

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

Functional Area - Process Design and Development

Title	Develop and formulate intelligent processing and inspection procedures, methods, and equipment for metal stamping and sheet metal products, and upgrade them to machine networking and data-driven operation
Code	111565L5
Range	This unit of competency is applicable to the process design and development departments / engineering departments of companies engaged in the metal stamping and sheet metal industries. Practitioners should be capable to review existing metal stamping and sheet metal product processing flows, develop suitable automated equipment, and upgrade to machine networking
Level	5
Credit	6
Competency	Performance Requirements - Understand relevant knowledge of various automated processing methods and equipment, and 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 automation, machine vision, IoT, big data, and other technologies are applied in the field of metal stamping and sheet metal processing - Understand the hardware requirements for upgrading from information silos to machine networking - Be familiar with the characteristics, processing technology, and forming methods of metal stamping and sheet metal materials; understand the design and production process of metal stamping and sheet metal products - Understand types, specifications, and applications of various sensors, programmable logic controllers (PLCs), and other components and systems - Understand the types, specifications, and applications of various peripheral equipment for automated processing and handling of metal stamping and sheet metal products, including transfer robots, multi-axis robots, conveyor belts, etc., and understand the methods for data acquisition from peripheral automated machinery - Understand types, specifications, functions, and applications of automated inspection equipment for various metal stamping and sheet metal products, including stack detectors, high-speed optical camera measuring instruments, and integrated measuring instruments, and data acquisition methods - Develop and formulate automated processing procedures, methods, and equipment, and upgrade them to machine networking - Able to base on new metal stamping and sheet metal product R&D design schemes to determine the production process flow of new metal stamping and sheet metal products, and able to evaluate the effectiveness of automation, intelligence, and machine networking in the metal stamping and sheet metal products development and improve continuously - Able to set up new production processes for metal stamping and sheet metal products and tooling fixtures, ensure defect-free processes and equipment, and minimise the probability of failure - Able to monitor the trial production and testing process of new metal stamping and sheet metal 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 technologies in metal stamping and sheet metal 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 factory, combining and integrating existing data sources and 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 metal stamping and sheet metal products and upgrade them to machine networking • Able to possess theoretical knowledge and practical experience related to metal stamping and sheet metal processing • Able to apply advanced and specialised technologies such as automation, machine vision, Internet of Things, and big data in the field of intelligent metal stamping and sheet metal 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 processes, methods, and required equipment for automated processing of metal stamping and sheet metal products and upgrade 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