

TSC Category	Discipline Engineering Specialisation					
TSC	Instrumentation and Control Field Maintenance Management					
TSC Description	Perform routine and non-routine instrumentation field maintenance and inspection work to ensure optimal availability and reliability of instrumentation and control devices and systems in process plants					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	ECM-DEG-1005-1.1	ECM-DEG-2005-1.1	ECM-DEG-3005-1.1	ECM-DEG-4005-1.1		
	Recall fundamentals of instrumentation and control principles and instrumentation and control devices to assist in instrumentation maintenance tasks in a safe and reliable manner	Identify and apply instrumentation maintenance and inspection procedures and work instructions to perform instrumentation maintenance tasks at field in a safe and reliable manner	Interpret instrumentation maintenance and inspection regimes, work instructions and procedures to coordinate instrumentation maintenance tasks at field	Develop instrumentation field maintenance and inspection regimes, workflows and procedures to reduce likelihood of failure and to ensure maintenance tasks are performed correctly and consistently		
Knowledge	<ul style="list-style-type: none"> • Instrumentation codes and standards for instrumentation and control devices • Instrumentation measurement principles • Basic principles of instrumentation and process control • Types of instrument transmitters, transducers and switches • Instrument drawings and symbols • Types of measuring and calibration equipment • Types of instrument tubing systems • Pneumatics and pneumatic systems principles and practices • Principles of hazardous area equipment and zones 	<ul style="list-style-type: none"> • Instrumentation codes and standards for instrumentation and control devices • Principles of instrumentation and process control • Types of control valves and positioners • Types of sensors and transducers • Types and working principles of programmable logic controllers (PLCs) • Fieldbus technology • Industrial networks • Calibration techniques, tolerances and accuracy limits • Instrument wiring regulations, codes and standards • Wiring and grounding principles and practices • Hazardous area equipment (Ex) 	<ul style="list-style-type: none"> • Hazardous area equipment (Ex) inspection and testing methods • Types of fire and gas (F&G) detection devices and systems • Types of Emergency Shutdown (ESD) devices • Communication systems and smart device interfaces • Principles of maintaining fiscal metering instrumentation • Methods of reading engineering documentation, including cause and effect diagrams, connection diagrams, location and layout diagrams • Advanced principles of programmable logic controllers (PLCs) 	<ul style="list-style-type: none"> • Principles of asset integrity management and equipment maintenance • Principles of instrument specification and selection • Hazardous area equipment (Ex) • Principles of maintaining “As-Built” documentation • Principles of advanced process control and measurement 		

		<p>installation and maintenance</p> <ul style="list-style-type: none"> • Types of wireless communications and protocols • Types of transmitters and controllers • Troubleshooting and fault-finding techniques 				
Abilities	<ul style="list-style-type: none"> • Apply international codes and standards when assisting in instrumentation maintenance work • Carry out basic instrument maintenance activities at field • Select and correctly use a range of instrument calibration equipment and tools • Read instrument loop diagrams • Assist in the basic troubleshooting of instrument equipment and control systems • Maintain a clean and safe work area 	<ul style="list-style-type: none"> • Perform maintenance and troubleshooting of field instrumentation • Perform disassembly and reassembly of instrument equipment • Perform configuration and testing of industrial networks • Perform assembly, testing and troubleshooting of PLC systems • Perform instrument calibration and testing on instrument field equipment • Use a range of measuring and test equipment to perform instrument troubleshooting and fault finding • Perform repair and refurbishment of field instrumentation • Perform the installation and maintenance of Ex-rated instrumentation equipment • Perform instrument cabling and termination 	<ul style="list-style-type: none"> • Coordinate and perform maintenance, calibration and troubleshooting of field instrumentation • Coordinate and perform the disassembly and reassembly of instrument equipment • Coordinate and perform installation and maintenance of Ex-rated instrumentation equipment • Coordinate instrument cabling and termination activities • Coordinate the installation of instrument tubing and fittings 	<ul style="list-style-type: none"> • Lead the maintenance, calibration and troubleshooting of field instrument equipment • Develop workflows and procedures for disassembly and reassembly of instrument equipment • Oversee the installation and maintenance of Ex-rated instrumentation equipment 		

		<ul style="list-style-type: none">Perform the installation of instrument tubing and fittings				
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