

Level 3 Machining Technician

Apprenticeship overview

Machining is a manufacturing process which involves cutting, shaping, or removing material from a workpiece using a machine tool.

Machining technicians produce complex and precision machined products that are typically used in machinery. For example, aeroplanes and vehicles. They can also produce bespoke components or products for domestic appliances or medical equipment.

Machining Technicians use a variety of machines to carry out their work. For example, centre lathes, vertical and horizontal milling machines, and horizontal and cylindrical grinding machines. Electro-discharge machines, single- and multi-axis Computer Numeric Control (CNC) machine tool centres, gear cutting, and gear grinding machines.



Training location

Transport links

- Warblington train station (15-minute walk)
- Havant train station (10-minute walk)
- Havant bus station (15-minute walk)
- Free onsite parking

Key programme facts

- **Qualification level:** Level 3
- **Total duration:** 45 Months
- **Practical period:** 42 Months
- **End point assessment:** 3 Months
- **Training Days:** 1 day per week
- **Awarding body:** City and Guilds

Entry requirements

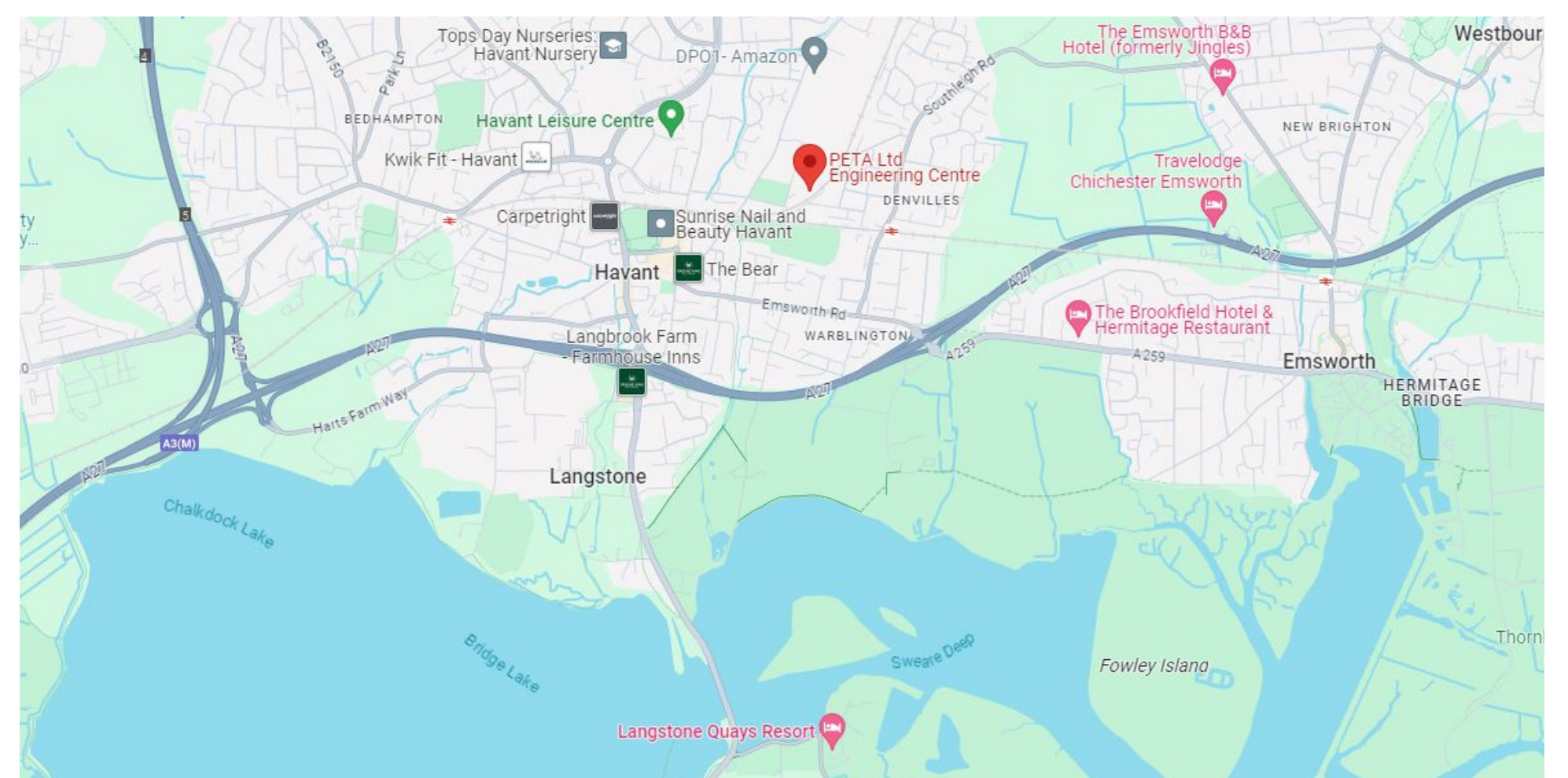
- Maths & English GCSE at Grade 4 or an equivalent qualification
- An active interest in machining and manufacture

Potential job roles

- CNC Machinist
- CNC Machinist Programmer
- Machining Technician
- Manual Machinist (Miller, Turner or Grinder)
- Precision Engineer

Qualifications to achieve

- Level 3 Machining Technician Apprenticeship
- Level 3 City & Guilds Diploma in Machining



PETA Engineering Training Centre

5 Kenwood Business Park, New Lane, Havant, PO9 2NT

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How you will learn

As a Machining Technician Apprentice, you will attend PETA's training centre one day per week.

While at our training centre, you will cover a range of different units that will help to develop your knowledge of engineering theory and give you the chance to gain practical hands-on experience in our workshop.

These will include general machining techniques, advanced milling & turning techniques, advanced manufacturing (CNC), additive manufacturing processes and engineering design.

Throughout your apprenticeship, you will be supported by a learning and development coach who will visit you every 6-8 weeks in your workplace. They will work closely with you and your employer to set learning objectives, undertake practical observations, and provide you feedback on your apprenticeship progress.

Alongside the training delivered by PETA, your employer will be providing you with a rigorous training schedule to support you in the workplace. This will be guided by a PETA training guide to enable a structured approach to learning.



How you will be assessed

Throughout your apprenticeship, you will be working towards your end point assessment (EPA). Your end point assessment will be conducted by an external examining body and will be made up of three key elements. For the Machining Technician, these are:

Workplace observation including verbal questioning (Duration 4.5 hours)

Short answer question exam

Professional interview based on showcase portfolio (3 reports)

These three key elements have been designed to enable you to demonstrate the key knowledge, skills and behaviours you have developed during your training. The possible outcomes of your EPA are Pass, Merit and Distinction.

Progression Routes

Upon completion of this apprenticeship the suggested progression pathway from the Institute for Apprenticeships is:

- Level 4 Engineering Manufacturing Technician

Level 3 Machining Technician

Apprenticeships are all about developing new Knowledge, Skills and Behaviours (KSB). These KSBs form the foundation of the core competencies and attributes you need in order to be successful as a Machining Technician.

These KSBs are the basis for your end point assessment.

Knowledge

K1: Awareness of health and safety regulations
K2: Awareness of hazardous waste regulations
K3: Awareness of environment and sustainability regulations
K4: Engineering representations, drawings, graphical information and specifications.
K5: Engineering mathematical and scientific principles: calculations, conversions.
K6: Planning techniques, time management, workflow, work scheduling, work plans, documents and work categorisation systems.
K7: Engineering materials and their structure, properties and characteristics; impact on use, how and why engineering materials can fail.
K8: Awareness of engineering standards and regulations
K9: Tooling and work-holding devices: purpose and operation of devices for carrying out complex machining tasks.
K10: Engineering machining processes tools and equipment: Milling; Turning; Grinding; Electro Discharge Machine (EDM); Gear Cutting.
K11: Machining operations and techniques to produce complex components.
K12: Quality assurance: principles, practices and record keeping.
K13: Fault finding, diagnostic methods and techniques for identifying engineering and manufacturing problems. Escalation techniques.
K14: Use and application of measurement, calibration and testing equipment.
K15: Communication techniques: verbal. Machining industry terminology.
K16: Documentation - electronic and paper.
K17: Housekeeping and maintenance practices and techniques: planned, preventative and predictive methods, frequency, and reactive activities.

K18: How organisations vary regarding their work, culture, values and production processes in the Machining industry.
K19: Inspection processes and procedures; documentation and escalation.
K20: Technological development and innovation in the machining sector; Industry 4.0; digitalisation.
K21: Continuous improvement principles and practices: Lean; Six Sigma; Kaizen.
K22: Equality, diversity and inclusion requirements in the workplace.
K23: Stock and services considerations. Availability, stock lead times. Correct handling. Stock value. Faulty stock and returns process.

Skills

S1: Comply with statutory health and safety regulations and procedures.
S2: Comply with environmental, ethical and sustainability regulations and procedures: safe disposal of waste, re-cycling or re-use of materials and efficient use of resources.
S3: Prepare and set up conventional or CNC machines.
S4: Operate and adjust conventional or CNC machines.
S5: Apply risk assessment and hazard identification processes and procedures in the work area.
S6: Monitor, obtain and check stock and supplies, and complete stock returns.
S7: Record information - paper based or electronic.
S8: Read and interpret information. For example, data and documentation used to produce machined components.
S9: Apply engineering, mathematical and scientific principles.
S10: Plan and organise own work and resources.
S11: Follow and apply inspection, quality assurance procedures and processes.
S12: Select machining process.
S13: Select and setup tooling and work holding devices.
S14: Set and adjust machine operating parameters. For example, setting feeds and speeds for roughing and finishing operations, downloading and editing programmes when using a CNC machine tool.

S15: Apply machining operations and techniques to produce complex components with features.
S16: Measure and check components.
S17: Select and check condition of tools and equipment. Identify issues, resolve and take action as needed.
S18: Identify and action issues in the manufacturing process.
S19: Apply fault-finding and diagnostic testing procedures to identify faults. Diagnose and resolve issues. Escalate issues.
S20: Maintain the work area and return any resources and consumables.
S21: Communicate with others verbally. For example, colleagues and stakeholders.
S22: Follow machine shut down, safe isolation, handover, start up or warm up procedures. Escalate issues.
S23: Apply continuous improvement techniques. Devise suggestions for improvement.
S24: Apply ethical principles.
S25: Apply team working principles.

Behaviours

B1: Prioritise health and safety.
B2: Act ethically.
B3: Take responsibility for work.
B4: Team-focus to meet work goals, for example, work effectively with others, resolves issues in discussion with others.
B5: Committed to continued professional development (CPD) to maintain and enhance competence in their own area of practice.
B6: Support an equality, diverse and inclusive culture