



ROLE PROFILE: INSTRUMENT & CONTROL (I&C) MAINTENANCE TECHNICIAN

Occupational Area:	Asset/Site - Instrument & Control (I&C) Technician
Job Role Examples:	Instrument & Control Technician, Control and Instrumentation Technician (C&I), Maintenance Technician – Instruments, Instrument Technician, Instrument Technician – Construction, Instrument Technician – Operations.
Role Overview:	
<p>Instrument & Control technicians are responsible for the assembly, installation, removal and replacement, disassembly, test functionality and operability, maintenance and repair of instrumentation systems and their associated system components. Such systems can be of an electronic, electro-mechanical or pneumatic technology which may be used to indicate, record and control a wide variety of equipment, plant and machinery. An integral aspect of the Instrument & Control technician is the ability to locate and identify faults in a timely manner to restore plant and equipment to acceptable conditions. The wide range of possible equipment and systems also require a good knowledge of, and the ability to effectively use, an equally wide range of test and measuring equipment. Instrument & Control technicians typically need a good understanding of engineering theory, the functions of components within systems and the effect on system operation of failure.</p>	
Knowledge & Skills:	
<p>The Instrument & Control Technician will:</p> <ul style="list-style-type: none">• Have the required competencies to assemble, install, carry out preventative maintenance, repair, diagnose faults and remove and replace, and disassemble instrumentation and control systems and their associated system components.• Understand the relevant legislative, regulatory and local requirements or procedures and safe working practices, including their responsibilities with regards to reporting lines and procedures.• Understand the preparation and reinstatement requirements in respect of the work area, materials and equipment, and the possible consequences of incorrect actions in these areas.• Be able to read and interpret relevant engineering drawings (process and instrumentation drawings - P&ID), related specifications, quality standards and equipment manuals, and to follow work instructions and relevant plans and schedules.• Understand which tools and equipment to use, and when, and will follow relevant training, methods and techniques and quality control and safety procedures for their use.• Understand their responsibilities for ensuring the care and security of tools and equipment used.• Understand the types of defects and testing anomalies that can occur, how to identify them, and what action to take.• Diagnose function and test equipment on return to service• Be able to handle a range of digital information, technology and equipment to support work related tasks and to communicate information.	
Technical Competencies:	
<p>Fault diagnosis is a key competency across all the activities below and has been incorporated into the individual test activities below.</p> <ul style="list-style-type: none">• TMIO1 - Pressure measurement and control systems - Range check a pressure gauge, change settings on a pressure switch, recalibrate a SMART pressure transmitter and record Instrument Test Records (ITR's)• TMIO2 - Level measurement and control systems - Reconfigure, calibrate and function check a displacement type level transmitter and a SMART type level transmitter and record ITRs• TMIO4 - Temperature measurement and control systems - Commission a temperature detector (RTD or thermocouple) and a SMART temperature transmitter including a range change by a 20% increase or	

decrease of its current settings, recalibration and full loop check from heat source to transmitter output, record ITRs.

- **TMI14 - Flow measurement and control systems** - Recommission a differential pressure flow transmitter into a fully operational condition, and calibration check the transmitter and record ITRs
- **TMI17 - Maintain, calibrate and commission a process control valve** - Remove a process control valve positioner and actuator, replace valve stem gland packing, reassemble and body pressure test. Set up and stroke test to operate open/closed on a 4–20 mA control signal, complete full loop calibration and record ITRs
- **TSBT02 - Disassemble and reinstall SBT assemblies** - Identify faults and defects with SBT assemblies, disassemble SBT assemblies, rectify faults and defects and reinstall SBT assemblies by selecting and using the correct materials, tools, fittings, clamps and supports in accordance with P&ID and specification sheet.

Behaviours:

- Establish and maintain effective working relationships, communicate effectively, and work inclusively to deliver work within given specifications.
- Demonstrate team working skills and interact with team members in a positive and professional manner.
- Work within an overall risk control strategy which has been developed by safety specialists and includes detailed criteria for identifying risks, together with clearly defined procedures for action which must be followed.
- Take personal ownership of, and responsibility for, completing tasks and procedures.
- Follow procedures and relevant codes of standard with integrity and vigour and complete actions and documents accurately and honestly.
- Take responsibility for identifying and reporting instances where procedures or work instructions cannot be met or where a variation in them is required.
- Deal promptly and effectively with problems within their control and report those that have been, and those that cannot be, solved.
- Take responsibility for supervising and mentoring others where appropriate.
- Demonstrate the ability to coordinate work scopes and simultaneous operations (SIMOPS) effectively within a wider team, as required.
- Demonstrate effective handover of responsibility and equipment at the end of a task.
- Take responsibility and ownership of personal development, set targets to plan on how these will be achieved.
- Support operational requirements, achieve targets and maintain records as required, thereby minimising backlog and downtime.
- Maintain compliance with legislative requirements and company policies, procedures and standards.
- Maintain and demonstrate ongoing technical competence and skill set to current standards and updates.
- Support innovation and development for improvements.

Determining Work Scopes:

Other categories of workers may be mobilised to complete certain stand-alone activities/work scopes within the Instrument & Control discipline. Relevant technical tests for those workers are identified below.

- Valve Service / Repair and Gland Packing - **TMI17**
- Identify faults and defects with SBT assemblies – **TSBT02**
- Recalibrate pressure transmitters – **TMI01**

Although appropriately qualified for these specific work scopes, it should be noted that without the full suite of Instrument & Control maintenance tests the person should not be deemed as demonstrating full 'currency of competence' across the Instrument & Control maintenance discipline.

SUPPORTING NOTES: INSTRUMENT & CONTROL (I&C)

MAINTENANCE TECHNICIAN

The Connected Competence standard role profile for an Instrument & Control maintenance technician sets out the knowledge, skills, technical competencies and behaviours that are expected from a fully competent Instrument & Control maintenance technician in any sector of the Engineering Construction Industry. Once competence is first achieved through training and subsequent qualification, **regular testing** ensures that **ongoing** competence is maintained, against a recognised standard.

This supporting document highlights transferable qualifications and any additional technical requirements that maybe specific to a certain sector to support standardisation of skills and workforce transferability. It does not reference any site-specific or sector specific safety training.

Sector Specific Qualifications

Prior to embarking on the formal technical test assessment cycle, an individual would be expected to have core trade qualifications as a minimum requirement:

Key
Accepted - Applicable qualification for the role with no gap analysis required
Recognised - Applicable technical content, however a gap analysis maybe required for appropriate unit completion
Dependant on Employer - May or may not be recognised

Qualification Details	Offshore Oil & Gas	Onshore Oil & Gas	Wind	Nuclear
L3 VQ/NVQ/SVQ, SCQF7, L3 Diploma in: Oil and Gas Engineering Maintenance (Instrument and Control); Maintaining Engineering Construction Plant and Systems - Instrument and Controls; Engineering Construction: Maintaining Instrument and Control Systems of Plant and Equipment; Engineering Construction: Maintaining Plant and Equipment - Instrument and Control Systems; OR Maintaining Plant and Systems - Instrument and Controls	Accepted	Accepted	Recognised	Recognised
L3 NVQ/SVQ, SCQF7 Apprenticeships/Diplomas/Extended Diplomas in: Process Engineering Maintenance; Engineering Maintenance; OR Process Manufacturing; Engineering Construction Maintenance – Instrument & Control.	Recognised	Recognised	Recognised	Recognised
L3 Apprenticeship - Science Industry Maintenance Technician	Recognised	Recognised	Recognised	Recognised
L3 Apprenticeship - Maintenance & Operations Engineering Technician	Recognised	Recognised	Recognised	Accepted
L3 NVQ/SVQ, SCQF6/7, L3 Diploma/Extended Diploma in: Engineering Maintenance; Advanced Manufacturing and Engineering.	Recognised	Recognised	Recognised	Recognised

Additional Technical Competence requirements

Given the hazardous nature of some Engineering Construction working environments, the overall risk control strategy for the organisation will usually require Instrument & Control maintenance technicians to be familiar with, and work within, a formal Permit to Work system. Compliance with a specific company or site safety management system (SMS) will also usually be required and additional 'site-specific' technical competence will be developed on top of basic technical competence assurance. Specialist safety training may also be required as a prerequisite in addition to role specific training.

Oil & Gas	Wind	Nuclear	CCUS	Hydrogen
<ul style="list-style-type: none"> No additional technical competencies. 	<ul style="list-style-type: none"> Refer to Wind Turbine Technician Cross Skill Programme. 	<ul style="list-style-type: none"> No additional technical competencies. 	<ul style="list-style-type: none"> No additional technical competencies. 	<ul style="list-style-type: none"> SBT04 - Pneumatic testing P&ID's within SBT02 will reflect hydrogen gas conditions.