

**SKILLS FRAMEWORK FOR MARINE AND OFFSHORE  
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT**

<b>TSC Category</b>	Quality Management					
<b>TSC</b>	Electrical Testing					
<b>TSC Description</b>	Execute non-destructive electrical tests to ensure insulation-resistance, continuity, and satisfactory performance of electrical equipment and installations against organisational and regulatory standards and requirements					
<b>TSC Proficiency Description</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
		<b>MAR-QUA-2003-1.1</b>	<b>MAR-QUA-3003-1.1</b>	<b>MAR-QUA-4003-1.1</b>		
		Perform preliminary electrical tests on generic cables, motors and generators	Conduct electrical testing on equipment and systems according to test plans and procedures	Develop electrical testing procedures and schedules, and lead follow-up actions based on test results		
<b>Knowledge</b>		<ul style="list-style-type: none"> <li>Principles of electricity</li> <li>Methods of electrical testing of generic cables, motors, transformers and switchboards, Direct current (DC) supply panels, single phase and three-phase alternating current (AC) circuits</li> <li>Types of basic electrical testing techniques</li> <li>Basic principles of electrical testing measurements, DC circuits, AC currents and voltages</li> <li>Types of electrical testing instruments and their applications</li> <li>Lock-out tag-out safety procedures</li> <li>Methods of measuring voltages and electrical and power faults</li> <li>Methods of measuring power and power quality</li> <li>Relevant workplace safety and health (WSH) practices, guidelines and regulations, safe working procedures and use of protective equipment</li> </ul>	<ul style="list-style-type: none"> <li>Methods of electrical testing of normal and emergency systems and circuits</li> <li>Types of load tests, electrical tests and testing techniques</li> <li>Insulation checks for electrical leakage</li> <li>Principles of electrical testing measurements</li> <li>Required operating parameters of integrated systems</li> <li>Classification society and international safety requirements for electrical equipment and instruments</li> </ul>	<ul style="list-style-type: none"> <li>Electrical testing best-practices</li> <li>Principles of electrical test planning</li> <li>Electrical loading calculations</li> <li>Types of electrical sub-systems such as motors, pneumatics, sensors and control systems</li> <li>Applicability and limitations of electrical tests and techniques</li> <li>Sustainable energy alternatives</li> <li>Methods of rectifying electrical and power faults</li> <li>Stakeholder communication and management</li> <li>Documentation protocols</li> <li>Testing methodologies and limitations</li> <li>Technical reporting standards</li> </ul>		

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		concerning electrical testing <ul style="list-style-type: none"><li>• Relevant quality assurance and quality control (QA/QC) policies and procedures</li></ul>				
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<p><b>Abilities</b></p>		<ul style="list-style-type: none"> <li>• Adhere to relevant WSH risk-control measures when conducting electrical tests</li> <li>• Conduct live tests on generic cables and motors to identify faults</li> <li>• Suggest potential safety hazards resulting from identified faults</li> </ul>	<ul style="list-style-type: none"> <li>• Execute electrical testing activities according to established methods and procedures</li> <li>• Conduct live tests and measurements to identify faults</li> <li>• Check circuits and machines in isolation to identify faults</li> <li>• Highlight potential safety hazards resulting from identified faults</li> <li>• Dismantle circuit components to facilitate testing</li> <li>• Store parts appropriately to protect against loss or damage</li> <li>• Set up testing instruments according to manufacturer's instructions and regulatory standards</li> <li>• Ensure testing activities are carried out without damage to circuits and the surrounding environments</li> <li>• Ensure equipment is reassembled properly and work areas are made safe after testing</li> <li>• Execute tests to ensure systems operate within required parameters</li> <li>• Programme switchboards and calibrate sensors to optimise electrical systems</li> </ul>	<ul style="list-style-type: none"> <li>• Plan electrical tests to be conducted according to organisational guidelines and regulatory requirements</li> <li>• Incorporate relevant workplace safety and health (WSH) risk control measures into test activities</li> <li>• Coordinate activities to be carried out as part of electrical tests and delegate tasks accordingly</li> <li>• Advise others on best-practice methods and procedures to conduct required tests</li> <li>• Ensure tools, equipment and testing devices required are obtained and checked for correct operation and safety</li> <li>• Apply sustainable energy practices when possible</li> <li>• Report electrical testing findings to relevant stakeholders</li> <li>• Document any infringements of WSH risk-control measures and procedures</li> <li>• Recommend actions to rectify any faults identified during testing</li> <li>• Regulate and adjust voltages based on load test analysis</li> </ul>		
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