SEMME3203

Installing electrical equipment in yachts and boats

Overview

This standard identifies the competences you need to install electrical equipment into yachts or boats, in accordance with approved procedures. You will be required to use appropriate installation drawings, specifications and documentation to install and connect up the various types of equipment, components and circuits. You will be expected to position, align and secure the equipment in the correct locations, using the appropriate techniques and terminating devices. The installation activities will cover a broad range of electrical equipment such as power supply and distribution equipment, lighting, domestic services, alarm, motor/rotating equipment, pumping equipment and entertainment systems.

Your responsibilities will require you to comply with organisational policy and procedures for the electrical installation activities undertaken and to report any problems with the activities, components or equipment that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. **

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying appropriate installation techniques and procedures to yacht or boat electrical equipment. You will understand the electrical equipment being installed and its application, and will know about the installation techniques, tools and methods, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

You will understand the safety precautions required when carrying out the electrical equipment installation operations. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1.
work safely at all times, complying with health and safety legislation, regulations, directives and other relevant guidelines
2.
follow all relevant drawings and specifications for the installation being carried out
3. use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
4. install, position and secure the equipment and components in accordance with the specification
5. ensure that all necessary connections to the equipment are complete
6. deal promptly and effectively with problems within your control and report those that cannot be solved
7. check that the installation is complete and that all components are free from damage
8. complete relevant documentation in line with organisational procedures

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that you need to observe when installing and terminating electrical equipment in yachts or boats (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
2. the health and safety requirements of the work area where you are carrying out the activities and the responsibility these requirements place on you
3. how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down of compartments in the case of fire or other major incident, first aid, fire fighting and resuscitation of personnel)
4. the hazards associated with the installation of electrical equipment in yachts or boats and with the tools and equipment used and how they can be minimised
5. the protective equipment that you need to use for both personal protection (PPE) and protection of the vessel/craft
6. the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps)
7. what constitutes a hazardous voltage and how to recognise victims of electric shock
8. how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
9. the interpretation of drawings, standards, quality control procedures and specifications used for the installation (including BS and ISO schematics, symbols and terminology)
10. how to carry out currency/issue checks of the specifications you are working with
11. the equipment and components to be installed and their function within the particular system
12. the various mechanical fasteners that will be used and their method of

installation (including threaded fasteners, special securing and locking devices)
13. why some securing devices need to be locked and the different methods that are used
14. the importance of using the specified electrical terminations, connections and fasteners for the particular installation process and why you must not substitute others
15. the quality control procedures to be followed during the electrical installation operations
16. the procedures for ensuring that you have the correct tools, equipment, electrical components and fasteners for the activities
17. the techniques used to position, align, adjust and secure the electrical equipment, components and circuitry to the vessel/craft without damage
18. methods of lifting, handling and supporting the components/equipment during the installation activities
19. the use of seals, sealants, adhesives and anti-electrolysis barriers and the precautions that need to be taken
20. why electrical earth bonding and continuity is important and why it must be both mechanically and electrically secure
21. how to conduct any necessary checks to ensure the equipment and system integrity, functionality, accuracy and quality of the installation (such as continuity, polarity, insulation resistance)
22. the various fault-finding techniques that can be used if the equipment fails the checks/tests
23. how to recognise installation defects (such as misalignment, ineffective fasteners or terminations, damage or contamination)
24. the procedure for the safe disposal of waste materials
25. the tools, equipment and measuring devices used in the electrical installation activities and their calibration/care and control procedures
26. the problems that can occur with the electrical installation operations and how these can be overcome
27. the recording documentation to be completed for the activities undertaken
28. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

Scope/range related to performance criteria