

Specification of Competency Standards
for the Manufacturing Technology.
Unit of Competency.

Functional Area - Process Design and Development

Title	Develop and formulate intelligent processing and testing procedures, methods, and equipment for plastic products, and upgrade them to machine networking and data-driven operation
Code	111566L5
Range	This unit of competency is applicable to the process design and development departments / engineering departments of companies engaged in the plastics industries. Practitioners should be capable to review existing plastic product processing flows, develop suitable automated equipment, and upgrade them to machine networking
Level	5
Credit	6
Competency	Performance Requirements - Understand relevant knowledge of various automated processing methods and equipment, upgrade to relevant knowledge of machine networking and information technology - Understand the basic concepts and technologies of smart manufacturing and Industry 4.0 and be familiar with the operating principles of intelligent processing equipment and systems - Understand how technologies such as automation, machine vision, IoT, and big data are applied in the plastics processing industry - Understand the hardware requirements for upgrading from information silos to machine networking - Be familiar with the properties, processing technology, and moulding methods of plastic materials; understand the design and production process of plastic products - Understand the types, specifications, and applications of commonly used sensors, programmable logic controllers (PLCs), and systems - Understand the types, specifications, and applications of various automated processing and parts handling equipment for plastic products, including transfer robots, multi-axis robots, and conveyor belts, and understand the methods for data acquisition from these automated machines - Understand the types, specifications, functions, and applications of various automated testing equipment for plastic products, including stacked parts detectors, high-speed optical camera measuring instruments, and integrated measuring instruments, and understand data acquisition methods - Develop and formulate automated processing procedures, methods, and equipment, and upgrade them to machine networking - Able to assess based on new plastic product R&D design schemes to determine the production process flow of new plastic products, and able to evaluate the effectiveness of automation, intelligence, and machine networking in plastic product development and improve continuously - Able to design new plastic product manufacturing processes and tooling fixtures, ensuring defect-free processes and equipment, and minimise the probability of failure - Able to monitor the trial production and testing process of new plastic products to ensure product quality, and ensure the development of automated, intelligent processes and machine networking does not lead to product defects - Able to understand the application of automation and robotics in plastics processing, and able to evaluate and select suitable automated equipment, intelligent equipment, and robotic systems to

	achieve intelligent and automated production lines • Able to interconnect different automated production lines within factories, combining and integrating existing data sources with workshop sensors to provide comprehensive information and achieve visualisation • Able to draw layout diagrams and process flow charts for machine networking and specify technical specifications 3. Professional handling of developing and formulating automated processes and equipment for various plastic products and upgrade them to professional machine networking • Able to possess theoretical knowledge and practical experience related to plastic processing • Able to apply advanced and specialised technologies such as automation, machine vision, IoT, and big data in the field of intelligent plastic processing and achieve high degree of production line informatisation • Able to arrange and configure production lines and equipment, and upgrade to machine networking
Assessment Criteria	The integrated outcome requirements of this unit of competency are: • Able to develop and formulate automated processing procedures, methods, and required equipment for plastic products, and upgrading them to machine networking • Able to develop and formulate layout diagrams and process flow charts for machine networking and specify technical specifications
Remark	Individuals who possess the above knowledge and competency are able to support the enterprise to achieve the Industry 4.0 digital maturity level of visualisation (0i) and CPPS