

TSC Category	Discipline Engineering Support Management					
TSC	Engineering Safety Standards Interpretation					
TSC Description	Design and implement appropriate safety and safeguarding engineering solutions standards in accordance with legislative requirements and industry best practices					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			ECM-DES-3001-1.1	ECM-DES-4001-1.1	ECM-DES-5001-1.1	
			Interpret engineering safety and safeguarding standards to conduct safety reviews and implement safety controls for process plants and equipment	Analyse engineering safety and safeguarding standards to supervise the selection of the most relevant and appropriate standards for complex engineering projects and continuous improvement projects	Validate safety and safeguarding engineering solutions in accordance with legislative requirements and industry best practices	
Knowledge			<ul style="list-style-type: none"> Engineering safety standards principles and practices Design engineering safeguarding principles and practices Principles of failure mode and effects analysis (FMEA) Safety engineering codes and standards Cause and effect strategies, logic function diagrams, Boolean logic Types of process area zones of classification Fault tolerant and failsafe principles Principles of hazard and operability studies (HAZOP), hazard identification studies (HAZID) and FMEA	<ul style="list-style-type: none"> Principles of fault tree analysis (FTA) Passive safety design principles and practices Quantitative and qualitative analysis techniques Safety engineering design principles Methods to determine process area zones of classification Principles of fault tolerance, failsafes, 2o3, 2o2 voting safeguarding systems Types of certified safeguarding systems 	<ul style="list-style-type: none"> Local and international engineering safety standards and codes Equipment safety certification standards Safety and reliability including problematic risk assessment methods Mean time between failure (MTBF) analysis methods Design engineering preventive techniques Equipment redundancy and backup techniques 	

**SKILLS FRAMEWORK FOR ENERGY AND CHEMICALS
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

Abilities			<ul style="list-style-type: none"> • Interpret engineering safety and safeguarding standards • Implement engineering safety standards for existing plant systems and equipment • Implement safety and safeguarding engineering solutions • Apply industry and organisational engineering safety standards and codes • Carry out basic failure and effect analysis and modelling <p>Undertake safety reviews and risk analyses for process plant and equipment</p>	<ul style="list-style-type: none"> • Analyse and select relevant and appropriate engineering safety and safeguarding standards and codes to meet project objectives • Identify possible conflicts of standards and recommend solutions • Lead project teams to recommend safety and safeguarding engineering solutions • Conduct hazard and operability studies (HAZOP), hazard identification studies (HAZID) and failure mode and effects analysis (FMEA) • Conduct fault tree and root cause safety reviews and analyses 	<ul style="list-style-type: none"> • Validate the implementation of safety and safeguarding standards in accordance with local and international legislative requirements and industry best practices • Deploy advanced techniques and modelling techniques for safety analysis reviews • Evaluate the effectiveness and reliability of safety control and safeguarding systems • Evaluate preventive techniques and practices for plant systems and equipment • Drive continuous improvement teams in the design and implementation of engineering safety improvements 	
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