

TSC Category	Engineering Construction, Operations and Maintenance					
TSC	Commissioning and Start-Up Management					
TSC Description	Manage the commissioning and start-up of new or modified equipment, components and systems into operational modes					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		EGS-EPM-2001-1.1-1	EGS-EPM-3001-1.1-1	EGS-EPM-4001-1.1-1	EGS-EPM-5001-1.1-1	
		Execute work activities for commissioning and start-up of equipment, components and systems according to established processes and procedures	Interpret commissioning and start-up work processes and procedures including systematic integration, testing and initial operations so as to conduct commissioning and start-up activities	Establish commissioning and start-up work processes and procedures including systematic integration, testing and initial operations so as to coordinate commissioning and start-up activities with internal and external stakeholders	Drive strategic planning and implementation of commissioning and start-up work processes so as to ensure safe and reliable commissioning and start-up of new or modified equipment, components and systems	
Knowledge		<ul style="list-style-type: none"> Procedures and processes for commissioning and start-up Types of equipment, component and system tests and inspections Types of engineering drawings Methods of making corrective adjustments to equipment, components and systems Types of Workplace Health and Safety (WSH) hazards related to commissioning work activities International standards, codes, legislation pertaining to testing and commissioning 	<ul style="list-style-type: none"> Principles of pre-commissioning and commissioning Commissioning completions, punch list closeout and handover principles System integrity, and functional and performance checks Types of engineering drawings Types of systems and functional checks Types of commissioning for various engineering disciplines Equipment fault finding and troubleshooting techniques Types of safety systems and safety interlocks and special commissioning requirements Types of Workplace Health and Safety (WSH) hazards related to commissioning and start-up work activities 	<ul style="list-style-type: none"> Advanced principles of pre-commissioning and commissioning activities Testing, acceptance and handover principles and practices Equipment advanced fault-finding and troubleshooting techniques Mechanical completions Test runs and dynamic testing principles Types of functional and performance testing and acceptance Principles of maintaining safe working areas during commissioning activities Testing and commissioning documentation, reporting and close out requirements Workplace Safety and Health (WSH) requirements related to testing, commissioning and start-up of process plant equipment and systems requirements 	<ul style="list-style-type: none"> Commissioning and start-up strategy development Planning techniques and practices Methods of formulating testing and commissioning policies and frameworks Commissioning and start-up risk management Certification and handover principles and practices Procedure development techniques International standards, codes, legislation pertaining to testing, commissioning and start-up 	

**SKILLS FRAMEWORK FOR ENGINEERING SERVICES
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE**

			<ul style="list-style-type: none"> International standards, codes, legislation pertaining to testing, commissioning and start-up 	<ul style="list-style-type: none"> International standards, codes, legislation pertaining to testing, commissioning and start-up 		
Abilities		<ul style="list-style-type: none"> Support commissioning and start-up activities Carry-out visual inspections as required Carry out functional and performance tests as required Check operation of equipment, components and systems Calibrate and adjust equipment, components and systems based on indicators Execute replacement of faulty equipment, and secure them in accordance with specifications and organisation procedures Assist with preparation of commissioning and start-up reports Apply relevant WSH procedures for a given work area 	<ul style="list-style-type: none"> Conduct commissioning and start-up support activities Provide discipline specific engineering support on fault finding and troubleshooting of equipment Review and critique as-built drawings Conduct and technically support completions and punch list action closeouts Perform system integrity and functional and performance checks Prepare commissioning and start-up reports Apply relevant WSH procedures for a given work area 	<ul style="list-style-type: none"> Review pre-commissioning and commissioning activities in area of expertise Manage discipline specific fault-finding and troubleshooting Manage test runs and equipment performance runs Monitor and report commissioning and start-up progress activities against plan Review contractor and vendor commissioning and start-up activities Review commissioning and start-up reports Identify defects and malfunctions from testing and commissioning results with relevant guidelines Verify system and design faults using appropriate technical information, fault finding and diagnostic techniques to identify equipment, component and system irregularities and non-conformances Identify follow-up actions for identified irregularities and non-conforming equipment, components or systems 	<ul style="list-style-type: none"> Determine commissioning and start-up requirements according to specifications, design drawings and regulatory requirements Formulate effective commissioning and start-up strategic plans Formulate testing and commissioning policies and parameters Lead and oversee all pre-commissioning and commissioning activities Validate testing and commissioning procedures to ensure compliance with requirements and specifications Approve commissioning test results Accountable for commissioning and start-up risk assessments Drive handover and completions certification processes Verify commissioning documentation in accordance with organisation's requirements 	