

# How to Prepare for a Career in Advanced Manufacturing



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The demand for Industry 4.0 talent is rising as Singapore and the global manufacturing industry enter a new wave of automation and digitisation. Industry 4.0 represents the fourth revolution in the manufacturing sector (commonly known as Advanced Manufacturing), which involves the rapid adoption of smart, autonomous systems driven by data and machine learning to create a more holistic, better connected ecosystem for companies in manufacturing and supply chain management.

Accounting for about 21 per cent or around S\$106 billion of Singapore's total gross domestic product (GDP), the manufacturing sector presents a lot of exciting career opportunities. Former Trade and Industry Minister Chan Chun Sing had also noted how the government intends to groom more local talents and companies in the area of advanced manufacturing, complementing the workforce with high quality machines to attract foreign investments.

If you're thinking of making a career switch especially in these COVID-19 times, read on to explore more about advanced manufacturing and how you can best prepare for it!

## A Closer Look at Advanced Manufacturing

Compared to traditional manufacturing, advanced manufacturing emphasises the use of smart digital technology to create versatile production methods that are more efficient, effective and responsive<sup>3</sup>. There are lots of terms relating to advanced manufacturing and Industry 4.0. For a start, let's get up to speed with these<sup>4</sup>:

- **Artificial Intelligence (AI)** – A computer's ability to perform tasks and make decisions that would usually require some level of human intelligence
- **Big Data** – Large sets of structured or unstructured data that can be compiled, stored, organised and analysed to reveal trends, associations and opportunities
- **Cloud Computing** – The practice of using interconnected remote servers hosted on the Internet to store, manage and process information
- **Enterprise Resource Planning (ERP)** – Business process management tools that manage information across an organisation
- **IoT** – Internet of Things, a concept that refers to connections between physical objects like sensors or machines and the Internet
- **IIoT** – Industrial Internet of Things, a concept that refers to the connections between people, data and machines as they relate to manufacturing
- **M2M** – Machine-to-machine, a concept that refers to the communication that happens between two separate machines through

wireless or wired networks

- **Machine Learning** – The ability that computers have to learn and improve on their own through AI without being explicitly told or programmed to do so
- **Smart Factory** – A smart factory is the one that invests in and leverages Industry 4.0 technology, solutions and approaches

Key trends in Industry 4.0 involve day-to-day use of many of the above technologies and concepts. One such trend is the increasing prevalence of predictive maintenance and analytics, where manufacturers are given the ability to predict when potential problems are going to arise before they actually happen. With IoT systems in place, preventive maintenance becomes more automated instead of being dependent on a fixed, manually scheduled routine.

## Making the Switch

Now that you have a better understanding of the field, let's see how you can prepare for a career in advanced manufacturing<sup>5</sup>:

1. **Think creatively, think constantly** – Not every manufacturer uses robotics or other cutting-edge technology. However, the desire for cutting-edge ideas to enhance operations is universal. That's why it's good to always observe current industry practices and brainstorm new ways to improve, be it a switch to more cost-effective materials or streamlining a certain production process. When your idea helps your manager or lead worker succeed, everyone wins.
2. **Focus on career fulfilment** – Whether you're a trainee or a senior worker, you should remain excited about picking up relevant problem-solving and technical skills, and keeping up with industry trends. Taking the initiative to solve issues and be a cooperative team player goes a long way towards feeling fulfilled within a highly dynamic environment.
3. **Pursue a professional academic course** – Look for a programme from a reputable institution that can help develop your skillset with regards to supply chain management, blockchain and contract management. We highly recommend the [6-month JOMAN for Corporate Services in Advanced Manufacturing](#), which is offered by SIM PDEL in conjunction with the [SGUnited Skills Programme](#). A combination of classroom/virtual training modules and industry projects/attachments will allow you to gain the required expertise to fulfil managerial roles in the areas of Procurement, Supply Chain and Technical Service in the manufacturing sector.

To sum it up, navigating towards career success in advanced manufacturing takes a combination of skills, qualifications and constant professional development. To learn more about how you can upskill and reskill for the demands of Industry 4.0, check out our [SGUS JOMAN for Advanced Manufacturing](#) programme today!

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<sup>1</sup> Forbes, 2 Sep 2018: What is Industry 4.0? Here's A Super Easy Explanation For Anyone

(<https://www.forbes.com/sites/bernardmarr/2018/09/02/what-is-industry-4-0-heres-a-super-easy-explanation-for-anyone/?sh=7c35be499788>)

<sup>2</sup> CNA, 25 Jan 2021: Singapore aims to grow manufacturing sector by 50% over next 10 years

(<https://www.channelnewsasia.com/news/singapore/singapore-grow-manufacturing-sector-50-percent-2030-14037626>)

<sup>3</sup> TWI Global: What is Advanced Manufacturing?

(<https://www.twi-global.com/technical-knowledge/faqs/faq-what-is-advanced-manufacturing>)

<sup>4</sup> EPICOR, 21 Sep 2020: What is Industry 4.0—the Industrial Internet of Things (IIoT)?

(<https://www.epicor.com/en-sg/resource-center/articles/what-is-industry-4-0/#2>)

<sup>5</sup> SMC, 30 Oct 2019: 3 Tips to Advance Your Manufacturing Career Path (<https://www.steckermachine.com/blog/tips-to-advance-your-manufacturing-career-path>)