EUROPASS CERTIFICATE SUPPLEMENT

TITLE OF THE DIPLOMA (ES)

Técnico en Instalaciones de Producción de Calor

TRANSLATED TITLE OF THE DIPLOMA (EN) (1)

Technician in Heat Generation Installations

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(1) This translation has no legal status

DIPLOMA DESCRIPTION

The holder of this diploma will have acquired the General Competence with regard to:
Assembling and maintaining heating, solar thermal and fluid installations the applying current legislation, and the quality, safety and labour risk protocols, guaranteeing their functionality and respect for the environment.

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

"Thermal Machinery and Equipment"
The holder:
- Recognises the magnitudes and the values which determine the operation of thermal equipment, relating such magnitudes and values to the behaviour of the equipment and comparing them with the operating ranges of the equipment.
- Calculates thermal loads in refrigeration, air conditioning and heating installations, justifying the proceedings and the results obtained.
- Recognises heat generation processes by analyzing combustion principles, solar radiation and their field of application.
- Prepares the refrigeration cycle of an installation, interpreting refrigeration diagrams and obtaining the energy balance.
- Selects the types of coolers used in refrigeration equipment, consulting technical documents and describing their applications.
- Recognises real thermal machinery and equipment and their elements, describing the function each one performs within the ensemble.
- Recognises the components of a refrigeration installation (heat exchangers and expansion devices, among others), describing their operation principles, characteristics and field of application.
- Recognises the elements of a heating and domestic hot water (DHW) installation, describing its operation principles, and its field of application.
- Recognises different types of chambers and refrigeration installations, describing their conformation and field of application.

"Installation Assembly Techniques"
The holder:
- Determines the process to be followed for machining and joining operations, analysing the technical documents from the assembly drawings of pipe and fitting sets.
- Draws parts and sets of pipes, accessories and fittings of installations for their construction and assembly, applying representation techniques and using CAD programmes.
- Applies anti-corrosion and anti-oxidation treatments, describing the properties of the materials used in installations.
- Manually mechanizes elements of the installations, relating the machine operation to the conditions of the process and the product features.
- Shapes sheets, tubes and sections, analyzing their geometry and dimensions and applying the appropriate techniques (cut and bend, amongst others).
- Carries out solderless joints, identifying the features of each joint, and applying the suitable techniques for each type of joint (threading, screwing and crimping, among others).
- Welds elements in installations, analyzing the materials to join and applying soldering techniques (soft, oxy-acetylene and electric welding) both by hand and automatically.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks and the measures and the equipment to prevent them.

"Electric Installations and Automatisms"
The holder:

- Assembles control and power circuits with characteristic components, interpreting schemes and verifying its operation.
- Draws electric board and installation schemes applying the regulation and drawing conventions.
- Assembles the associated electric boards and systems, interpreting schemes and justifying the function of each element within the group.
- Assembles and disassembles electric motors, identifying their components and describing their function within the group.
- Connects the motors with auxiliary control, protection and speed regulation elements, interpreting schemes and verifying their operation.
- Measures magnitudes and carries out electric safety checks, acting on equipment and installations in operation and interpreting the results.
- Locates and repairs malfunctions in the boards and in the electric installation, identifying the causes that produce them and relating them to the symptoms showed.
- Assembles simple automatic systems with programmable controllers, interpreting schemes and verifying the performance of the control programme.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks, the measures and the equipment to prevent them.

"Configuration of Heating Installations"

The holder:

- Recognises the components and obtains the technical features of heating and domestic hot water installations, with solar contribution, interpreting the technical documentation and describing its function.
- Configures small power heating and domestic hot water installations, selecting the equipment and the elements according to their field of application and regulations in force.
- Determines distribution networks of water or heat transfer fluid for small heating and domestic hot water installations with solar contribution, analysing their features and selecting their elements.
- Sizes solar thermal installations in buildings, analysing their thermal needs and interpreting the current regulations on minimal contribution.
- Draws plans and functional block diagrams of heating and domestic hot water installations, analysing and interpreting the specific symbols and the relevant representation conventions.
- Prepares the technical and administrative documentation required to legalise small power installations, interpreting the regulations and filling in the documents in preset formats.

"Assembly and Maintenance of Heating Installations"

The holder:

- Assembles heat generation equipment, emitters and accessories (boilers, radiators, fan coil units, tanks, exchangers and heat pump, among others), interpreting plans and the manufacturer's instructions and applying assembly techniques.
- Assembles water distribution and evacuation networks, as well as smoke evacuation networks for heating installations, applying assembly procedures and using appropriate means and techniques.
- Carries out sealing tests of the different circuits of the installation, applying and describing the technical and regulatory criteria.
- Assembles electric installations and automatic systems associated to heating and domestic hot water installations, interpreting schemes and the manufacturer's instructions.
- Carries out start-up operations, verifying the working parameters of the installation.
- Carries out preventive maintenance operations, interpreting the manufacturer's plans, instructions and recommendations.
- Detects breakdowns and dysfunctions in equipment and installations, relating them to their causes.
- Repairs the elements and the equipment of heating installations, applying corrective maintenance techniques and procedures.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

“Assembly and Maintenance of Water Installations"

The holder:

- Configures small water installations and networks, analyzing their features and selecting the equipment and the elements.
- Assembles networks of pipes, accessories, and control and regulation elements, interpreting plans, regulations and technical specifications and using the tools and the equipment in safe conditions.
- Installs water pumps from plans, schemes and technical specifications, applying assembly techniques for mechanical and electrical sets.
- Installs terminal water installation equipment (domestic cold water, domestic hot water, fire-fighting networks, amongst others) from plans and technical specifications, applying assembly procedures and techniques.
- Carries out preventive maintenance operations in water installations' equipment, according to the current regulations and the manufacturers' instructions.

- Diagnoses breakdowns and dysfunctions in water installations, identifying their origin and applying the most suitable repairing methods and techniques.
- Repairs by replacement the electromechanical equipment of water installations, applying corrective maintenance techniques and procedures, resuming initial functional and safety conditions.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

“Assembly and Maintenance of Solar Energy Installations"

The holder:

- Selects the equipment included in solar thermal installations, interpreting technical documents and the manufacturers' catalogues.
- Assembles solar thermal installations (individual or collective) interpreting plans and schemes.
- Carries out sealing tests of the different circuits of the installation, applying and assessing the technical and regulatory criteria.
- Assembles the electrical feed systems (conventional and through photovoltaic panels) and the control of the solar installation, interpreting schemes and the manufacturer's instructions.
- Carries out preventive maintenance operations, interpreting the current regulations and the manufacturers' recommendations.
- Repairs the elements and equipment of heating installations, applying corrective maintenance techniques and procedures.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks and the measures and the equipment to prevent them.

“Assembly and Maintenance of Gas and Liquid Fuel Installations"

The holder:

- Recognises the components of a gas or fuel installation (controllers, safety devices and valves amongst others), describing their characteristics, operation principles, and application in the installation.
- Configures gas and liquid fuel installations, justifying the calculation procedures and the results obtained.
- Assembles gas and liquid fuel installations, applying assembly techniques and interpreting schemes and instructions.
- Carries out checking and preventive maintenance operations in installations, interpreting plans and applying the current regulations.
- Carries out corrective maintenance operations in installations, applying breakdown detection techniques and taking into account the current regulations.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks and the measures and the equipment to prevent them.

"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 the risks derived from his/her activity, analysing the job conditions and the risk factors present in his/her labour setting.
- Participates in the development of a risk prevention plan for a small enterprise, identifying the responsibilities of all the agents involved.
- Applies protection and prevention measures, analysing the risk situations in the labour setting of the Technician in Heat Generation Installations

"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 company's structure and organization relating them to the production and the marketing of assembled or repaired installations.
- Applies labour and ethic habits in his/her professional activity according to the characteristics of the job position and the procedures established by the company.
- Assembles heat, water and gas installations, observing the processes from the quality system established by the company and corresponding safety protocols.
- Carries out preventive maintenance operations in the installations under the company's responsibility applying corresponding maintenance plans.
- Participates in the diagnosis and in the repairing of breakdowns and dysfunctions in equipment and installations, applying corrective maintenance techniques and procedures.
- Participates in both, in the set up of the installations made by the company and in the he equipment under its responsibility.
- Participates in small installation configuration and legalisation tasks, preparing schemes and plans, and filling in the necessary documents.

RANGE OF OCCUPATIONS ACCESIBLE TO THE HOLDER OF THE DIPLOMA

The Technician in Heat Generation Installations works in industries of assembly and maintenance of thermal and fluid installations related to the sub-sectors of heating, solar thermal installations for domestic hot water production and gas in the industrial sector and in the building and civil work sector.

The most relevant occupations or jobs are the following:

- Fitter / maintainer of heat generation equipment.
- Fitter / maintainer of heat and DHW installations.
- Fitter / maintainer of solar thermal installations.
- Fitter / maintainer of water installations.
- Fitter / maintainer of gas and liquid fuel installations.

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 _____ of the European Qualifications Framework (EQF__).

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 1792/2010, of 30 December, according to which the diploma of Technician in Heat Generation Installations 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.

INFORMATION ON THE EDUCATION SYSTEM