

MAKE IT

Let's Make It Happen – a Shift into Learning Outcomes in the
Welding Sector



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R2.1 European Welding Practitioner LOs Standard (Short Version)

English Version

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INTRODUCTION

This document addresses the re-design of the European Welding Practitioner (EWP) qualification and its alignment with the European Qualifications Framework (EQF) and the European Credit System for Vocational Education and Training (ECVET).

The development process leading to the re-design of the EWP profile, included in the IAB/EWF training Guideline for Welding Coordination (IAB/EWF 252r3-16), is detailed in the specific supporting document (SD01 R2.1 Updating process of the European Welding Practitioner LOs Standards).

A sectoral approach was used for re-defining the EWP training curriculum, which structure includes a theoretical and practical part, being the first related with the supervision and coordination activities, and the second with the welding activity.

1. PROFESSIONAL PROFILE

The EWP coordination tasks comply with the EN ISO 14731, requiring from this professional a factual and theoretical technical knowledge, skills, autonomy and responsibility at the level needed to supervise simple welded constructions and activities, being expected from him/her to demonstrate:

- ability to develop solutions on basic and specific problems
- ability to supervise basic welding applications and related professional activities
- taking responsibility for decision making in basic work
- taking responsibility to supervise the tasks of welding and related personnel

The EWP is also the person performing welding at higher level, for more than one welding process or group of materials.

2. CURRICULUM IMPLEMENTATION AND STRUCTURE

Different learning methods and environments can be implemented to theoretical training, namely face to face training, blended learning programmes (combined system of classroom and e-learning aligned with the IAB-195 - Distance Learning Guideline) and work-based learning, thus under control of EWF Nominated Body (ANB), which are detailed throughout the document after each competence unit description in the *External Resources and Context Conditions* tables.

The theoretical training includes eight “Competence Units” expressing the expected outcomes regarding the trainee’s assessment:

- Competence Unit 1- Introduction to Welding Technology and Arc Power Source**
- Competence Unit 2 - Welding and Cutting Processes**
- Competence Unit 3- Introduction to Metallic Materials**
- Competence Unit 4 - Materials, Their Weldability and Application of Structural and High Strength Steels**
- Competence Unit 5- Construction and Design**
- Competence Unit 6- General Features for Quality Management**
- Competence Unit 7- Quality Assurance/Quality Control on Welded Joints**
- Competence Unit 8- Tests Used for The Quality Control of Welded Joints**

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These Competence Units are organized in smaller components named “Subjects”, which are linked to **specific actions** (referring to a general task the trainee must be able to perform by the of the unit) and **performance criteria** (referring to the necessary steps the trainee should take to achieve the action, and to quality requirements for assessment of its performance). These actions translate the set of learning outcomes (LOs) established for that specific Competence Unit: **knowledge application** (related to memorization and comprehension), **practical application** (related to analysis, evaluation, application and creation) and **autonomy and responsibility**. An estimation of workload - amount of time needed for the trainee to achieve the expected results - has been defined for each subject, which enables the assignment of ECVET points to the Competence Unit, and then to the whole EWP qualification (work package 3 of MAKE IT project).

The practical training consists of typical test pieces and positions in welding (figure 1). This part of the curriculum has not been defined in terms of LOs; as such, it is not addressed in this document.

The MAKE IT EWP LOs standards have been developed to support training and the recognition of prior learning (RPL). In this context, and to what refers to the validation of welding skills, since there is no direct link between the outcomes of the theoretical and practical parts of the curriculum, it is the typical test pieces and positions in welding (figure 1) which will support the validation of the welder’s performance, as explained in RPL Guideline and tools (work package 4 of MAKE IT project).

| Welding process | | Practical Test | | |
|-----------------|----------|-------------------------------|------------------|--------------------------------------|
| ISO 9606 | ISO 9606 | Material Group (ISO TR 15608) | Welding Position | Test Dimension(s) Diameter/Thickness |
| MMA | 111 | 1 | PF/BW | 6,0 – 13,0 |
| | | 3 | PF/BW | 6,0 – 13,0 |
| | | 4, 5, 6 | H-L045/BW | ∅60,3 – ∅114.3/ 3.9 – 7.11 |
| | | 7 | PF/BW | 6,0 – 13,0 |
| | | 8 | PB/FW | 6,0 – 13,0 |
| TIG | 141 | 1 | H-L045/BW | ∅60,3 – ∅114.3 3.9 – 7.11 |
| | | 3 | PF/BW | 2,0 – 6,0 |
| | | 4, 5, 6 | H-L045/BW | ∅60,3 – ∅114.3 3.9 – 7.11 |
| | | 7 | PF/BW | 2,0 – 6,0 |
| | | 8 | H-L045/BW | ∅60,3 – ∅114.3 3.9 – 7.11 |
| | | 22 | PF/BW | 2,0 – 6,0 |
| MIG | 131 | 22 | PF/BW | 6,0 – 13,0 |

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| | | | | |
|-----------------------------|-------|---|-----------|------------------------------|
| MAG (and/or metal cored) | 135 | 1 | PF/BW | 6,0 – 13,0 |
| | (136) | 8 | PB/FW | 6,0 – 13,0 |
| FCAW (flux cored only) | 136 | 1 | PF/BW | 6,0 – 13,0 |
| | | 8 | PF/BW | 6,0 – 13,0 |
| | | 3 | PA/FW | 6,0 – 13,0 |
| GAS | 311 | 1 | H-L045/BW | Ø60,3 – Ø114.3 3.9 – 7.11 |

Figure 1 - Recommended test pieces and positions for practical examination (Source -IAB Guideline 252r3-2016)

A final note refers to the Welding processes terminology used within the document, which is according to the EN ISO 4063 standard.

QUALIFICATION DESCRIPTION

General description of the EWP qualification using the EQF terminology (2008): Knowledge; Skills and Autonomy and Responsibility

| QUALIFICATION | KNOWLEDGE | SKILLS | AUTONOMY AND RESPONSABILITY | EQF LEVEL (EQF L) | WORKLOAD (WL) | TEACHING HOURS | ECVET POINTS |
|--------------------------------------|---|---|---|-------------------|---------------|----------------|--------------|
| EUROPEAN WELDING PRACTITIONER | Factual and theoretical knowledge (basic understanding) of the theory, principles and applicability of the welding and related technologies | Fundamental range of cognitive and practical skills required to identify proper solutions, when applying welding and related technologies, in basic and specific problems | <p>Self-manage, within the guidelines of work, the applications of welding and related technologies, in a predictable context, but subject to change.</p> <p>Take responsibility without autonomy for decision making in basic work and supervise basic tasks of welding and related personnel.</p> | 4 | 247 | 150 | 8 |