

Automotive Trailblazer: Level 3 Apprenticeship Mechatronics Standard

Designation of Occupation

Mechatronics Maintenance Technician

Duration of Apprenticeship

Typically the duration of this apprenticeship is 36 – 48 months. This duration may be reduced for a candidate with previous relevant experience and/or someone already part qualified.

Suggested Entry Requirement

Individual employers will set the selection criteria for their Apprenticeships. In order to optimise success candidates will typically have 4 GCSE's at Grade C or equivalent, including Mathematics, English and a Science. Employers who recruit candidates without English or Maths at Grade C or above must ensure that the candidate achieves this standard prior to the completion of the Apprenticeship.

Role Specific Occupational Requirements

Mechatronics Maintenance Technicians ensure that plant and equipment perform to the required standard to facilitate production targets regarding Safety, Quality, Delivery and Cost within High Value Manufacturing environments. Typically the work would cover a broad range of activities include installation, testing, fault finding and the on-going planned maintenance of complex automated equipment. This requires the application of a complex blend of skills, knowledge and occupational behaviours across the electrical, electronic, mechanical, fluid power and control systems disciplines.

Vocational Skills: The apprentice will need to develop a solid grasp of the core job skills and then apply them in the workplace in a logical and systematic approach. These skills will not only allow the apprentice to demonstrate that they have the required manual dexterity to do their current role but their competencies are transferable and can be built upon over time, as the technology involved continues to rapidly advance. As a core the technician needs to have a solid grasp of;

- Statutory regulations and how to comply with stringent organisational safety requirements
- How to use and interpret a range of engineering data sources and supporting documentation
- Key performance indicators, utilising lean techniques to improve efficiency & effectiveness
- Where appropriate, how to support installation, testing and commissioning a wide range of equipment.
- How to carry out complex fault diagnosis and repair on high technology engineered systems:
 - Maintaining mechanical equipment
 - Maintaining fluid & pneumatic power equipment
 - Maintaining electrical & electronic equipment
 - Maintaining process control equipment
- How to minimise machinery downtime by carrying out preventative planned maintenance
- Confirmation testing and subsequent smooth hand over of equipment & plant

Academic Knowledge: The academic learning that is required to underpin the above vocational skills will allow the apprentice to demonstrate a thorough breadth and depth of understanding of relevant maintenance principles, appropriate to and in the context of their company's needs. As a core the technician needs to cover around 720 academic Guided Learning Hours in order to have a solid grasp of;

- Analytical and Scientific Methods for Engineers
- Project Design, Implementation and Evaluation
- Instrumentation and Control Principles & Applications
- Mathematics for Technicians
- Mechanical, Electrical, Electronic and Digital Principles & Applications
- Quality Assurance Principles Within Mechatronic Systems
- Applications of Pneumatics and Hydraulics
- Health, Safety and Risk Assessment in Engineering
- Plant and Process Principles & Applications
- Condition Monitoring and Fault Diagnosis
- Business Improvement Techniques

Occupational Behaviours: Modern high value manufacturing organisations require their apprentices to have a set of occupational behaviours that will ensure success both in their current and future roles and in meeting the overall company objectives. These required behaviours include:

Safety mindset: This occupation sits within an industry with a high level of safety critical activities. There has to be strict compliance and a disciplined and responsible approach to manage, mitigate and avoid risk.

Strong work ethic: Positive attitude, motivated by engineering; dependable, ethical, responsible and reliable.

Logical approach: Able to structure a plan and develop activities following a logical thought process, but also able to quickly “think on feet” when working through them.

Problem solving orientation: Identifies issues quickly, enjoys solving complex problems and applies appropriate solutions. Has a strong desire to push to ensure the true root cause of any problem is found and a solution identified which prevents further recurrence.

Quality focus: Follows rules, procedures and principles in ensuring work completed is fit for purpose and pays attention to detail / error checks throughout activities.

Personal responsibility and resilience: Motivated to succeed accountable and persistent to complete task.

Clear communicator: Use a variety of appropriate communication methods to give/receive information accurately, and in a timely and positive manner.

Team player: Not only plays own part but able to work and communicate clearly and effectively within a team and interacts/ helps others when required. In doing so applies these skills in a respectful professional manner.

Applies Lean Manufacturing Principles: Continuous improvement in driving effectiveness and efficiency.

Adaptability: Able to adjust to different conditions, technologies, situations and environments.

Self-Motivation: A ‘self-starter’ who always wants to give their best, sets themselves challenging targets, can make their own decisions.

Willingness to learn: wants to drive their own continuous professional development

Commitment: Able to commit to the beliefs, goals and standards of their own employer and to the wider industry and its professional standards.

Training and Development Summary

There will be two phases of training to ensure that apprentices meet this Apprenticeship standard, in line with specified employer requirements¹. The foundation phase will be intensive off the job training focused on developing the apprentice's core skills, knowledge and behaviour, allowing them to work effectively with supervision in a largely simulated working environment. This stage will require typically 1400 Vocational Guided Learning Hours, building up from basics to more complex engineering operations and practices. The tasks will be aligned to the job role to develop a range of tailored core engineering techniques so by the end of this phase the apprentice will be able to demonstrate, under independent test conditions, that they can deploy the skills and occupational behaviours.

The development phase will focus on applying the apprentice's on-job vocational competence supported by further guided learning, enabling them to eventually work effectively without the need for supervision. The competencies gained are sufficiently transferable by the end of this development phase for someone to adapt quickly to function effectively after minimal instruction on new equipment / environments or revised working practices. There will be an employer endorsement as part of the final assessment of this phase to ensure that the apprentice has demonstrated full competence against the knowledge, skills and behaviours in this standard. The employer will sign off that the apprentice is ‘job ready’ as a competent mechatronics technician.

Professional Recognition and Career Progression: Completion of this Apprenticeship standard will be recognised by the relevant professional institutions as the evidence required for Engineering Technician registration (EngTech) through a professional review. For those deemed capable and ready, further career development / progression opportunities could be considered such as Mechatronic Maintenance Engineering or higher levels of education and training.

Governance & Review date: March 2017 by existing employer led trailblazer collaboration.

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¹ In order to articulate the specific level of skills, knowledge and behaviours required to be achieved and assessed to demonstrate full occupational competence, the employers on the trailblazer group have developed a more detailed Employer Occupational Brief (EOB). This brief will inform the awarding organisations of the required elements of knowledge, behaviours and vocational skills within this Apprenticeship Standard. It will also provide a clear basis for the development of the assessment of this Apprenticeship and will enable the sector to maintain world class levels of quality and ensure that the credibility and consistency of the Apprenticeship outcome is maintained.