

New normal, new opportunities



Automation

Technology advancements lead to new products and higher productivity

This report is part of the “New normal, new opportunities” series, in which we examine secular trends in a post-COVID-19 world. The series will cover a range of themes that are emerging as a result of social distancing, the work-from-home imperative, health care developments, corporate implications, and broader societal change. We believe identifying these trends and understanding their investment implications will be critical to navigating the road ahead. Additional reports will be released over the following weeks.

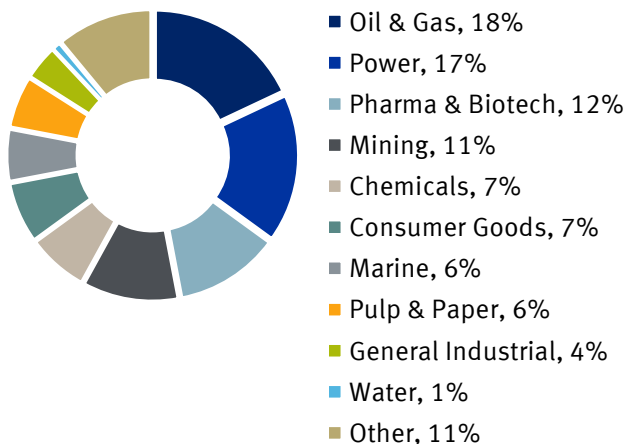
The primary objective of industrial automation is to make manufacturing operations more profitable. This is achieved in several ways, such as developing higher-quality products, lowering labor and materials costs, and reducing the need for input inventories on hand.

Today, the world is experiencing a confluence of advancements in computing power, data network speed, and mechanical technology. As a result, manufacturers

appear to have an opportunity to increase the functionality and personalization of manufactured goods by spending on automation. Examples of such goods include electrical and self-navigating automobiles, smart appliances, and cleaner water systems.

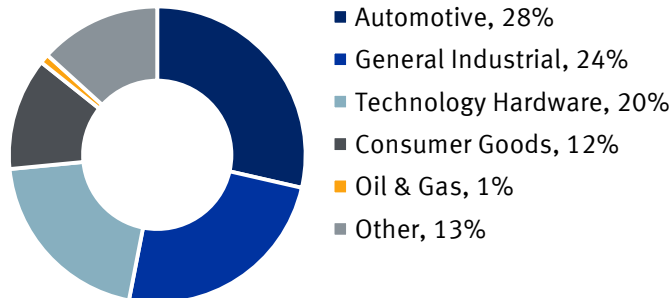
The COVID-19 pandemic revealed supply chain security weaknesses in many developed markets, coming from offshoring production for entire product categories. For example, outsourcing the production of antiviral protective masks helped lead to a U.S. shortage in the early stages of the outbreak. This has led to a reassessment of essential goods production capabilities, with nascent initiatives to bring some manufacturing operations back onshore. In a recent survey of U.S. manufacturers by the Institute for Supply Management (ISM), 64 percent of respondents indicated an intent to reshore at least a portion of current manufacturing operations, for reasons related both to supply chain security and higher overseas labor costs.

Process automation end markets



Source - Credit Suisse

Discrete automation end markets



Source - Credit Suisse

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Automation explained

Industrial automation can be split into two separate platforms: process automation and discrete automation.

- **Process automation** has to do with manufacturing raw materials into products that are then either sold to the public or used as inputs into finished goods.
- **Discrete automation** has to do with assembling finished products from the component parts. A relatable example is an automotive assembly line.

Process and discrete automation systems are not mutually exclusive, as some industries use hybrid systems that perform both processes. Key examples are pharmaceuticals, water, and food & beverage.

The primary components that make up automation systems are:

- **Automation equipment & systems.** The largest manufacturing and automation companies build the equipment that performs the actual manufacturing processes. Additionally, each of these equipment makers also provide integrated platforms which contain subcomponents such as the three listed below, creating a coordinated manufacturing system.
- **Automation software** helps manufacturers oversee their operations. This is done in several ways, such as automating product design, monitoring the manufacturing process, identifying and sometimes addressing maintenance issues, managing labor productivity, and coordinating input supply. Automation software systems provide a feedback loop of information that can then be used to enhance the manufacturing process and ultimately improve product quality, efficiency, and profitability. Our research source estimates that the automation software market is growing at a seven percent annualized rate, versus that of around four percent for the whole automation market.
- **Instrumentation** is a smaller but important component of the manufacturing process, providing feedback on manufacturing to the labor, management, financial, and purchasing departments, as well as to the automation software. This information can then be used to make improvements to the manufacturing process.
- **Manufacturing robotics** allows a manufacturer to save on labor costs and increase quality consistency. The robotics systems must be sufficiently fast, reliable, and energy efficient to justify their upfront costs.

Growth opportunities

In addition to automation software, there are a few niches within the automation market that may grow at a faster rate than the automation market as a whole, due to their relatively early stage of development, and in some cases, pandemic-mandated changes.

A relatively new and niche component of the automation puzzle is the Industrial Internet of Things (IIoT), which involves a network of transmitters, sensors, and processors designed to remotely monitor and analyze data through an automated process. It can unlock manufacturing profitability in several ways, such as reducing waste, improving employee safety, monitoring equipment performance, and automatically procuring resources. We expect IIoT deployment to become more widespread as the enabling 5G wireless networks are deployed over the next few years. According to our research source, 37 percent of current spending on Internet of Things initiatives emanates from the Industrials sector.

The global COVID-19 pandemic could accelerate the automation of office buildings and factories. A recent study by the University of Chicago estimated that 37 percent of jobs could be done entirely at home, while 63 percent still require a physical location. The study further stated that within several years, 30 percent of employees could be home several days per week. The corollary to this is that 70 percent would still be working in the office, store, or factory. Should COVID-19 prove to be a persistent reality like the flu, it is likely that the additional precautions temporarily in place regarding spacing, security, and access may need to become permanent. While the shorter-term impact could lead to a down-cycle in office building construction, those that already exist may need to spend more money on security, lighting, and access automation solutions. Factories may seek to reduce employee density by increasing remote monitoring capabilities.

RBC Capital Markets expects the pandemic to accelerate adoption of “smart water” solutions deployments by water utilities. Several of these utilities had already been implementing automation solutions prior to the outbreak, deploying remote asset and workforce management solutions, automated operations, and remote monitoring. Companies deploying solutions to projects such as the United Nations’ Sustainable Development Goals, which aim to conserve water through the use of advanced technologies and provide access to clean water and sanitation to underdeveloped populations, should appeal to investors who take a company’s environmental, social, and governance (ESG) factors into consideration.

Could COVID-19 serve as a reshoring catalyst to offset automation-induced job losses?

Increasing adoption of automation has a tendency to reduce the need for labor, and as a result produces a negative externality for society in the form of fewer available high-paying jobs. The U.S. has been experiencing manufacturing labor displacement for a few decades, due to factory production being shipped overseas to take advantage of lower labor costs in emerging markets. However, with labor costs in those developing nations trending higher, and also with the COVID-19 pandemic exposing some national security concerns associated with having important operations concentrated in foreign markets, the trend toward automation-enabled reshoring appears to be growing.

While ISM's manufacturer survey revealed that 64 percent of respondents indicated they're likely to bring production and sourcing back to North America, RBC Capital Markets believes this survey may overstate the eventual reshoring move, because in most cases manufacturing outside of the U.S. is for local domestic use, termed "in-country, for-country." Our research source believes that most of the reshoring inspired by supply chain security will be limited to just a few industries, particularly medical device and pharmaceutical production operations.

While automation may not be a permanent boon for U.S. job creation, reshoring initiatives may result in new domestic factories, stimulating commercial construction activities, and leading to a particularly strong purchasing cycle for automation equipment, provided that the health of the global economy provides a sufficient backdrop to justify such spending.

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			Count	Percent
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