

TSC Category	Process Operations Management					
TSC	Process Unit and Utilities Operations Management					
TSC Description	Operate, monitor and control process units and utilities in order to manage process operations and planning to meet organisational business targets					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	ECM-POM-1008-1.1	ECM-POM-2008-1.1	ECM-POM-3008-1.1	ECM-POM-4008-1.1	ECM-POM-5008-1.1	ECM-POM-6008-1.1
	Identify fundamental operational principles for process plants and equipment to assist in process operational tasks in a safe and reliable manner	Apply operational principles for process plants and equipment to conduct process operational tasks in a safe and reliable manner	Interpret operating conditions of process units and utilities to make necessary adjustments to process parameters and ensure safe and reliable operations during steady-state, start-up and shutdown of plants	Facilitate analyses on process parameters data, trends and alarms to supervise and manage operational tasks for all modes of plant operations including process upset conditions	Evaluate plant operational performance with reference to key performance indicators (KPIs) to manage process units and utilities operations to meet quantity and quality targets	Translate organisational business targets into department business targets and oversee manufacturing process operations and production planning processes to meet targets
Knowledge	<ul style="list-style-type: none"> Fundamentals of process chemistry Fundamentals of process technology Operating procedures for process units and utilities Fundamentals of process measurement, instrumentation and process control Operational principles of process plants and equipment Methods of monitoring process plants and equipment Drawings, schedules and diagrams of process units and utilities 	<ul style="list-style-type: none"> Fundamentals of process chemistry Types of process units and utilities Operating principles of rotating equipment including pumps, compressors, etc. Operating principles of exchangers, separators, columns, reactors, absorption units, storage etc. Process flow diagrams, tag numbering systems, unit and system numbering Principles of process plant start-up and shutdown Methods of reporting, logging and handing over Principles of local and remote control systems 	<ul style="list-style-type: none"> Organic and inorganic chemistry Types of process units and principles of operation Types of utility units and principles of operations Mass and energy balance Methods of monitoring and controlling processes within design and operating limits to ensure process fluids are under control and within specifications Principles of pre-alarm and shutdown initiators Principles of process control and protection systems Types of instrumentation and control systems 	<ul style="list-style-type: none"> Chemical engineering principles Interpretation and analysis of process design and operating data sheets Relationships between process design and operating data sheets and process equipment and systems Process operations and control Methods of process troubleshooting Principles of on-line analytical measurement and process analysers Plant start-up and shutdown operations in situations Human factors for decision making 	<ul style="list-style-type: none"> Data analytical tools for analysing and interpreting operational data Process plant troubleshooting and root cause analyses Process equipment integrity monitoring and reporting Process instrumentation and control systems Methods in managing the operation of a range of process units and utilities Principles of process control and automation Continuous improvement principles and practices 	<ul style="list-style-type: none"> Production best practices Operational excellence principles and practices Goal setting and key performance indicators (KPIs) Enterprise resource planning Continuous improvement principles and practices

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

		<ul style="list-style-type: none"> Principles of Standard Operating Procedures (SOPs) 		<ul style="list-style-type: none"> Communication and teamwork 		
Abilities	<ul style="list-style-type: none"> Assist in start-up, monitoring, control and shutdown of process units and utilities from field locations Support responses to emergency shutdowns of process plants Assist in routine field data reporting of process parameters and equipment statuses Perform sampling operations Maintain work areas and carry out housekeeping activities 	<ul style="list-style-type: none"> Perform start-up, monitoring, control and shutdown of process units and utilities from field locations Respond to emergency shutdowns of process plants Record and log process plant parameters, equipment statuses and conduct handover activities Communicate with control room operation teams Monitor process plant operating performance 	<ul style="list-style-type: none"> Perform start-up, monitoring, control and shutdown of process units and process utility operations Perform troubleshooting during all modes of operation including process upset conditions Respond to emergency shutdowns Perform data analyses, trend recording of process parameters and alarms Schedule process plants for routine and non-routine maintenance activities Perform safe loading and unloading of solids and fluids Perform process unit safety checks 	<ul style="list-style-type: none"> Supervise the start-up, monitoring, control and shutdown of process units and utilities Supervise process troubleshooting during process upset conditions Supervise responses to emergency shutdowns Review data analyses, trend recording of process parameters and alarms Monitor plant performance and efficiency and suggest adjustments to meet production quality and quantity targets Write handover logs 	<ul style="list-style-type: none"> Evaluate plant performance and efficiency and authorise adjustments Manage and lead operations teams in operational abnormalities and process troubleshooting Audit process unit and plant operations efficiency Audit plants Review production plans and schedules and liaise with planning teams Oversee the optimal operation of manufacturing processes and equipment 	<ul style="list-style-type: none"> Establish department business targets and take action to achieve goals Set plant performance criteria and KPIs Oversee manufacturing process operations and production planning processes to meet production quantity and quality targets Continuously improve manufacturing processes, plant efficiency and business workflows