technology can help with the same:

Manufacturing Trends in 2021

1. Accessible Automation

The manufacturing industry is quite familiar with the term Automation, though it is not widespread enough yet. But with the emergence of new technologies like AI and ML, automation is becoming more accessible to manufacturers and it is helping them change the way companies operate. "Automation for all" is the future of the manufacturing industry.

Automation offers easy-to-use robotic solutions along with user-friendly Manufacturing Process Management (MPM) systems and human-robot collaboration. By implementing manufacturing automation, organizations can reduce costs and optimize workflows while increasing their bottom line.

2. Internet of Things (IoT)

The Internet of Things (IoT) is an ideal technology for manufacturers to connect and monitor various components of their operations since it offers deep insights into the same. It also provides the manufacturers with valuable data that helps them to change quickly and optimize every facet of their manufacturing process.

Smart sensors and cloud connectivity backed by the internet are helping IoT become a propelling advancement of the industry. Not only this, but it also helps in improving safety, saving money, streamlining manufacturing, and creating new products with numerous capabilities for manufacturing. Till 2020, more than [267 billion USD](#) were invested in IoT: [50%](#) of which was focused on manufacturing, transportation, and logistics.

3. Enterprise Resource Planning

Enterprise Resource Planning (ERP) technology has been helping the manufacturing industry transform for many years. It is getting even more widespread with the availability of cloud-based SaaS options that can easily be deployed. They are ideal for small businesses as they are quite affordable.

ERP systems can help the manufacturers automate various operations under one comprehensive system. Also, they facilitate the manufacturers with the insight needed to oversee the entire manufacturing operations and to make improvements and adjustments as and when required.

4. Artificial Intelligence and Machine Learning

Now, companies have access to more data than ever before. This is why they need efficient tools that can enable them to make the most of that existing data. Emerging technologies, such as Artificial Intelligence (AI) and machine learning, are helping the manufacturing industry with the same.

AI is not only about walking, talking robots, it also refers to a computer system's ability to recognize trends and infer logical conclusions to help manufacturers make timely, data-driven decisions. AI and machine learning can transform the manufacturing sector by facilitating inventory management, supply chain visibility, asset tracking, and forecasting accuracy. It can also help in warehouse and transport cost reduction.

5. Predictive Maintenance

Backed with IoT, AI, and machine learning, predictive maintenance is assisting manufacturers to avoid downtime by catching issues, even before they arise. Using predictive maintenance technology in a manufacturing operation not only saves maintenance costs and downtime but also extends the expected life of machinery.

Well-designed predictive maintenance programs can help the manufacturers reduce costs to about [20%](#) for maintenance can cut unplanned machine outage to almost half i.e., [50%](#).

6. Additive Manufacturing

Additive Manufacturing is the official industry term for what we call 3D printing. With the help of computer-aided design (CAD) software, manufacturers are now able to build custom parts and products, one layer at a time, for their customers. Additive manufacturing goes way beyond making entire, complete products – it also helps in creating models, prototypes, moulds, lost-wax castings, or components of final, finished products.

7. Collaborative Robots (Cobots)

Robotics and automation in the manufacturing industry bring several concerns related to a negative impact on the workforce. But the reality and what manufacturing trends are showing is exactly the opposite of it – robots and people working in collaboration to get more work done, faster and more safely.

Cobots, built for the human workforce, can be used as a valuable tool to improve overall efficiency in the workplace. AMRs are customized to this working partnership as they can easily be programmed to consistently perform non-value-added work, such as moving heavy products. It will provide the human operators with a lot of time that can be spent focusing on skilled labour.

Endnote

Technology has always been a game-changer for every industry: the emergence of new technologies brings new transformative possibilities that help businesses grow. Manufacturing is one of the few companies that rely heavily on manual processes, most of which can be easily automated. It will not only increase efficiency but will also reduce operational costs. These technology trends in the manufacturing industry make it even more evident. The time is now to embrace the same!