

**SKILLS FRAMEWORK FOR ELECTRONICS
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Manufacturing and Operations					
TSC	Production Shut-down and Re-start					
TSC Description	Manage shutdown and restarting of production process to minimise loss and/or damage of assets as well as ensure the safety of personnel during shut down and restarting					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			ELE-OPR-3008-1.1	ELE-OPR-4008-1.1		
			Coordinate the shut-down and re-start of the production process in a safe and efficient manner due to a planned or an unplanned shut-down or emergency situation	Manage the shut-down and re-start of a production process while ensuring maximum safety to personnel and minimum impact to plant, environment and the organisation's productivity		
Knowledge			<ul style="list-style-type: none"> • Possible causes of unplanned shutdowns that require immediate actions • Organisation procedures for controlling automatic shut-downs • Procedures for assessing emergency situations in the plant • Effects of unplanned shut-downs on the control systems • Safe handling of equipment to protect oneself and others from risks • Importance of minimising any loss and/or damage during shut-down • Electrical and mechanical isolation • Plant and equipment operating parameters during start-up • Commissioning and pre-start checking of various associated equipment • Safe de-isolation and commissioning • Are there any WSH-related knowledge items required here? 	<ul style="list-style-type: none"> • Principles of operation of plant and/or equipment • Routine problems, faults and their resolution • Methods of starting, stopping, operating and controlling process • Corrective actions appropriate to the problem causes • Functions and troubleshooting of major components and their problems • Types and causes of problems within one's scope of skill level and responsibility • Emergency shut-down procedures • Procedures relating to plant shut-down and re-start • Workplace Safety and Health (WSH) Regulations 		

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Abilities			<ul style="list-style-type: none"> • Respond to unplanned shut-downs in plant • Co-ordinate planned shut-downs in plant • Co-ordinate start-up of plant 	<ul style="list-style-type: none"> • Check and verify safety systems to ensure that the unit has been made safe • Identify the reasons for, or cause of the shut-down by troubleshooting the systems and utilising all available data and information systems • Obtain confirmation of the identified shut-down from production team to verify both the nature and the reliability of the shut-down • Rectify or initiate procedures to rectify the fault or cause of shut-down through repairs of the operational faults or re-adjustment before returning the system to start-up status • Conduct the start-up process in accordance with organisational procedures and WSH procedures • Record any further ongoing production problems to report to appropriate persons or authority 		
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