TSC Category	Product Development					
TSC	Manufacturing Process Design					
TSC Description	Analyse the design of the product to identify potential manufacturing risks and problems for the reduction of manufacturing costs					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
				PRE-PMN-4007-1.1	**PRE-PMN-5007-1.1**	**PRE-PMN-6007-1.1**
				Develop a new product manufacturing process design strategy, which includes determining the process capability and the facilitation of initial production	Formulate key drivers for process selection and review capabilities and limitations of primary and secondary manufacturing processes	Mentor installation or commissioning teams to ensure installation or commissioning schedules and plans adhere with approved policies and procedures
Knowledge				• Benchmarks for best practices in quality • Comparative analysis techniques • Quality assurance schemes • Types of production operation costs • Concept of eliminating operations • Process of strategic planning • Communication strategies • Procedures for documentation and reporting • Code of practice • Workplace safety and health (WSH) regulations	• Design for manufacture and assembly (DFMA) tools • Generic needs for selecting processes • Selecting processes • Manufacturing process selection • Types of rapid prototyping process • Principles of rapid near net shape manufacturing processes	• Process to develop and gain agreement on departmental budgets • Risk assessments and hazards • Requirements for the commissioning of the new product manufacturing process • Commissioning methods used for different types of products • Procedure for purchasing and obtaining materials and other consumables necessary for commissioning • Quality criteria to be used for the different products or processes • Quality assurance and control methods to be used in the department • Processes involving root cause problem solving analysis • Methods to create, review and modify

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						standard operating procedures (SOPs) • Workplace safety and health (WSH) regulations
Abilities				• Review product designs with clients and the production team to agree on technical specifications, aesthetic requirements, timelines, costs and other market requirements • Determine industry and regulatory requirements for the products • Determine material requirements for products • Determine process requirements for products • Evaluate the workplace's machining processes to determine the optimum machining process, in accordance with product materials' requirements • Trial new products through the process • Design and set up quality control procedures to address product quality and compliance to regulatory requirements	• Apply basic principles to the solution of shape, property and cost problems through identification of key drivers for process selection • Report the properties of materials which influence their selection and behaviour during processing • Evaluate the influence on engineering properties of different processes • Review the capabilities and limitations of manufacturing processes	• Obtain details on the new product manufacturing process • Review and interpret the production specifications and documentation to assess their characteristics and requirements • Secure, monitor and control the use of resources to achieve the most effective results • Produce and agree on contingency plans • Seek clearance to carry out the commissioning activities from appropriate regulatory agencies in accordance with organisational procedures • Report and evaluate impact of improvement activities