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EUROPASS CERTIFICATE SUPPLEMENT

TITLE OF THE DIPLOMA (ES)

Técnico en Mantenimiento y Control de la Maquinaria de Buques y Embarcaciones

TRANSLATED TITLE OF THE DIPLOMA (EN) (1)

Technician in Maintenance and Control of Ships and Boats' Machinery

(1) This translation has no legal status.

DIPLOMA DESCRIPTION

The holder of this diploma will have acquired the General Competence with regard to:

Operating and maintaining the propulsion plant and the equipment and systems of the ship and collaborating in the security, survival and health care on board, applying quality criteria and complying with company's the plans on labour risk prevention and environment.

Within this framework, the PROFESSIONAL MODULES and their respective LEARNING OUTCOMES acquired by the holder are listed below:

"Maintenance of the propulsion plant and auxiliary machinery"

The holder:

- Makes the necessary arrangement for the start up of the propulsion plant and auxiliary machinery, verifying the functionality of its elements and auxiliary circuits and applying the established sequences to real and/or simulated equipment.
- Carries out the necessary operations to start up/stop and to control the thermal engines and their auxiliary systems, applying the established sequences in real and/or simulated equipment and justifying the ranks and parameters required for each stage of the process.
- Carries out the necessary operations to start up/stop and to handle steam propulsion plants and gas turbines, verifying their functioning and applying the sequences established to real and/or simulated equipment-
- Carries out operations for the preventive, predictive and corrective maintenance on equipment of the propulsion plant and auxiliary machinery, interpreting the maintenance plan and following the procedures established.
- Carries out operations of preventive and corrective maintenance in internal combustion engines, applying the procedures established and complying with the required quality and security and selecting the suitable tools
- Maintains propulsions systems in auxiliary boats with outboard, inboard/outboard and water jet engines to guarantee their energy efficiency, applying the procedures established in the technical documentation and using the required tools.
- Prevents labour and environment risks during the maintenance works of the propulsion plant and auxiliary engines, interpreting and complying with the rules established.

"Machining and welding processes in ships and boats"

The holder:

- Carries out elaboration and preparation operations of pieces with a machine-tool, using mechanizing and verifying techniques, according to the reference plans and complying with the quality standards.
- Carries out operations of elaboration and preparation of pieces by means of arc electric welding with coated electrode and protective gas (MIG, MAG and TIG), according to the technical procedures that the materials require that have to be combined with the required security and quality conditions.
- Carries out elaboration and reparation operations in pieces, applying procedures of oxyacetylene welding and cut (oxycut), according to the materials' features, to the required safety and quality standards.
- Carries out the inspection and reparation of machine elements according to standard methods, using technical documentation and measurement devices and carrying out the identification of components, of the parts
- Carries out inspection and repair operation in the ship, associated to the grounding condition, interpreting and developing the established maintenance plan.
- Carries out the operations of preventive and corrective maintenance of the machinery of the deck and fish pond, according to the established plan and the technical documentation.
- Prevents labour and environmental risks during the workshop and docking labours, interpreting and complying with the established standards.

"Regulation and maintenance of cooling machinery in ships and boats"

The holder:

- Controls the functioning of pneumatic systems, interpreting technical information and adjusting the parameters of the installation
- Carries out operations of assembly and corrective maintenance for pneumatic systems, interpreting the technical documentation and applying assembly techniques.
- Maintains oleo-hydraulic systems, interpreting technical documentation and checking the system's functioning.
- Carries out assembly and reparation operation in oleo-hydraulic systems, interpreting the technical documentation and selecting the necessary tools and components.
- Carries out programmable logic control projects (PLC), analyzing the functions performed by the automatisms and applying programming and assembly techniques of PLC.
- Sets up basic electro-pneumatic and electro-hydraulic automatisms, wiring or programmed, interpreting electrical diagrams ,and adjusting the processing's parameters.

"Maintenance of installation and electric machines in ships and boats"

The holder:

- Defines functioning parameters for direct, alternating and three-phase alternating current electrical circuits, on the basis of technical specifications, doing readings with measurement equipment and calculating electric magnitudes.
- Completes de coupling and the distribution of the load, according to the power and lighting demands, controlling the functioning parameters of the electric generators in the power switchboard.
- Carries out maintenance operations of electrical machinery, identifying breakdowns and dysfunctions, applying the corresponding techniques to archive and optimum performance and analyzing the technical documentation.
- Carries out the operations of preventive and corrective maintenance in the main switchboard, making measurements and interventions according to the technical documentation.
- Assembles low tension electrical installations (lighting and engine starting circuits) producing standa4rds and applying the required techniques according to low voltage directive.
- Carries out the maintenance and the installation of services and circuits of direct-current track circuit
- By means of replacements locates and repairs breakdowns in generators and controllers of battery charges, applying the established intervention protocols and analyzing the functioning parameters.
- Prevents labour and environment risks in maintenance in electrical installations and equipment, interpreting and complying with the rules established.

"Installation and maintenance of cooling and air-conditioning machinery in ships and boats"

The holder:

- Carries out assembly operations of equipment in refrigeration installations and climate-control systems, selecting the necessary means and associating the technical features of the parts and their function.
- Carries out operations to set up, to control the functioning and to stop of the refrigeration installation and the climate-control system, identifying the operation variables and assessing their influence in the installation's performance.
- Locates and repairs failures and breakdowns of the equipment and of the elements making up a refrigeration installation and a climate-control system, assessing the security and environment regulations and complying with the established protocols.
- Carries out the preventive maintenance of the cooling and conditioning systems, assessing the safety and environmental regulations and complying with the established protocols.
- Prevents labour and environmental risks during the maintenance tasks on the elements and equipment refrigeration and climate-control installations, interpreting and complying with the implementation rules.

"Guard duties procedures for machines"

The holder:

- Organizes the watch of the machines, taking into account the available means and interpreting the regulation.
- Exercises the functions of engine seafaring, pursuant to the established monitoring and communication protocols and using real and/or simulated resources.
- As a marine engineer applies the watch procedures, pursuant to the established communication and watch protocols and using real and/or simulated resources.
- Controls the functioning parameters of the propulsion plant and auxiliary system in both, normal and critical situations (adverse manoeuvres, bad weather, manoeuvring in harbour, amongst others), verifying its performance, depending on the demands for change and preventing possible damages.
- Responds in case of emergencies and contingencies occurred during the watch, interpreting and carrying out the necessary actions to avoid damages.

"English"

The holder:

- Recognises every-day and professional information contained in oral speeches in standard language, analyzing the global content of the message and relating it to the corresponding language resources.
- Interprets professional information contained in written texts, comprehensively analyzing their contents.
- Produces well structured clear oral messages, taking part as an active agent in professional conversations.
- Writes simple texts, relating the grammatical rules with the text's purpose.

- Applies professional attitudes and behaviours in communication situations, describing the characteristic relations of the language of the foreign country.

"Maritime safety"

The holder:

- Reviews the contingency plan in case of abandonment, assessing its application and indentifying the functions, the training activities and the resulting maintenance processes.
- Manages abandonment assumptions of the ship according to the established plans, controlling the rescue means and using the survival techniques with efficiency and security.
- Reviews the contingency plan in case of fire, assessing its application and indentifying the prevention measures, the formative activities and the resulting maintenance processes.
- Handles fire-fighting means and dispositive, applying measures to prevent accidents and practicing the derived techniques.
- Prevents and manages the effects of a flood, establishing the measures to take, according to the contingency plan and practicing the techniques to guarantee the security on the vessel.
- Prevents pollution by accidental dumping of hydrocarbon or other polluting substances, assessing the causes and consequences and interpreting the plans of the SOPEP/SMPEP and the related regulations.

"Health care on board"

The holder:

- Defines the preventive measures for the crew and passengers' health, taking into account the most common accidents, the basic hygiene procedures and the principles of health care on board, complying with health regulations.
- Assesses the condition of the patient, applying recognition and elementary exploration techniques and where appropriate carrying out radio-medical consultation.
- Organizes the rescue, transfer and evacuation of patients and injured on board, assessing the patient's medical condition and the available means and applying the regulation.
- Defines the care and the basic health care to the patient or injured on board, according to the pathology or injury and applying the established protocols.
- Assesses the application of first aid techniques in emergency health care, relating the patient's medical condition to the pathologies or injuries most common on board and according to the established protocols.

"Professional Training and Guidance"

The holder:

- Selects job opportunities, identifying the different possibilities of labour integration, and the alternatives of lifelong learning.
- Applies teamwork strategies, assessing their effectiveness and efficiency on the achievement of the company's goals.
- Exercises rights and complies with the duties derived from labour relationships, recognising them in the different job contracts.
- Determines the protective action of the Spanish Health Service in view of the different covered eventualities, identifying the different types of assistance.
- Assesses risks derived from his/her activity, analysing job conditions and risk factors present in his/her labour setting.
- Participates in the development of a risk prevention plan in a small enterprise, identifying the responsibilities of all agents involved.
- Applies protection and prevention measures, analysing risk situations in the labour setting of the Technician in Maintenance and Control of Ships and Boats' Machinery.

"Business and Entrepreneurial Initiative"

The holder:

- Recognises skills related to entrepreneurial initiative, analysing the requirements derived from job positions and business activities.
- Defines the opportunity of creating a small enterprise, assessing the impact on the performance setting and incorporating ethic values.
- Carries out the activities for the setting-up and implementation of a company, choosing the legal structure and identifying the associated legal obligations.
- Carries out basic administrative and financial management activities of an SME, identifying the main accounting and tax obligations and filling in documentation.

"On the Job training"

The holder:

- Identifies the structure and the organization of the company, relating both to the type of service proviced.
- Applies ethical and labour values in the development of his/her professional activity, according to the features of the job and to the procedures established by the company.

- Prepares the propulsion plant and the auxiliary machines for the trip or for the tide, collaborating with the chief engineer and/or officer during the required verification and supply works.
- Fulfils the tasks entrusted during switching operations and watches, following the instructions of the person in charge and respecting the procedures and the standards on safety, environmental protection, activities recording and quality, established by the company.
- Under supervision carries out the maintenance works in equipment of refrigeration and conditioning installation, as well as the mechanical equipment of the fish processing area, following the instructions of the responsible on board and the standards on security, environment protection and quality, established by the company.

RANGE OF OCCUPATIONS ACCESSIBLE TO THE HOLDER OF THE DIPLOMA

The Technician in Maintenance and Control of Ships and Boats' Machinery works on freight forward or passenger vessels, whether they be public or private. All that within the limits and attributions established by the relevant administration. Furthermore his/her training allows him/her to perform functions as self-employed or for others, in companies devoted to the maintenance of boats and energetic plants.

The most relevant occupations or jobs are the following:

- Repair and maintenance operator of engines and mechanical groups
- Repair and maintenance operator of engine and steam energy plants
- Chief engineer, pursuant to the assignments established for the ship's engineer by article 15.2 of the Royal Decree 973/2009, of 12 June.
- Engineer officer or chief engineer officer, pursuant to the assignments established for the ship's engineer by the article 15.2 of the Royal Decree 973/2009, of 12 June and by the Resolution of 31 May of 2010, of the Directorate General for the Merchant Marine, governing the accreditation courses for ship's engineers and ship's engineer for the professional exercise in merchant ships up to 6,000 kW.
- Maintenance and installation electromechanic for propulsion plant, machines and auxiliary equipment in sports and leisure boats.
- Mechanic for engines and injection equipment (diesel and gasoline)
- Mechanic for gasoline engines
- Mechanic for diesel engines
- Mechanic for engines and industrial machines
- Mechanic for engines and naval mechanic groups in shipyards
- Carries out the maintenance for air conditioning system and engines, dynamos and transformers repair
- Operator for installation and maintenance of cooling systems and air conditioning

AWARD, ACCREDITATION AND LEVEL OF THE DIPLOMA

Name of the body awarding the diploma on behalf of the King of Spain: Spanish Ministry of Education or the different Autonomous Communities according to their areas of competence. The title has academic and professional validity throughout Spain.

Official duration of the education/ training leading to the diploma: 2000 hours.

Level of the diploma (national or international)

- NATIONAL: Post-Compulsory Secondary Education
- INTERNATIONAL:
  - Level 3 of the International Standard Classification of Education (ISCED3).
  - Level 4A of the European Qualifications Framework (EQF4).

Entry requirements: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test.

Access to next level of education/training: This diploma may provide access to Higher Technical Cycles provided that an entrance exam is passed.

Legal basis: Basic regulation according to which the diploma is established:

- Minimum teaching requirements established by the State: Royal Decree 1072/2012, of 13 de July according to which the diploma of Technician in Maintenance and Control of Ships and Boats' Machinery and its corresponding minimum teaching requirements are established.

Explanatory note: This document is designed to provide additional information about the specified diploma and does not have any legal status in itself. An Annex I may be added and will be filled in by the corresponding Autonomous Community

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INFORMATION ABOUT THE EDUCATION SYSTEM

