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| **Title** | **Design and build vehicle or machine complex electrical systems containing electronics and reflect on build procedures** | | |
| **Level** | **5** | **Credits** | **10** |

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| **Purpose** | People credited with this unit standard are able to: explain the function and operation of vehicle or machine complex electrical systems containing electronics; design and build vehicle or machine complex electrical systems containing electronics; and reflect on learning experience in response to building vehicle or machine complex electrical systems containing electronics. |

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| **Classification** | Motor Industry > Automotive Electrical and Electronics |

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| **Available grade** | Achieved |

**Guidance Information**

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, and company and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

2 Legislation, regulations and industry standards relevant to this unit standard include but are not limited to the:
Health and Safety at Work Act 2015.

Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

3 Definitions
*Company requirements* refer to instructions to staff on policy and procedures that are available in the workplace. These requirements may include – company policies and procedures, work instructions, product quality specifications and legislative requirements.
*Service information* refers to technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.

4 Range
*Complex electrical systems* integrate two or more systems, or three or more sub-systems (electronic, electrical, mechanical, pneumatic, hydraulic).
*Learning experience* involves a reflection on the overall process to form a holistic viewpoint. This may refer to one or more learning experiences.

## Outcomes and performance criteria

### Outcome 1

Explain the function and operation of vehicle or machine complex electrical systems containing electronics.

**Performance criteria**

1.1 Function of the electrical system is explained.

1.2 Operation of the complex electrical system is explained.

### Outcome 2

Design and build vehicle or machine complex electrical systems containing electronics.

Range evidence of two different system builds is required.

**Performance criteria**

2.1 Wiring diagram is designed and created.

Range may include – electronic components, electrical components, wiring, connections to existing systems.

2.2 Complex electrical system is built to design specification and installed.

2.3 Complex system is tested.

Range operation, operation of any affected systems.

### Outcome 3

Reflect on learning experience in response to building vehicle or machine complex electrical systems containing electronics.

**Performance criteria**

3.1 Experience of building electrical systems is reflected on and described in relation to the knowledge and analytical skills acquired.

3.2 Improvements to future build procedures are identified based on own reflection.

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| **Planned review date** | 31 December 2027 |

**Status information and last date for assessment for superseded versions**

| Process | Version | Date | Last Date for Assessment |
|---|---|---|---|
| Registration | 1 | 26 January 2023 | N/A |

| Consent and Moderation Requirements (CMR) reference | 0014 |
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This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

**Comments on this unit standard**

Please contact Hanga-Aro-Rau Manufacturing, Engineering, and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.