SEMME2016

Assisting in the installation of marine pipework and components

Overview

This standard identifies the competences you need to assist in the installation of marine pipework and associated components on board vessels, in accordance with approved procedures. The marine pipework systems to be installed include fresh water, chilled water, air conditioning, lubricating oil, waste water, steam drains, sea water and other salvage drainage systems. In installing the marine pipe-work, you will be expected to use a range of equipment, hand tools and techniques, appropriate to the operations being performed.

The installation activities include producing cemented/glued joints, hot welded plastic joints, compression joints, threaded joints, flanged joints and push-fit joints. The marine pipe installations will use a range of fittings, which will include straight connectors, elbows, tee pieces, reduction pieces, flanges, tank connectors, tap connectors, valves and other fittings, as appropriate to the application.

Your responsibilities will require you to comply with organisational policy and procedures for the marine pipework installation activities undertaken and to report any problems with the equipment, materials or installation activities that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with either a high level of supervision or as a member of a team. You will take personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. When working in a team you must demonstrate a significant personal contribution to the team activities in order to satisfy the requirements of the standard and competence in all the areas required by the standard must be demonstrated.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will provide an informed approach to the installation of marine pipework and associated components onboard vessels. You will have an understanding of the marine pipework system being installed and its application and will know about the installation techniques, pipe components and materials used, 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 working on the installation of the marine pipework and with the associated tools and equipment. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others onboard the vessel.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and 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. assist in the installation, positioning and securing of the pipework and components in accordance with the specification
5. ensure that all necessary connections to the pipework are complete
6. deal promptly and effectively with problems within your control and report those that cannot be solved
7. complete relevant documentation in accordance with organisational requirements
8. check that the installation is complete and that all components are free from damage

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken when installing marine pipework onboard vessels and with the tools and equipment used (including general workshop and site safety, accident procedure; statutory regulations, risk assessment procedures and COSHH regulations)
2. the personal protective equipment (PPE) to be used when installing marine pipework
3. the hazards associated with carrying out marine pipework installation activities (including tag-out systems and how they operate, ship boundaries and handling long lengths of pipe in confined spaces, working with heating elements for plastic welding) and how they can be minimised
4. how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down compartments in the case of fire or other major incident)
5. the procedures to be carried out before starting work on the installation (such as obtaining permits to work, obtaining and complying with risk assessments and other health and safety requirements)
6. how to obtain and interpret information from job instructions, drawings and specifications, in relation to the work undertaken
7. the preparation of pipework and fittings for the installation operation (including checking for damage, removing foreign objects, dirt and swarf from bore of pipe, removing burrs)
8. the range of marine pipe fittings that can be used and how to identify them (including straight connectors, elbows, tee pieces, reduction pieces, tank fittings, flanged fittings, valves, blanking pieces/cap ends plastic hot welding fittings)
9. the different methods of connecting pipework (such as bolted flanges, screwed couplings, nut and ferrules, compression fittings and push-fit fittings)
10. how to ensure alignment and identify the correct orientation of fittings with regard to flow and the consequences of incorrectly orientating the fitting
11. the methods used to prepare pipe ends and why it is necessary to ensure that these preparations are carried out
12. the use of compression fittings, how the pipes are sealed and the effects of over-tightening the fittings
13. the use of flanged fittings, jointing materials, fasteners and the effect of over-

tightening fasteners

14. the use of push-fit connectors and their advantages and disadvantages
15. the use of threaded connections and their advantages and disadvantages
16. methods of fastening pipe supports to the vessel structure and the need to protect the integrity of the vessel at all times
17. methods of supporting pipework and the type of fittings that are used
18. the importance of ensuring that the completed installation is free from dirt, swarf and foreign object damage and of ensuring that any exposed components or pipe ends are correctly covered/protected
19. the procedure for the safe disposal of waste materials
20. the tools and equipment used when installing marine pipework
21. why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the activities
22. the standards to be attained and company quality procedures
23. 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

1.

Carry out all of the following during the marine pipework installation activities:

1.1 ensure that the site is kept accessible and free from obstructions or hazards
1.2 use the correct marine pipe installation drawings, specifications or job instructions
1.3 ensure that the components and pipes used are free from foreign objects, dirt or other contamination
1.4 check that all tools are in a safe and usable condition
1.5 ensure that tag-out systems are in place before removal of any blanks, prior to installation
1.6 ensure that appropriate COSHH regulations are adhered to
1.7 leave the work area in a safe condition and to the prescribed category of cleanliness

2.

Assist in the installation of marine pipework which contains six of the following types of fittings:

2.1 straight couplings
2.2 elbows
2.3 tee pieces
2.4 reduction pieces
2.5 valves
2.6 blanking caps
2.7 pipe clips/supports
2.8 drain/bleeding devices
2.9 screwed fittings (such as tank, tap, pump, gauges)
2.10 flanged fittings
2.11 other specific fitting

3.

Use two of the following jointing methods during the installation activities:

3.1 nut and ferrule
3.2 screwed fittings
3.3 compression fittings
3.4 bolted flanges
3.5 snap-on/push fittings
3.6 cemented/glued joints
3.7 plastic hot welding

4.

Assist in the installation of the marine pipework, to include carrying out four of the following:

4.1 securing pipework supports to vessel structures
4.2 using gaskets, seals or jointing compounds
4.3 connecting pipe-to-pipe

4.4 aligning and levelling equipment
4.5 making bulkhead penetrations
4.6 torque loading of bolts
4.7 connecting pipe to vessel's equipment

5.

Assist in the installation of three of the following marine pipework systems:

5.1 fresh water
5.2 salt/raw water
5.3 air conditioning
5.4 chilled water
5.5 lubricating oil
5.6 waste water
5.7 deck drains
5.8 fire main
5.9 steam drains
5.10 refrigeration gas
5.11 fuel gas
5.12 hydraulics
5.13 distilled
5.14 main services
5.15 high/low pressure air
5.16 other salvage drainage systems

6.

Produce marine pipework installations, in accordance with one of the following standards:

6.1 BS, EN or ISO standards and procedures
6.2 customer (contractual) standards and requirements
6.3 company standards and procedures
6.4 specific system requirements
6.5 recognised compliance agency/body's standards
6.6 other accepted international standards

7.

Complete the relevant paperwork, to include one of the following, and pass it to the appropriate people:

7.1 installation record
7.2 job cards
7.3 time sheets
7.4 system log
7.5 other specific reporting method

Behaviours

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

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