

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

Functional Area - Process Design and Development

Title	Operate and maintain intelligent and automated processing and design equipment, systems and processes for die casting, casting and extrusion of metal products; collect and monitor process data for die casting, casting and extrusion products
Code	111560L3
Range	This unit of competency is applicable to the process design and development departments / engineering departments of companies engaged in the metal die casting, casting and extrusion industries. Practitioners should be capable to operate and maintain intelligent and automated equipment and systems for metal casting processes, are familiar with control systems and data handling, and possess knowledge and skills in data collection techniques and process monitoring
Level	3
Credit	3
Competency	Performance Requirements 1. Understand relevant knowledge of equipment, control systems, and digital application technologies in metal die casting, extrusion, and forging processes • Understand basic concepts and technologies of smart manufacturing and Industry 4.0 • Understand characteristics, processing methods, and forming techniques of commonly used metal die casting, casting and extrusion materials • Understand design and production process of metal die casting products, and possess theoretical knowledge related to die casting operations • Understand functions, structures, basic operation principles, and system operations of intelligent and automated equipment used in metal die casting, extrusion, and casting • Understand data exchange and collaborative operation principles between equipment and systems • Understand cost benefits brought by smart production and in-plant logistics • Understand principles and operation methods of automation equipment, and are familiar with the application of PLC control systems and sensors • Understand impact of intelligent and automated equipment setup on production capacity, quality, risk, safety, cost, and environmental sustainability • Understand troubleshooting methods for automated equipment • Understand statistical methods for data analysis • Understand principles of network communication protocols and cybersecurity 2. Able to operate and maintain intelligent and automated equipment and related digital configurations for metal die casting, extrusion, and casting • Able to operate intelligent and automated metal die casting, casting and extrusion equipment, and understand operating principles and workflow • Able to visualise equipment data, such as utilisation rates, production processes, and fault alerts • Able to maintain and service smart and automated equipment on daily basis • Able to identify equipment malfunctions and implement appropriate corrective actions, include mechanical, electrical, and IoT-related troubleshooting

	• Able to organise production data and evaluate production efficiency and performance using common data analysis tools, and report to supervisors • Able to monitor the status of automated and smart equipment, process data, and in-plant logistics • Able to support the maintenance of equipment and data security in accordance with cybersecurity guidelines • Able to configure and manage network connections for intelligent and automated equipment 3. Professional handling of smart metal casting equipment and the integration of digital analysis techniques in production processes • Able to monitor real-time production process parameters using IoT technologies (include cloud computing, IoT, and big data) and report to supervisors • Able to apply automation, machine vision, IoT, and big data technologies in metal die casting, casting and extrusion operations, and incorporate them into daily equipment operation and maintenance • Able to set up and debug metal casting equipment and related digital configurations under supervision and instructions from senior staff
Assessment Criteria	The integrated outcome requirements of this unit of competency are: • Able to apply data analysis and statistical methods for metal die casting, casting and extrusion processes, and present real-time production data and analysis results to supervisors • Able to operate and maintain common intelligent and automated equipment for metal casting, understand their working principles and processes, and optimise the production workflow • Able to support the implementation of smart production goals in line with enterprise's Industry 4.0 requirements
Remark	Individuals who possess the above knowledge and competency are also required to possess the knowledge and competency of “ Understand various requirements of physical and electronic drawings, and be familiar with metal product manufacturing processes to effectively communicate with internal staff and customers regarding metal products and processes (106491L3)” 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 (1i)