

# EUROPASS CERTIFICATE SUPPLEMENT

## TITLE OF THE DIPLOMA (ES)

*Técnico en Soldadura y Calderería*

## TRANSLATED TITLE OF THE DIPLOMA (EN)<sup>(1)</sup>

*Technician in Welding and Boilermaking*

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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:**

Carrying out the processes of the manufacture, assembly and repair of boilermaking elements, pipes, metallic structures and metallic joinery applying techniques of welding, machining and shaping, and complying with the specifications on quality, labour risk prevention and environmental protection.

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

### “Graphical Interpretation”

The holder:

- Determines the forms and characteristics of the products to be manufactured, interpreting the symbols represented in the manufacturing plans.
- Identifies whether or not the product to be manufactured supports specific forms and dimensions, analysing and interpreting the technical information included in the manufacturing plans.
- Sketches tools to be used during the making processes, defining the constructive solutions in each case.
- Interprets sketches of machine and equipment automation, identifying the represented elements in pneumatic, hydraulic, electric, programmable and non programmable installations.

### “Scribing, Cutting and Shaping”

The holder:

- Organises his/her work during the process of scribing, cutting and shaping, describing the sequence of operations to be carried out.
- Prepares materials, equipment and machines used to scribe, cut and shape sheet metal, profiles and pipes, defining their functions and relating them with the desired forms or pieces.
- Scribes geometric forms and intersections on sheet metal, commercial profiles and pipes, determining possible forms and applying scribing techniques.
- Operates thermal cutting equipment and machinery, either conventional and computer numerical controlled (CNC), identifying the parameters to control and relating them with the desired product.
- Operates thermal shaping equipment and machinery, either conventional and computer numerical controlled (CNC), identifying the parameters to control and relating them with the desired product.
- Operates mechanical shaping equipment and machinery, either conventional and computer numerical controlled (CNC), identifying the parameters to control and relating them with the desired product.
- Carries out the first-level maintenance of machinery and tools relating it with its functionality.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### “Machining”

The holder:

- Organises his/her tasks during the machining process, describing the sequence of operations that must be carried out.
- Prepares materials, equipment, tools and elements of protection, identifying the parameters that must be established and their relationship with the desired product.
- Machines pieces by hand, relating the procedures with the desired product and applying operative techniques.
- Operates conventional and computer numerical controlled machinery during the machining process, relating how they work and the programming instructions with the conditions of the process and the characteristics of the product to be obtained.
- Carries out the first-level maintenance of machinery, equipment and tools, relating it with its functionality.

- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Welding in Atmospheric Air”**

The holder:

- Organises his/her tasks during the welding, surfacing and spraying processes analysing the process sheets or the corresponding procedure and preparing the necessary documentation.
- Prepares the oxy-fuel gas welding, metal arc welding and resistance welding equipment, as well as that for manual oxy-fuel gas spraying, identifying the parameters, gases and fuels that must be regulated and their relationship with the characteristics of the desired product.
- Operates oxy-fuel gas welding, metal arc welding and resistance welding equipment, as well as that for manual oxy-fuel gas spraying, relating the way they work with the conditions of the process and the characteristics of the final product.
- Carries out the first-level maintenance of the welding and surfacing equipment and their accessories, relating it with its functionality.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Gas-shielded Welding”**

The holder:

- Organises his/her tasks during the welding, surfacing and spraying processes analysing the process sheets or the corresponding procedure and preparing the necessary documentation.
- Prepares the tungsten inert gas welding (TIG), MAG/MIG welding, as well as that of arc spraying, identifying the parameters and gases to be regulated and their relationship with the characteristics of the desired product.
- Programs welding robots, analysing the specifications of the process and the requirements of the product.
- Operates equipment for tungsten inert gas welding (TIG), MAG/MIG welding, as well as that of manual arc spraying, relating the way they work with the conditions of the process and the characteristics of the final product.
- Operates equipment for submerged arc welding (SAW) relating how they work with the conditions of the process and the characteristics of the final product.
- Carries out the first-level maintenance of the welding, robot, surfacing, spraying equipment and their accessories, relating it with its functionality.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Fitting”**

The holder:

- Prepares the working area, analysing the assembly process and selecting materials, equipment, tools, auxiliary and protective means.
- Prepares the assembly plan, identifying and characterising its different stages.
- Fits pipes, structures and metallic joinery, analysing the assembly procedures and applying the operative techniques of placement, alignment and joining.
- Applies finishing treatments, relating their characteristics with the requirements of the installation.
- Carries out the first-level maintenance of equipment and tools, relating it with its functionality.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Metrology and Tests”**

The holder:

- Prepares instruments, verification and destructive and non-destructive testing equipment, selecting tools and applying the required techniques or procedures.
- Checks the dimensions, geometry and surface of products, calculating measurements and comparing them with the specifications of the product.
- Detects deviations in automatic processes, analysing and interpreting the graphics of processes control.
- Checks the characteristics and properties of the manufactured product, calculating the value of the parameter and comparing results with the specifications of the product.
- Acts in accordance with quality procedures and regulations in association with the competences of the professional profile, relating them with quality systems and models.

### **“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 Welding and Boilermaking.

### **“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:

- Recognises the organisational structure of the company, identifying its internal and external functions and its relationship with the sector.
- 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.
- Prepares materials, equipment and machinery for the scribing, cutting, machining, shaping and joining of elements, building structures, metallic joinery and industrial piping installations, in accordance with the established procedures, applying the rules on labour risk prevention and environmental protection.
- Machines and shapes sheet metal, profiles and pipes, in accordance with manufacture specifications, applying the rules on labour risk prevention and environmental protection.
- Fits pipes, metallic structures and metallic joinery, complying with the plan on labour risk prevention and environmental protection, from the provided technical documentation.
- Obtains welded or surfaced sheet metal, profiles and pipes through electric welding, oxy-fuel gas welding, TIG, MAG/MIG, submerged arc welding and surfaces through thermal or arc spraying from the building plans complying with the plan on labour risk prevention and environmental protection.
- Verifies dimensions and characteristics of manufactured pieces, following the instructions established in the control plan.

### **RANGE OF OCCUPATIONS ACCESSIBLE TO THE HOLDER OF THE DIPLOMA**

The Technician in Welding and Boilermaking works in the industries of manufacture, repair and assembly of boilermaking products, metallic joinery and structures, related with the sub-sectors of metallic and shipping constructions, and the manufacture of transport vehicles within the industrial sector.

The most relevant occupations or jobs are the following:

- Welders and flame cutters
- Thermal spraying operators
- Bodyworker and boilermaker
- Metallic structures fitter
- Metallic joiner
- Heavy industry piping fitter

### **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 (ISCED 3).
  - Level 4A of the European Qualifications Framework (EQF4).

## INFORMATION ABOUT THE EDUCATION SYSTEM

