Title	**Explain marine electrical systems**		
Level	**4**	**Credits**	**8**

Purpose	People credited with this unit standard are able to explain electrical systems in a boat and explain the corrosion protection for electrical system components in a boat.

Classification	Boating Industries > Boatbuilding

Available grade	Achieved

Guidance Information

1 References
References and/or industry standards relevant to this unit standard include but are not limited to the:
- ISO 13297:2020 Small Craft – Electrical Systems – Alternating and direct current installations
- Maritime Rules for Recreational Boating.

Any new, amended or replacement Acts, regulations, rules, 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.

2 Definition
Manufacturer's specifications refer to technical information of boat or product detailing: operation, installation and servicing procedures; technical terms and descriptions; or illustrations. Manufacturer's specifications must be followed in all instances to ensure compliance with manufacturers' warranty, safe operation, and operation that meets manufacturer performance claims.

Outcomes and performance criteria

Outcome 1

Explain electrical systems in a boat.

Performance criteria

1.1 Battery banks are explained in relation to their marine use.

Range battery banks include - deep cycle, start, auxiliary

1.2 Battery banks are compared in terms of battery construction.

Range battery banks include – deep cycle, start, auxiliary

1.3 Marine battery types are explained in terms of their characteristics and maintenance requirements.

Range battery types includes but is not limited to – flooded, gel, lead-acid, lithium.

1.4 Electrical circuits are explained in terms of wiring requirements.

Range electrical circuits include – parallel, series, earthing.

1.5 Battery installation requirements are explained in accordance with manufacturer's instruction information.

Range battery installation requirements include – position, security, ventilation.

1.6 Charging and storage of batteries are explained in terms of marine safety guidelines.

Range charging systems include – alternating current (AC), direct current (DC), Battery Management System, solar, wind

1.7 Components of electrical systems are explained in terms of their use and application.

Range electrical systems include – inverters, navigation lights, safety lights, charging.

1.8 Ingress Protection (IP) Ratings for marine electrical systems are explained in terms of the degree of protection against the marine environment.

Outcome 2

Explain the corrosion protection for electrical system components in a boat.

Performance criteria

2.1 The corrosion protection for electrical system components is explained for the marine environment.

Planned review date	31 December 2030

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 April 2017	31 December 2027
Review	2	29 May 2025	N/A

Consent and Moderation Requirements (CMR) reference	0136

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 Engineering, Manufacturing and Logistics Workforce Development Council at qualifications@hangaarorau.nz if you wish to suggest changes to this skill standard.