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Considering a Career in

Advanced Manufacturing

Innovating how things are made

LIVERPOOL CITY REGION COMBINED AUTHORITY

METRO MAYOR LIVERPOOL CITY REGION

Funded by UK Government

Advanced Manufacturing

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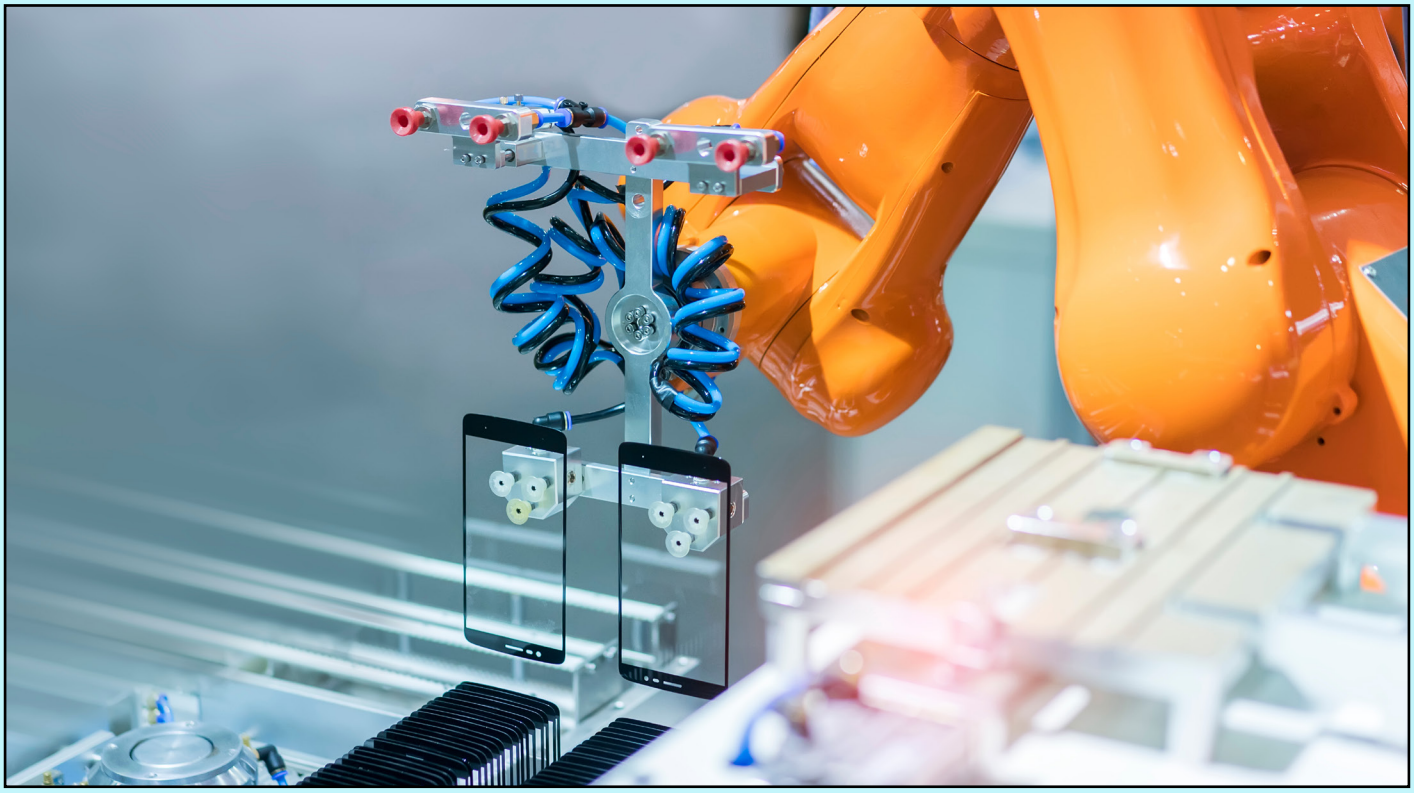
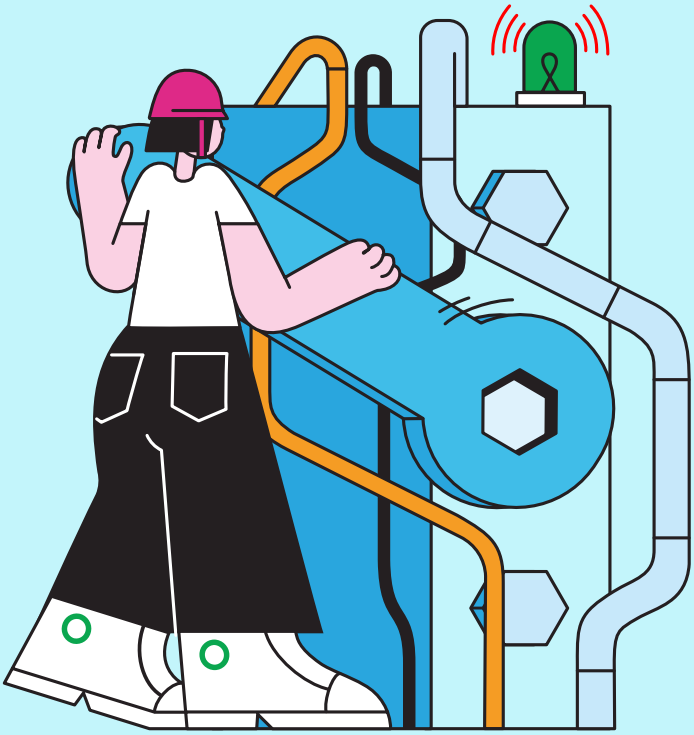


What is Advanced Manufacturing?

Advanced manufacturing strives to continually improve how things are made, making production processes quicker, smarter and greener.



It combines the human qualities of creativity and logic with progressive technology, such as robotics, artificial intelligence, and augmented reality, to transform how we make and improve products.

From producing zero-emission vehicles and lifesaving vaccines to crafting components for satellites and renewable energy systems, advanced manufacturing revolutionises the world we live in.

There are many production-based industries, and advanced manufacturing drives all of them. This career could see you working in automation, aerospace, clean energy, consumer goods, food and drink, pharmaceuticals, defence or any other industry where things are made.

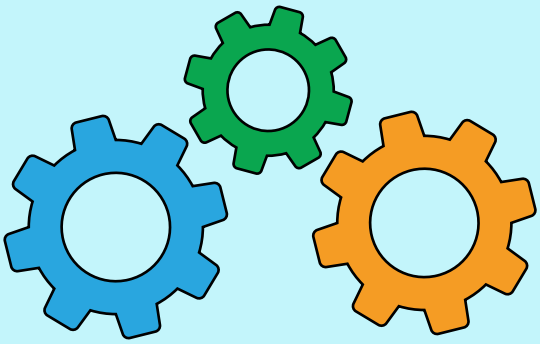
Whether you're designing next-generation electric vehicles as an automotive engineer, working with robotics and AI to optimise production, or creating custom medical implants using 3D printing, a career in advanced manufacturing is a career in improving the world.

Stats & Facts

Did you know?

Advanced manufacturing in Liverpool City Region: Stats & Facts

- **2,500+** manufacturing companies based here.
- Approximately **50,000** Liverpool City Region residents work in manufacturing.
- We have one of **Europe's biggest biomanufacturing** clusters.
- Advanced manufacturing contributes **£2.9bn** to our regional economy.



Advanced manufacturing in action in the Liverpool City Region

- Jaguar Land Rover in Halewood has invested £500 million in new production lines for hybrid and electric vehicles.
- Pharmaceutical giant AstraZeneca manufactures the children's nasal flu vaccine used in the UK and US's annual vaccination programme from its factory near Liverpool Airport.
- EET Fuels is set to become the world's first decarbonised oil refinery as it develops the capability to capture 1m tonnes of the CO_2 it emits annually and store it under Liverpool Bay.
- To reduce its use of virgin plastic, Unilever's R&D team in Port Sunlight has created a digital tool to predict the colour of packaging made from recycled plastics, cutting development time by around 25%.
- CSL Seqirus produces the H5N1 bird flu vaccine at its main UK manufacturing plant in Speke, ready to ship worldwide if there's a pandemic.
- Liverpool City Region is home to the National Centre for Digital Innovation—The Hartree Centre, MTC Liverpool, and the Materials Innovation Factory. These centres work at the crossover of industry and academia to develop pioneering solutions for manufacturing.

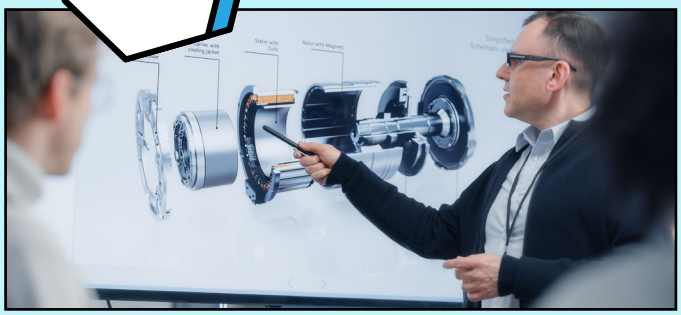
Advanced manufacturing: Good to know

What is the difference between manufacturing & advanced manufacturing?

Advanced manufacturing takes traditional manufacturing processes (e.g., factory production lines) and turbo-boosts them with cutting-edge industry tech tools like AI, robotics, data analytics, and augmented reality. It aims to improve product quality and development, speed up production, reduce costs and achieve industry goals such as sustainability.

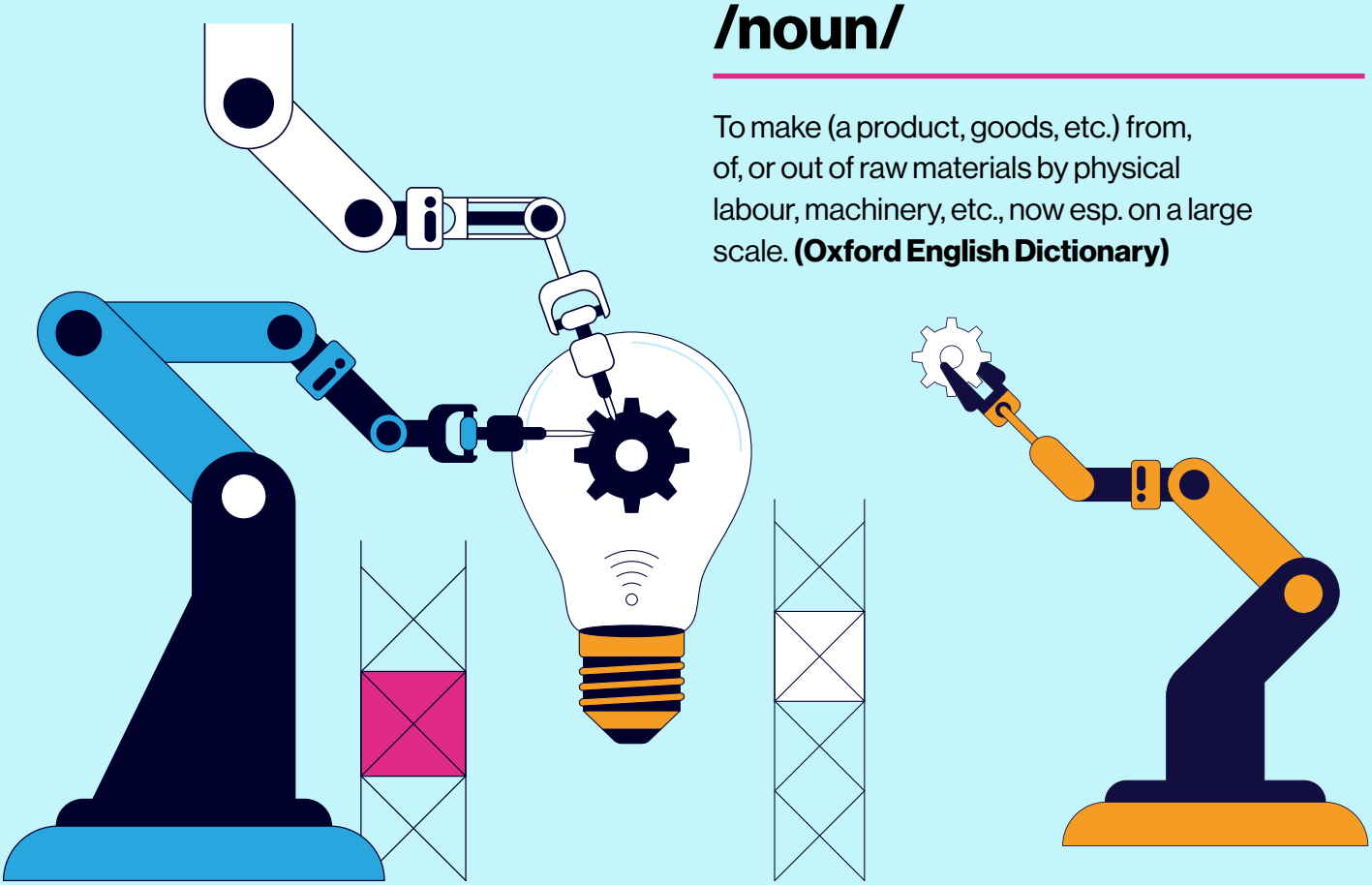
What role does engineering play in advanced manufacturing?

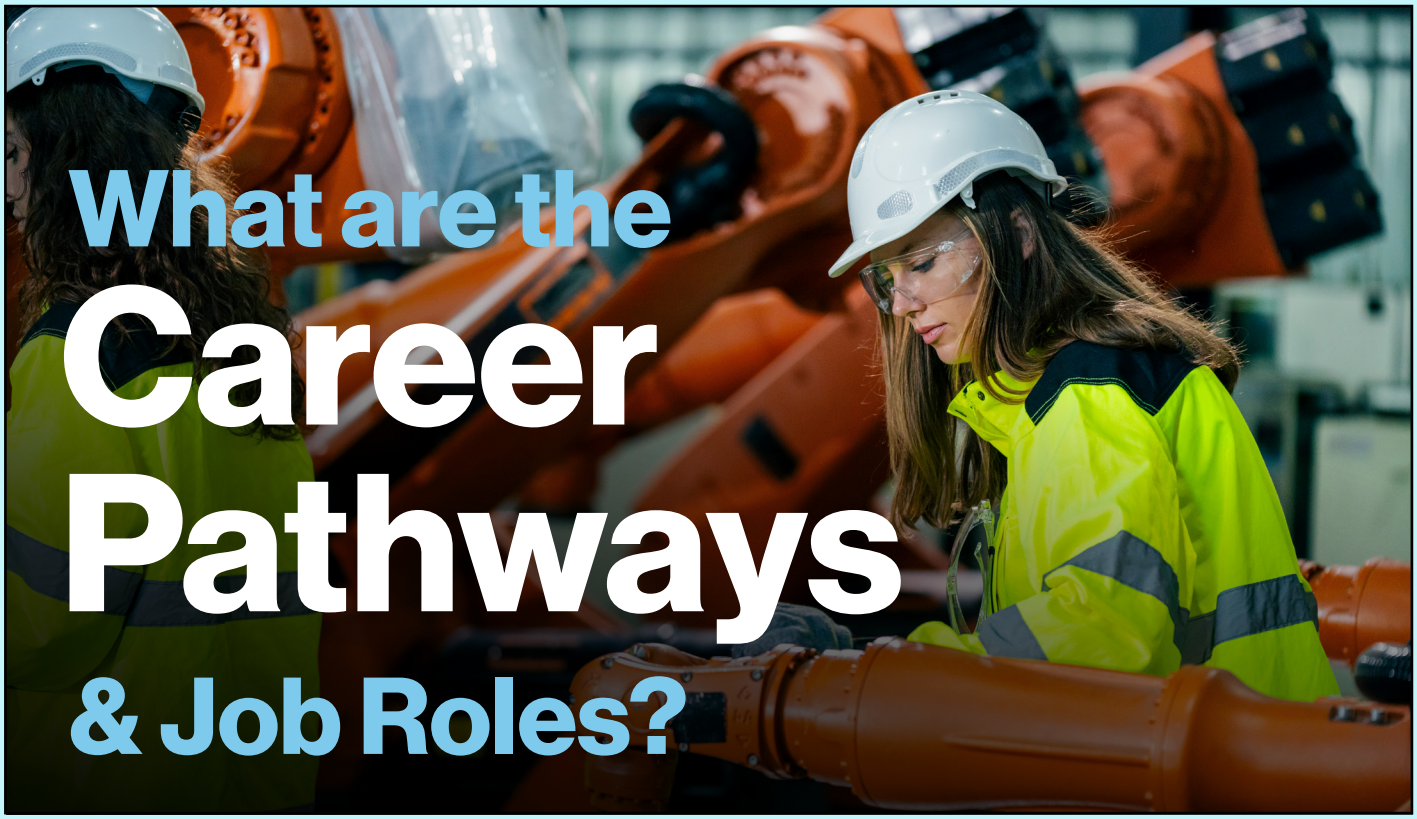
Engineering know-how provides the specialist skills, techniques, and knowledge to design, build and optimise processes and machinery using cutting-edge technology.



Manufacturing /noun/

To make (a product, goods, etc.) from, of, or out of raw materials by physical labour, machinery, etc., now esp. on a large scale. **(Oxford English Dictionary)**





What are the Career Pathways & Job Roles?

Advanced manufacturing career pathways

In an entry-level job such as a car manufacturing worker or production worker, you'll help assemble products on a production line, following procedures and developing practical skills and experience.

A mid-level role could see you crafting parts using precision and digital tools as a 3-D printing technician or engineering craft machinist. With time, you could train to develop specialist skills and become a robotics engineer or take on responsibilities progressing to roles like quality assurance manager.

Experienced individuals who have developed leadership and analytical skills or specialisms can progress into higher-level roles, such as production director or naval architect.


Approximately
50,000
Liverpool City Region residents work in manufacturing.

Advanced Manufacturing

Job Roles

There are hundreds of different job roles in advanced manufacturing. Here's just a sample:

Position	Role & tasks	Salary
Packer	Picks, packs, and labels products, inspects for damages, seals packaging, moves goods to storage using equipment, loads lorries for delivery and reports issues to supervisors. Ensures products are prepared and dispatched efficiently and accurately to meet business and customer needs.	Up to **£24,000**
Quality control assistant	Ensures products and processes in laboratories and factories meet required standards through inspections, testing, and fault identification. Documents issues, reports fixes and updates quality policies while maintaining compliance with regulations.	Up to **£30,000**
Car manufacturing worker	Assembles vehicle components, operates machinery and reports production issues. Fixes engines to chassis, fits interiors, wiring and dashboards, and manages robotic and paint-spraying equipment. Ensures vehicles are production-ready and prepares finished cars for shipping.	Up to **£32,000**
3D printing technician	Makes different products, such as medical implants, car parts, aircraft parts or fashion accessories. Creates models and prototypes, operates 3D printers and scanners, ensures quality control and maintains equipment.	Up to **£38,000**
Aerospace engineering technician	Builds, tests, and maintains aircraft, satellites, and their systems. Inspects and repairs electronics, fits critical components, tests flight controls, creates 3D models with CAD software, and maintains safety logs, ensuring the reliability and performance of commercial and military aerospace technologies.	Up to **£45,000**

Earn up to £68,000 per year

Position	Role & tasks	Salary
Metrologist	Uses advanced tools to ensure precision in measurements critical to manufacturing processes, calibrates and inspects equipment, troubleshoots issues, and records results to maintain high production and quality control standards. Applies measurement technologies to optimise processes and products across industries.	Up to **£45,000**
Robotics engineer	Designs, builds, and programmes automated machines for industries such as automotive, aerospace, and pharmaceuticals, ensuring efficient and precise operation to address complex industrial challenges.	Up to **£54,000**
Design & development engineer	Researches, designs, and develops innovative products and systems. Creates design plans, tests prototypes, troubleshoots issues, and analyses data to improve performance and efficiency using advanced software, mathematical modelling, and engineering expertise.	Up to **£55,000**
Naval architect	Oversees engineering design teams to create safe, seaworthy, and cost-effective vessels. Prepares and checks design plans, and tests specifications using simulations and 3D models, coordinating manufacturing or repair processes, guaranteeing optimal performance and compliance.	Up to **£65,000**
Textile production manager	Oversees all aspects of manufacturing, collaborating with design, sales, and quality control teams, managing supplier relationships, monitoring factory production, and setting quality standards. Ensures timely delivery, manages orders and promotes the brand through conferences and exhibitions.	Up to **£68,000**

Getting into Advanced Manufacturing

At entry-level

You can train for an entry-level role with a college course leading to a certificate, diploma, or T-level in engineering, manufacturing, or applied sciences. If you want to develop skills on the job, you can do a level 2 or 3 apprenticeship, such as engineering operative or improvement technician.

At mid-level

For mid-level technical or specialised positions, you can consider a higher national diploma (HND) or foundation degree in engineering or a degree apprenticeship, all of which provide expertise in areas like process design, automation, and sustainability.

At senior level

More complex roles, such as aerospace engineers, chemical engineers, or robotics specialists, typically require a university degree in engineering or a degree apprenticeship, such as mechanical engineer. Courses at this level combine theoretical knowledge with practical skills and expertise.

Subjects to study at school & beyond

- Design & technology
- Electronics
- Engineering
- ICT
- Maths
- Science

Core skills and knowledge to build

- AI technology
- Attention to detail
- Critical & analytical thinking
- IT skills
- Problem-solving
- Project management
- Sustainability knowledge
- Teamwork
- Thinking outside the box

Test Your Knowledge

(Answers on back page)

Q1. What is advanced manufacturing?

A. A traditional way of producing goods.
B. Combining skills like engineering and design with advanced technologies to transform production.
C. Producing goods solely through physical labour.
D. A method reserved only for the aerospace industry.

Q2. Which technologies are commonly used in advanced manufacturing? (Choose as many as you wish)

- Robotics
- Artificial Intelligence
- Augmented Reality
- Manual Labour

Q3. The Liverpool City Region accounts for 10% of the UK's annual car production. True or false?

Q4. Approximately how many Liverpool City Region residents work in manufacturing?

Q5. Which of these companies produces the H5N1 bird flu vaccine in Liverpool?

A. AstraZeneca
B. CSL Seqirus
C. Unilever
D. EET Fuels

Q6. Which of the following industries could a career in advanced manufacturing find you in? (Tick as many as you wish)

- Defence
- Food and Drink
- Consumer Goods
- Finance

Q7. Give an example of an apprenticeship or training course that could prepare someone for a role in advanced manufacturing.

Q8. What are the skills necessary for advanced manufacturing careers? Name three.

Q9. What role does a robotics engineer play in advanced manufacturing?

A. Design and build automated machines
B. Package and label products
C. Inspect and repair aircraft systems
D. Develop medical implants using 3D printing

Q10. Advanced manufacturing contributes £____ billion annually to Liverpool City Region's economy.

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Quiz Answers

Q1. B
Q2. Robotics, artificial intelligence, augmented reality
Q3. False – it's 15 %
Q4. Approximately 50,000
Q5. B
Q6. Defence, Food and Drink, Consumer Goods
Q7. Level 2 or 3 apprenticeship, such as engineering operative or improvement technician, or a foundation degree in engineering.
Q8. Attention to detail, critical thinking, problem-solving (or any other from the brochure content).
Q9. A
Q10. 2.9

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