

**SKILLS FRAMEWORK FOR AEROSPACE
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE**

TSC Category	Technology Management					
TSC	Robotics and Automation Application					
TSC Description	Integrate automation technologies and robotic systems to enhance precision and productivity and reduce reliance on manual tasks					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		AER-OPR-2020-1.1	AER-OPR-3020-1.1	AER-OPR-4020-1.1	AER-OPR-5020-1.1	AER-OPR-6020-1.1
		Apply procedural knowledge of robotic systems and automation technologies to execute operational activities	Oversee the use of robotic systems and automation technologies in compliance with specifications and workflow plans	Review performance of automated workflows for process improvements	Formulate new automated workflows to streamline processes	Explore wider applications of robotic and automation methods in the organisation by using expertise within the field to transform workflows
Knowledge		<ul style="list-style-type: none"> Types of robotic systems, automation technologies and process control systems Methods of operating robotic systems for operational activities Procedures for safe machinery operation Types of sensors and actuators Procedures for installing actuators and sensors 	<ul style="list-style-type: none"> Organisational workflows Principles of automation technologies and robotic systems Procedures for setting up and inspecting robotic systems and automation technologies Approaches to oversee operational activities that use robotic systems and automation technologies Control theory Types and applications of control loop components and controllers 	<ul style="list-style-type: none"> Application range of automation technologies and robotic systems Methods for evaluating resources and skills to carry out operational activities using automation technologies and robotic systems Principles of electro-pneumatics Types of logic control programmes Concepts pertaining to performance specifications and analysis Best practices in robotics and automation Components of a robot Principles of path and trajectory planning Types of programming skills of a robot 	<ul style="list-style-type: none"> Organisation's products and processes Organisation's quality and workplace safety and health (WSH) guidelines Methods of developing detailed operating procedures for automation technologies and robotic systems Methods to influence adoption of new technologies Impact of robotics and automation on operations Principles of change management 	<ul style="list-style-type: none"> Applications of emerging robotics and automation technologies Industry best practices and applications of new technologies Impact of robotics and automation on operations Benefits and trade-offs of advanced robotics and automation Principles of change management Methods of conducting research and development in automation and robotics
Abilities		<ul style="list-style-type: none"> Operate automation technologies and robotic systems by following manufacturer's instructions and operating procedures Follow safety procedures when operating 	<ul style="list-style-type: none"> Oversee use of automation technologies and robotic systems Diagnose faults in the use of automation technologies and robotic systems for operational processes and suggest solutions 	<ul style="list-style-type: none"> Evaluate various automation technologies and robotics systems to compare their strengths and limitations Evaluate the feasibility of incorporating automation and robotic systems into operational activities 	<ul style="list-style-type: none"> Determine range of applications, resources, skill requirements and production feasibility of automation technologies and robotic systems Develop technical operating procedures for robotics and automation 	<ul style="list-style-type: none"> Develop robotics and automation application strategies Refine parameters of robotics and automation processes to improve operational efficiency Analyse alternative approaches to robotics

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		<p>automation technologies and robotic systems</p> <ul style="list-style-type: none"> Identify and report any issues with the automation technologies and robotic systems Install sensors and actuators for process control in specified locations 	<ul style="list-style-type: none"> Interpret and extract relevant process parameters from given specifications Apply corrective actions for automatic and manual shut-downs during critical and emergency situations Review feedback on operation of automation technologies and robotic systems, and incorporate into updated operating procedures 	<ul style="list-style-type: none"> Apply optimisation techniques to improve automated processes' efficiency and product quality Assess improvements on the products and processes Evaluate the benefits and trade-offs of implementing advanced optical metrologies to the business 	<ul style="list-style-type: none"> Evaluate the benefits and trade-offs of implementing advanced robotics and automation to the business Formulate processes and procedures for operational activities using robotics and automation Ensure procedures and operations are implemented according to plan and WSH requirements Determine post-processing procedures for operational activities using robotics and automation 	<p>and automation to enhance engineering precision and productivity</p> <ul style="list-style-type: none"> Identify potential opportunities to improve robotics and automation approaches in the organisation Prepare business cases for implementing advanced robotics and automation to satisfy business and legislative requirements
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