Metal Casting, Foundry and Patternmaking **Technician** (Apprenticeship Standard)

Common Technician job areas

- Pattern and Model Making or Methods Development Technicians plan how to design and make patterns in wood, resin or metal from 2D/3D drawings, sometimes using additive manufacturing techniques and simulation software programmes, to produce prototypes or sample castings to tight tolerance.
- Foundry Material and Process Control Technician/Foundry Production or Metal Casting Furnace and Ladle Technicians prepare and control sand or liquid metal quality for casting into moulds or dies, which may involve maintenance and control of complex automated equipment.
- Post Casting Technician/Quality Assurance Technicians inspect and carry out and record control tests on samples or castings to meet agreed tolerances.

To succeed in these roles, apprentices must achieve the core knowledge, skills and behaviours listed below, as well as knowledge and skills from one of the specialist options.

Core knowledge

An apprentice will need to understand:

- relevant statutory, quality, and environmental compliance procedures and systems, as well as organisational and health and safety regulations relating to manufacturing operations
- their individual roles and responsibilities within the organisation and the limits of their own authority and the implications of operating outside of this
- how to interpret relevant engineering and manufacturing data and documentation to execute their job role, ie. how to understand a two-dimensional engineering drawing and use this to produce a three-dimensional model
- general metal casting, foundry and patternmaking manufacturing mathematical and scientific principles, methods, techniques, graphical expressions, symbols, formulae and calculations used by this engineering environment. ie. how to understand contraction allowances in the calculation of technical drawings for specific pattern production or the temperature specifications of casting liquid metal
- the structure, properties and characteristics of common materials used in the sector for example: pattern making materials like different woods, metals and plastics, foundry sand, binders, coatings, feeding and filtration systems, refractories, various metal alloys, additives, waxes and lubricants. Laboratory testing including: sand and binder properties, chemical composition and mechanical testing ie. tensile and hardness testing
- the full process of producing castings from a technical drawing to a finished casting and have knowledge of the manufacturing practices, processes and procedures.

Core skills

An apprentice needs to be able to:

- apply safe systems of work, complying with health and safety legislation, regulations, environmental compliance procedures and systems and other relevant guidelines
- demonstrate clear and effective communication skills which include oral, written, electronic and visual displays
- plan and obtain all the resources and documentation required to undertake the manufacturing process ie. a technician would plan and prepare the process to produce prototype castings. All elements and steps would be required to be planned, resources would need to be briefed and all stages of production recorded
- undertake the work using the correct processes, procedures and equipment. ie. the final inspection of a complete casting prior to despatch to ensure it complies with customer specifications
- perform safety, quality and compliance checks, using the correct processes, procedures and equipment. Ie. ensuring the gravity die assembly is safe and ready to start production
- complete appropriate documentation in an accurate, efficient and legible way by using the correct terminology
- maintain a positive working relationship with a range of people working within the manufacturing environment
- deal promptly and effectively with casting, foundry or patternmaking problems within the limits of their responsibility using approved diagnostic methods and techniques and report those which cannot be resolved
- work efficiently and effectively, maintaining workplace organisation and minimising waste.

Core behaviours

The Metal Casting, Foundry and Patternmaking industry requires their apprentices to behave in line with the Engineering Council's guidelines to ensure success in both their role and in the overall company objectives, which include:

- **Personal responsibility and resilience.**

  Apprentices must: comply with health and safety guidance and procedures; be disciplined and have a responsible approach to risk; work diligently regardless of the level of supervision; accept responsibility for managing time and workload; stay motivated and committed when facing challenges.
- **Working effectively in teams**

  Apprentices must: integrate and contribute with the team; support other people; consider implications of their own actions on other people and the business whilst working effectively to get the task completed.
- **Developing effective communication and interpersonal skills**

  Apprentices must: develop effective communication and interpersonal skills in order to ensure the smooth and effective running of the company.

Are you looking to attract new talent or upskill your employees?

The Elite Centre for Manufacturing Skills' Apprenticeship programmes offer a number of benefits for employers.

Our National Foundry Training Centre has been designed by industry for industry. Industrial standard equipment is complimented by the knowledge and expertise of our industry-specialist trainers. These experienced professionals, who are currently leading the way in the sector, will deliver training and assessment which will develop the vital skills needed in the next generation of employees.

As expert Apprenticeship providers, The Elite Centre for Manufacturing Skills (ECMS) can help employers throughout the process. Our dedicated Business Development Manager will guide you on how to recruit trainees and Apprentices, giving you all the support and information you need.

Our Business Development Manager will also work with you to construct a training programme tailored both to the needs of the sector and to your needs as a specific employer, focusing on the skills you need in your business.

All new Apprenticeships are now called Apprenticeship Standards; these are replacing the current Apprentice Frameworks.

What are the assessment methods?

There are no exams with the competence. Apprentices are assessed on their knowledge and skills on an on-going basis and will have to demonstrate that they can meet the required standards throughout their training. There will, however, be examinations for functional skills.

All Apprentices will have an allocated Training Officer who will oversee training at work and at the ECMS. Their Training Officer will visit at least once every three months to review the Apprentice's progress and help them with any problems they might have.

How long is the course?

The Apprenticeship ends when the apprentice has completed all of the necessary components of the course. This can take between three and four years.

Apprentices will attend for one week per month, 8am-6pm and will work with their employer for the other three.

Year 1-3/4 Apprentices will attend the National Foundry Training Centre.

There are a variety of delivery models available depending on your needs eg: block release (eg: 1 week in 5) or full-time. Local accommodation is available.

ECMS Apprenticeship costs

- 16-18-year-olds are free for Non-Levy payers if you have less than 50 employees*
- 19+ up to £2,700 for an SME Non-Levy Payer**

Employers will pay 10% towards to the cost of apprenticeship training and the Government will pay the rest (90%) eg: Apprenticeship standard current maximum fee £27,000.

If you are a Levy payer you will have to contribute up to £9,000 from your Levy account.

*If an employer recruits a 16-18-year-old Apprentice the employer may receive a £1,000 incentive payment, This will be paid over two equal instalments at 3 months and 12 months.

**19-24-year-old Care leavers and those on EHCP are fees exempt.

For more information on the Elite Centre for Manufacturing Skills (ECMS) and the Apprenticeship training available, please contact:

Tel: **01902 322500**
Email: **enquiries@the ecms.co.uk**

theecms.co.uk

Each Apprenticeship Standard comprises the following areas:

1. Knowledge Element – which covers the theory element of the Apprenticeship.

2. Competence Element – which demonstrates that the Apprentice can carry out the skills required for their role, assessed directly within the workplace or in centre by an assessor.

3. Functional Skills (English & Maths Level 2) If the Apprentice doesn't already hold Maths and English qualifications at the level required for your Apprenticeship, they will study these as part of your off-the-job training. An Information & Technology (IT) qualification may also be required.

4. Transferable Skills The Apprentice programme will also include training to help them develop Personal Learning and Thinking Skills (PLTS) and an understanding of their rights as an employee within the workplace.

You may wish for the Apprentice to develop enhanced skills for their job role; these specialised units will be taught alongside the main programme. There are two main stages of an Apprenticeship Standard: the Foundation stage and the Development stage. Each stage has Knowledge (theory) and Competence (practical skills) elements.