TSC Category	Discipline Engineering Specialisation					
TSC	Instrumentation and Control Design Engineering Management					
TSC Description	Manage technical design, selection, specification, modification and troubleshooting of instrumentation and control systems to provide instrumentation and control engineering discipline support to construction, operations, maintenance and project teams					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			EGS-EPM-3009-1.1-1	**EGS-EPM-4009-1.1**	**EGS-EPM-5009-1.1**	
			Interpret designs, technical specifications, modification designs, constructability methods, and maintenance procedures to provide instrumentation and control systems engineering support to construction, operations, maintenance and project teams	Enable the development and implementation of designs, technical specifications, modification designs, constructability methods, and maintenance procedures to manage instrumentation and control engineering support to construction, operations, maintenance and project teams	Evaluate designs, technical specifications, modification designs, constructability methods, and maintenance procedures to drive high standards of instrumentation and control engineering support to construction, operations, maintenance and project teams	
Knowledge			• Instrumentation and control engineering codes and standards • Quality Assurance and Quality Control (QA& QC), testing and troubleshooting techniques • Field measurement devices, temperature, pressure, level and flow measurement • Field control devices, control valves, shutdown valves, actuators and safety relief valves • Process control theory and principles • Control system applications, Process Logic Controllers (PLC), Distributed Control System (DCS) • Control room systems, Fire and Gas Detection (FGD) systems, alarm	• Installation, commissioning, start-up, planning and execution techniques • Chromatographs, analyser and densitometer field measurement devices • Automated sampling systems and techniques • Safety relief systems • Advanced process control theory and loop control • Third-party control systems, safety instrumented systems • Process control network design and security • Human Machine Interface (HMI) console and control panels and smart device interfaces • Professional certification for instrument and control engineers	• Instrument and control systems best practice, local and international standards • Instrument and control systems design and modification practices • Instrumentation and control design strategies • Engineering, Procurement, Construction (EPC) project management • Technological advancements in instrumentation and control	

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			management systems, communication systems • Installation practices, wiring and grounding requirements, instrument and tubing installations • Principles of fiscal metering	• Failsafe/fault tolerant Programmable Logic Controllers (PLCs) • Emergency Shutdown (ESD) and Fire and Gas (F&G) design methods • Types of wireless technology • Methods of machinery production systems		
Abilities			• Verify industry standards and practices referenced in vendor documents are active and applicable to projects • Participate in developing inspection and testing plans and QA&QC documentation for equipment, components and systems • Specify and size devices and equipment used for field measurement of pressure, level, flow and temperature • Specify and size common field control devices which include control valves, actuators, shutdown valves and safety relief valves • Apply process control theory methods to designs which include loop control and advanced process control • Specify and apply process control systems to design • Specify key element of control room systems in project designs, FGD communications, process control networks, alarm management, human	• Manage the design and engineering of instrument and control equipment used in hazardous areas explosion proof (Ex) competence levels and evidence requirements for designers, installers, maintainers and repairers • Prepare recommendations for modification and/or design of main measurement and control systems • Develop instrument and control system studies required during various project phases to verify system design and equipment selection • Manage the construction, installation and commissioning of instrument and control equipment and systems • Manage project execution and construction strategy through each project including project implementation with contractors • Manage instrumentation and control systems construction support through plans and	• Set the organisation's instrumentation and control standards • Define the strategy for instrument and control equipment used in hazardous areas (Ex) competence levels and evidence requirements for designers, installers, maintainers and repairers • Review and endorse instrument and control system studies required during various project phases to verify system design and equipment selection • Endorse the construction, installation and commissioning of instrument and control equipment and systems • Define and mature project execution and construction strategy through each project including project implementation with contractors • Benchmark instrumentation and control equipment integrity management systems against	

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			machine interface, and smart device interface	drawings, specifications and design criteria • Specify communication topology and protocols to integrate vendor's system into the overall facility systems • Manage the design development of control room systems; Fire and Gas, communications, process control networks, alarm management, human machine interface and smart device interface	organisation, statutory or regulatory requirements • Maintain and manage current and developing technology applications to engineering design and problem solving	