

TSC Category	Discipline Engineering Specialisation					
TSC	Electrical Field Maintenance Management					
TSC Description	Interpret and apply routine and non-routine electrical field maintenance and inspection work instructions and regimes to ensure optimal availability and reliability of electrical equipment and control systems in process plants					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	ECM-DEG-1002-1.1	ECM-DEG-2002-1.1	ECM-DEG-3002-1.1	ECM-DEG-4002-1.1		
	Recall fundamentals of electrical principles and electrical equipment to assist in electrical maintenance tasks, at field, in a safe and reliable manner	Identify and apply electrical maintenance and inspection procedures and work instructions to perform electrical maintenance tasks, at field, in a safe and reliable manner	Interpret electrical maintenance and inspection regimes, work instructions and procedures to coordinate electrical maintenance tasks at field	Develop electrical field maintenance and inspection regimes, workflows and procedures to reduce likelihood of failure and ensure maintenance tasks are performed correctly and consistently		
Knowledge	<ul style="list-style-type: none"> • Electrical safety principles • Electrical, electrostatic and electronic principles • Electrical equipment installation, testing, and commissioning methods • Types of electrical equipment and systems maintenance • Cable installation and termination techniques • Electrical tools and test equipment • Electrical equipment in hazardous areas classifications • Electrical drawings and symbols • Fundamentals of electrical equipment used in hazardous areas 	<ul style="list-style-type: none"> • Electrical wiring regulations, codes and standards • Types of electrical measurement and test equipment • Principles of high voltage (HV) and low voltage (LV) systems • Types of lighting systems • Principles of earthing, bonding and lightning protection systems • Electrical equipment used in hazardous areas (Ex) installation and inspection • Types of motors and motor control circuits • Basic electrical protection systems • Types of power electronics including relays, relaying 	<ul style="list-style-type: none"> • Functions of switchgear and motor control centres • Auxiliary electrical systems • Electrical installation, testing, commissioning and troubleshooting methods • Hazardous areas (Ex) equipment installation, inspection, testing and maintenance methods • Principles of programmable logic controllers (PLCs) • Types of variable speed drive (VSD) systems • Methods of interpreting condition monitoring systems and types monitoring devices 	<ul style="list-style-type: none"> • Principles of power distribution, and power and load sharing • Principles of asset integrity management and equipment maintenance • Principles of electrical design and system selection • Principles of programmable logic controllers (PLC) and their use within electrical systems • High voltage (HV) switchgear maintenance and switching techniques 		

		<p>transducers, voltage transformers, and current transformers</p> <ul style="list-style-type: none"> • Types of conditioning monitoring for electrical equipment and systems • Types of power transformers • Cathodic protection systems • Types of alternating current (AC) and direct current (DC) • Uninterrupted power supply (UPS) systems • Types of battery backup systems • Electrical troubleshooting and fault-finding methods 				
Abilities	<ul style="list-style-type: none"> • Assist in the general maintenance of electrical equipment and systems • Carry out basic electrical maintenance activities • Select and correctly use a range of electrical test equipment and tools • Read electrical drawings • Recall electrical codes and standards • Assist in the basic troubleshooting of electrical equipment and systems • Maintain a clean and safe work area 	<ul style="list-style-type: none"> • Identify and apply electrical maintenance and inspection procedures and work instructions • Perform maintenance and troubleshooting of electrical equipment and systems • Perform the disassembly and reassembly of electrical equipment and components • Use a range of measuring and test equipment to perform electrical testing and fault finding • Perform maintenance on motors and motor control systems 	<ul style="list-style-type: none"> • Interpret electrical maintenance and inspection regimes, work instructions and procedures • Coordinate the troubleshooting of electrical equipment and systems • Coordinate the disassembly and reassembly of electrical equipment and components • Coordinate the electrical maintenance and inspection of auxiliary electrical systems • Apply and utilise advanced repair and refurbishment techniques for electrical equipment, in 	<ul style="list-style-type: none"> • Lead the maintenance and troubleshooting of electrical equipment and systems • Supervise the disassembly and reassembly of electrical equipment and components • Manage the electrical maintenance and inspection of auxiliary electrical systems • Establish and review repair and refurbishment techniques for electrical equipment in cooperation with vendors and external repair workshops • Lead the troubleshooting and maintenance of 		

**SKILLS FRAMEWORK FOR ENERGY AND CHEMICALS
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

		<ul style="list-style-type: none"> • Perform maintenance on electrical protection systems • Perform inspections and checks on Ex-rated equipment • Perform electrical cabling and terminations • Perform low voltage (LV), typically less than 415VAC, switching operations • Carry out troubleshooting and fault finding on electrical equipment and systems 	<p>collaboration with vendors and external repair workshops</p> <ul style="list-style-type: none"> • Carry out troubleshooting and maintenance of variable speeds motor drives and controllers • Perform high voltage (HV) switching operations • Maintain condition monitoring systems and devices 	<p>variable speed motor drives and controllers</p> <ul style="list-style-type: none"> • Facilitate advanced electrical and electronic diagnostics and troubleshooting for a wide range of electrical equipment and systems 		
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