

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

Functional Area - Product Manufacturing

Title	Operate and maintain data collection equipment and systems for surface treatment and processing product manufacturing; store, manage, and assist in analysis of digital production data in metal surface treatment and processing
Code	111571L3
Range	This unit of competency is applicable to the product manufacturing departments / production departments of companies engaged in the surface treatment industries. Practitioners should be capable to operate and maintain intelligent and automated equipment and systems for surface treatment processing, understand control systems, and possess knowledge and skills in data collection techniques and methods, and can collect, process, and apply production data
Level	3
Credit	3
Competency	Performance Requirements - Understand relevant knowledge of equipment, control systems, and digital application technologies in surface treatment and finishing processes - Understand basic concepts and technologies of smart manufacturing and Industry 4.0 - Understand data collection methods and techniques in surface treatment and processing, include sensors, QR codes, and RFID systems - Understand principles and methods of data storage and processing, and are familiar with the use of database management systems and data warehouses - Understand data backup and recovery strategies - Understand principles of data exchange and collaboration among equipment and systems - Understand installation and debugging methods of data collection devices - Understand configuration and management methods of data collection systems - Understand data visualisation and report generation technologies - Understand SQL language and database management tools - Understand basic data analysis tools and software, include Excel, Python, and R, etc. - Understand principles and applications of digital factories and manufacturing execution systems (MES) in the surface treatment and processing industry - Operate and maintain intelligent data acquisition equipment and systems for surface treatment processing - Able to operate and understand the working principles and workflows of general data collection equipment and systems used in surface treatment and processing product manufacturing, and perform installation, configuration, and debugging to effectively collect production data - Able to write basic databases and perform simple programming tasks, and carry out data extraction, transformation, and loading (ETL) operations under guidance - Able to apply data collection and statistical methods, and use data analysis tools and software, such as Excel, Python, and R, to organise data and support analysis under guidance - Able to visualise utilisation rates, production data, and fault alerts of surface treatment and processing equipment and related configurations

	• Able to apply key technologies and processes for building digital factories, and operate digital factory systems and MES in the surface treatment and processing industry 3. Professional handling of intelligent data collection equipment and systems for surface treatment and processing production, and conducting integrated data analysis • Able to integrate and interconnect workshop equipment and related configurations in surface treatment and processing production using various technologies (include cloud computing, IoT, and big data), and support centralised real-time monitoring of production status such as production capacity, defect rate, and equipment utilisation • Able to apply automation, machine vision, IoT, and big data technologies in the surface treatment and processing field under supervision • Able to configure and debug digital settings for surface treatment and processing equipment and related systems under senior instructions
Assessment Criteria	The integrated outcome requirements of this unit of competency are: • Able to apply data collection and statistical methods required in the surface treatment and processing industry, and organise production data using data collection tools and software to support production status analysis • Able to understand the operating principles, working methods, and workflows of common intelligent and automated equipment and systems in surface treatment and processing product manufacturing, and assist in the digitalisation and optimisation of production processes under guidance
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)