

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Engineering and Manufacturing Fundamentals					
TSC	Pneumatic Systems Management					
TSC Description	Design, repair and operate pneumatic systems within a manufacturing environment					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	PRE-EPM-1068-1.1	PRE-EPM-2068-1.1	PRE-EPM-3068-1.1			
	Operate pneumatic systems in a manufacturing environment	Perform maintenance and repair on pneumatic systems	Design and test pneumatic systems for manufacturing operations			
Knowledge	<ul style="list-style-type: none"> Organisational procedures related to the preparation of work activities Circuit diagrams Types of components Supply of compressed air for pneumatic equipment and components Operation of pneumatic components Types and operations of electrical devices Methods of connecting pneumatic systems Measurements of pressure Workplace safety and health (WSH) requirements 	<ul style="list-style-type: none"> Test and support equipment requirements and support documentation Scheduling of tasks in enterprise maintenance management systems Steps in conducting pre-maintenance tests on pneumatic systems Enterprise instructions for system shut-down, service isolation with the use of isolation tags, system services restoration, and isolation tags removal Pneumatic hygiene principles for the opening and closing up of system inspection, maintenance and/or repair Procedures for depressurising or isolating system pressure vessels, recharging and de-isolating system pressure vessels, according to specified instructions Approved parts, support and test equipment for repairs and maintenance 	<ul style="list-style-type: none"> Types and usage of pneumatic components, electrical devices and equipment Types of hardware and software for design drawing Types and usage of displacement diagrams ISO circuit diagrams and symbols related to pneumatic systems Pneumatic equipment and systems configurations and processes Process line-up blueprint drawings Industry standards in pneumatic equipment and systems operations Design principles and procedures for pneumatic and/or electro-pneumatic circuits, Operation of pneumatic and/or electro-pneumatic components and electrical devices Procedures for checking, verifying and amending completed pneumatic control circuits 			

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		<ul style="list-style-type: none"> Approved procedures for operating and testing pneumatic systems Workplace safety and health (WSH) requirements 	<ul style="list-style-type: none"> Workplace safety and health (WSH) requirements 			
Abilities	<ul style="list-style-type: none"> Identify pneumatic components required for work activities, based on circuit diagrams Check pneumatic systems for abnormalities Connect pneumatic systems to compressed air supply units and main power circuit, in accordance with WSH requirements Set required air pressure, in accordance with organisational and WSH procedures Check connections to pneumatic systems to ensure compliance to safety standards and requirements Activate pneumatic and/or electrical devices to operate pneumatic and/or electro-pneumatic systems, in accordance with established organisational WSH procedures Test pneumatic systems for proper operation and verify sequencing Shut down the pneumatic systems on completion of work in accordance with established organisational and WSH procedures 	<ul style="list-style-type: none"> Identify test and support equipment and support documentation required for the task Determine equipment maintenance shut-down periods and inform users of maintenance and/or repair schedules Verify the availability of test and support equipment and support documentation, in accordance with enterprise procedures Conduct and record pre-maintenance tests as specified in system documentation Isolate and shut-down pneumatic systems for maintenance and/or repair Depressurise or isolate system pressure vessels, in accordance with applicable instructions Inspect pneumatic system components and conduct maintenance and repair, in accordance with approved procedures Recharge and reconnect system pressure vessels, in accordance with instructions Restore pneumatic system services, operate and test system 	<ul style="list-style-type: none"> Identify control sequence for designing pneumatic equipment and systems based on control requirements and displacement diagrams, Identify and select required pneumatic components and/or electrical devices based on given control requirements Perform quality and process checks of computerised hardware and software required for pneumatic equipment and systems design, in accordance with approved written work instructions Draft pneumatic equipment and systems designs to fulfil control requirements, in accordance with ISO symbols Design pneumatic and electro-pneumatic circuits, in accordance with control requirements Check completed circuit diagrams, and make necessary amendments, to ensure control requirements are met Prepare parts list of all components used in 			

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		<p>performance after maintenance and/or repair, in accordance with approved procedures, and in conjunction with users and operators</p> <ul style="list-style-type: none"> • Investigate defects and anomalous operations, and record causes to rectify all anomalies and defects • Compile relevant reports in accordance with approved procedures 	<p>pneumatic equipment and systems</p> <ul style="list-style-type: none"> • Connect pneumatic components, electrical devices and wiring, according to completed circuit diagrams • Activate and test pneumatic equipment and systems, in accordance with established organisational procedures, and make modifications to ensure that control requirements are met • Record testing results of pneumatic equipment and systems 			
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