

MANUFACTURING INSIDER

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Current State of the Manufacturing Industry



THE FOURTH INDUSTRIAL REVOLUTION

Manufacturing has been through three industrial revolutions from the use of water and steam to electricity to automation. The next revolution involves connecting existing machines to one network. Appropriately, it has been dubbed the Fourth Industrial Revolution.

Since 2016, the World Economic Forum has been discussing what the Fourth Industrial Revolution may look like. Predicting how this new technology from artificial intelligence (AI) to the Industrial Internet of Things (IIoT) to augmented reality will affect the future of manufacturing is an impossible task. Just thinking about the amount of variables that influence the industry is daunting. Companies will have the struggle of finding the right time to integrate and rely on the technology.

According to a study done by McKinsey & Company only 5% of occupations consist of activities that are 100% automatable. The same study showed that 62% of occupations have activities that are 30% automatable – this is the

opportunity for the Fourth Industrial Revolution.

Companies embracing the Fourth Industrial Revolution are achieving results in two ways:

- Innovating and improving their production system and outputs.
- Innovating and changing the way their products are brought to market.

Innovating and improving production system and outputs:

Companies are improving production and quality by gathering data on themselves. Companies are creating their own IIoT networks to connect machinery currently in place with the use of sensors. This allows the gathering of real time data on production output as well as equipment wear. The data allows companies to better plan inventory buys, timing of shipments and maintenance.

Within the manufacturing workforce, the thought of automation can bring a stigma. The increase in productivity and efficiencies will often lead to

more job growth. In two examples cited in a Forbes article, companies that implemented this technology experienced over 50% job growth.

Innovating and changing the way their products are brought to market:

Companies going down this path focus on data from their customers. In order to be successful and move at the necessary speed required, companies are using 3D printers to produce on-demand products. This process can include input from a customer through a web-based configurator that communicates directly to production. These changes allow companies that historically focused on a B2B business channel to move toward a B2C business channel.

The Fourth Industrial Revolution is often thought of as an automating process with little human input. The reality is that these changes can be made using production equipment currently in place. Software or network changes are often scalable. The relatively cheap costs of network hardware and network or website scalability allows small and medium sized companies to compete in any market.

Chad Kime, Partner
(Farmington Hills, MI)

*The next level
of service*

5G NETWORKS: THE NEXT STEP IN THE FOURTH INDUSTRIAL REVOLUTION



If then when?

The new 5G network is getting a lot of play in the press. The next generation of 5G networks will be 100 times faster than the current 4G networks. 5G networks do not have the latency issues of 4G networks and allow for a large amount of connections. The flexibility of this new technology has given many the hope that it can further support the Fourth Industrial Revolution.

Follow the money

Sometimes the best judge of potential is to follow the money. Many companies and governments have begun to invest in trials of the 5G technology. Samsung is set to invest \$22B in 5G and AI related technology. T-Mobile and Nokia will put up \$3.5B. In June of 2019, the UK government announced its plans to invest \$50.5M in a study to determine how 5G can increase productivity and output in specifically the manufacturing and logistics sectors. Audi, the German automaker, has made the decision to develop their own 5G Industrial Internet of Things (IIoT) network.

What does it mean?

Manufacturers are already headed down the road of the Fourth Industrial

Revolution – connecting the automated machines of the last industrial revolution on to one network. The emphasis is data gathering. A 5G network has the potential to be more reliable than a WiFi network and does not have the connectivity issues of the 4G network.

Ericsson, a mobile phone company, has shown what can be done with this technology. In a study with the Fraunhofer Institute for Production Technology in Germany, sensors were placed on metal milling centers. The milling centers made very large bladed disks for jet engines that could take up to 20 hours to make. The disks had an error rate of up to 25% due to the precision required. The errors could not be detected until the milling was completed. The sensors with 5G connectivity detected faults that caused errors in real time. The sensors reduced the error rate to 15% and saved an average of \$4,000 on the production cost of a blade.

The next step

This technology has the chance to revolutionize the manufacturing industry. Increasingly manufacturers have been under great stress to embrace

technology, but have been reluctant to do so due to consistency issues. If a 5G network can live up to the lofty expectations, it may be a solution that manufacturers are looking for. A lot of companies with a lot of money on the line certainly hope so.

Chad Kime, Partner
(Farmington Hills, MI)

“The next generation of 5G networks will be 100 times faster than the current 4G networks.”



According to a new Standard & Poor's report, there are two key indicators that will tell you what kind of shape the manufacturing industry is in. The first is the Institute for Supply Management's Purchasing Manager's Index and the second is the Federal Reserve's Capacity Utilization Index for motor vehicles and parts. A reading above 50 percent for the ISM index indicates that manufacturing is expanding in the US, and below 50 means that it is contracting. History shows that each time since 1983 that the index fell below 43 percent "speculative grade" automotive companies began to panic. Similarly any time the Fed's utilization rate dropped below 72 percent during that period, it caused stress to automotive companies. Let's take a look at the trend over the past year:

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AS OF JUN '19

ISM Purchasing Manager's Index: 51.7% 

Fed Capacity Utilization Rate: 78.1% 

AS OF FEB '19

ISM Purchasing Manager's Index: 55.3% 

Fed Capacity Utilization Rate: 75.4% 

AS OF DEC '18

ISM Purchasing Manager's Index: 54.1% 

Fed Capacity Utilization Rate: 75.7% 

AS OF AUG '18

ISM Purchasing Managers Index: 61.3% 

Fed. Capacity Utilization Rate: 75.8% 

MANUFACTURING INDUSTRY INSIGHT

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- Distribution
- Automotive Suppliers
- Industrial Manufacturing
- Consumer Products

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