

**SKILLS FRAMEWORK FOR PUBLIC TRANSPORT  
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

<b>TSC Category</b>	Rail Systems Maintenance					
<b>TSC</b>	Rolling Stock Propulsion Systems Maintenance					
<b>TSC Description</b>	Implement preventive and corrective maintenance activities of rolling stock propulsion systems					
<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>PTP-RSM-1033-1.1</b>	<b>PTP-RSM-2033-1.1</b>	<b>PTP-RSM-3033-1.1</b>	<b>PTP-RSM-4033-1.1</b>		
	Carry out scheduled preventive maintenance work on rolling stock propulsion systems	Conduct corrective maintenance on rolling stock propulsion systems	Troubleshoot faulty rolling stock propulsion systems to locate faults and recommend rectification methods	Diagnose root causes of rolling stock propulsion systems failure and review maintenance plans to prevent fault recurrence		
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>Operating principles, functions and features of rolling stock propulsion systems and components</li> <li>Types of rolling stock propulsion equipment and components that includes: <ul style="list-style-type: none"> <li>Inverter system</li> <li>Traction control unit</li> <li>Transmission</li> <li>Traction motor</li> <li>Motor control and protection equipment</li> </ul> </li> <li>Procedures for servicing rolling stock propulsion equipment and components in accordance to organisational procedures, Work Instructions (WI) or Original Equipment Manufacturer (OEM) technical manuals</li> <li>Types and usage of tools and equipment for carrying out preventive maintenance on rolling stock propulsion systems</li> <li>Safety guidelines on use of tools and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Operating principles, functions and features of rolling stock propulsion systems and components</li> <li>Types of rolling stock propulsion equipment and components that includes: <ul style="list-style-type: none"> <li>Inverter system</li> <li>Traction control unit</li> <li>Transmission</li> <li>Traction motor</li> <li>Motor control and protection equipment</li> </ul> </li> <li>Principles of Electrical, electronics and power electronics and circuitry drawings</li> <li>Common wears and failures of rolling stock propulsion equipment</li> <li>Procedures to identify faults and failures of rolling stock propulsion equipment and components</li> <li>Procedures to dismantle rectify, repair and/or replace faulty rolling stock propulsion equipment and</li> </ul>	<ul style="list-style-type: none"> <li>Operating principles, functions and features of rolling stock propulsion systems and components</li> <li>Fundamentals of motor and controls</li> <li>Principles of electrical, electronics and power electronics and circuitry drawings</li> <li>Common fault symptoms in rolling stock propulsion systems</li> <li>Methods of locating and rectifying faults</li> <li>Types and usage of troubleshooting techniques, equipment and tools</li> <li>Safety guidelines for usage of tools and equipment to execute troubleshooting on rolling stock propulsion systems</li> </ul>	<ul style="list-style-type: none"> <li>Factors affecting rolling stock propulsion systems and components performance</li> <li>Failure investigation and prevention methods</li> <li>Methods and tools for diagnostic analysis</li> <li>Organisational maintenance procedures, Work Instructions (WI) and Original Equipment Manufacturer (OEM) technical recommendations</li> <li>Types and methods of functional tests on rolling stock propulsion systems</li> <li>Functional relationships between rolling stock propulsion systems, other rolling stock components, plant equipment and the overall rail system</li> </ul>		

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	<p>for preventive maintenance on rolling stock propulsion systems</p> <ul style="list-style-type: none"> <li>• Types and usage of Personal Protective Equipment (PPE) on rolling stock propulsion systems</li> <li>• Organisational maintenance documentation and fault reporting procedures</li> </ul>	<p>components and re-assemble</p> <ul style="list-style-type: none"> <li>• Procedure for conducting system performance and identifying faults on rolling stock propulsion system</li> <li>• Types and usage of tools and equipment for carrying out corrective maintenance on rolling stock propulsion systems</li> <li>• Safety guidelines on use of tools and equipment for corrective maintenance on rolling stock propulsion systems</li> <li>• Types and usage of Personal Protective Equipment (PPE) for rolling stock propulsion systems maintenance</li> <li>• Organisational maintenance documentation and fault reporting procedures</li> </ul>				
<b>Abilities</b>	<ul style="list-style-type: none"> <li>• Perform preparation work to conduct maintenance on rolling stock propulsion systems</li> <li>• Follow organisational procedures and/or Original Equipment Manufacturer (OEM) technical manuals to carry out preventive maintenance on rolling stock propulsion systems</li> <li>• Perform functionality checks on rolling stock propulsion systems and components</li> <li>• Adhere to tools and equipment operating and safety guidelines to</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret work orders and prepare for corrective maintenance</li> <li>• Apply fault identification procedures to determine causes of rolling stock propulsion equipment and components</li> <li>• Dismantle rolling stock propulsion equipment and components for corrective maintenance</li> <li>• Carry out rectification, repair and/or replacement of faulty equipment and components</li> <li>• Reassemble and reinstate rolling stock propulsion systems</li> </ul>	<ul style="list-style-type: none"> <li>• Use troubleshooting tools, equipment and methods to locate and analyse causes of rolling stock propulsion equipment faults</li> <li>• Recommend corrective actions for identified faults on rolling stock propulsion systems</li> <li>• Implement procedures on safe usage of tools and equipment during maintenance work</li> <li>• Analyse maintenance work documented for rolling stock propulsion systems to identify possible workflow</li> </ul>	<ul style="list-style-type: none"> <li>• Establish structured failure investigation and specify functional testing requirements</li> <li>• Apply failure investigation methods to diagnose root cause failure of rolling stock propulsion systems</li> <li>• Review organisational rolling stock propulsion systems maintenance procedures</li> <li>• Propose new and/or enhanced maintenance procedures and/or WI in reference to OEM recommendations</li> <li>• Monitor overall maintenance progress of rolling stock propulsion</li> </ul>		

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	<p>rolling stock propulsion systems</p> <ul style="list-style-type: none"> <li>• Adhere to safety guidelines and operating instructions for tools and equipment during maintenance work</li> <li>• Record rolling stock propulsion systems maintenance activities and report occurrences of potential faults identified</li> </ul>	<ul style="list-style-type: none"> <li>• Perform functional tests on rolling stock propulsion systems and components</li> <li>• Apply operating and safety measures in operating tools and equipment during maintenance work</li> <li>• Record and collate documentation of rolling stock propulsion systems maintenance work</li> </ul>	<p>improvements to prevent fault recurrence</p>	<p>systems to ascertain effectiveness of maintenance procedures</p> <ul style="list-style-type: none"> <li>• Develop solutions by analysing diagnostic data to prevent faults and failures recurrence</li> <li>• Develop troubleshooting, rectification and fault analysis methods</li> <li>• Develop test procedures for system performance checks</li> <li>• Coordinate rolling stock propulsion systems maintenance with other rail systems maintenance needs</li> </ul>		
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