



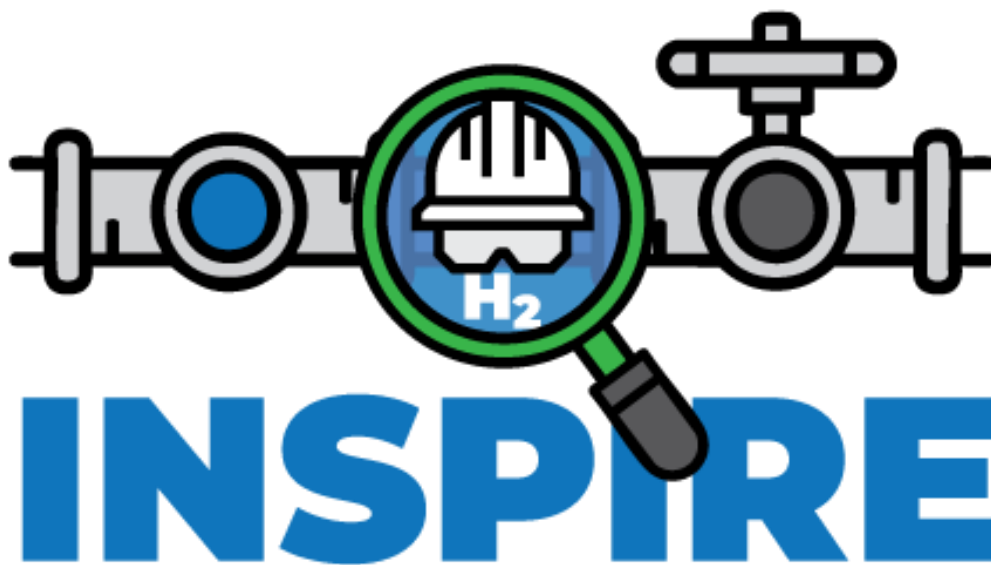
Framework for Modularisation of the Welding Inspector Guideline

ERASMUS-EDU-2024-1-FI01-KA220-VET-000249269



**Co-funded by
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Revision	Date	Author/Organisation	Description
1 st	02.02.2025	EWf	Initial draft of the revision of the Welding Inspector Guideline for modularisation
2 nd	10.03.2025	SHY, WGI, CESOL, AC-TECH, TTPSC, EWf	Partnership review and feedback collected
3 rd	04.04.2025	EWf	Updated version after integration of partnership feedback
4 th	28.04.2025	SHY, WGI, CESOL, AC-TECH, TTPSC, EWf	Final validated version; document closed

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1. Introduction

This report outlines the activities carried out under **WP3 Task 1: Revision of the Structure for a Modular Approach**, led by EWF. The task focuses on revising the existing European Welding Inspector (EWI) guideline with the aim of transforming it into a modular training programme. This modular approach is intended to enhance flexibility, allowing learners and training providers to adapt the programme to different learning needs, contexts, and industry requirements.

The work undertaken involved a comprehensive review of the current EWI guideline, the restructuring of its content into a cohesive modular framework, and the identification of key areas suitable for modularisation.

Additionally, the process explored the relevance of micro-credentials, assessing their potential to provide learners with incremental recognition of their skills and qualifications.

The report also details the methodology applied during this transformation, the structure of the revised training programme, and the anticipated benefits of this modular approach for learners, training organisations, and industry stakeholders.

This document specifically addresses WP3 Task 1, focusing on the revision of the EWI Guideline structure towards a modular approach. The identification and development of hydrogen-specific training content is addressed under WP3 Task 2 and subsequent WP3 activities, building on the modular framework presented in this document.



2. Qualifications System and Modular Approach

The European Welding Federation (EWF) qualification system is a harmonised framework for the education, training and examination of personnel in welding, joining and related technologies. It is implemented in more than 30 European countries and recognised globally as a trusted system for setting sectoral qualification standards.

The EWF System is built on a robust quality assurance framework and comprises harmonised Education, Examination and Qualification Guidelines for a range of professional levels. It has awarded more than 250,000 diplomas, widely accepted by employers and industry bodies worldwide, enabling mobility and recognition of professionals both within and outside Europe.

The success of the EWF qualification system is underpinned by the involvement of a comprehensive network of stakeholders, including training institutions, national certification bodies, companies, trainers, trainees, and standardisation organisations. This structure creates trust in the levels and content of its qualifications, ensuring their alignment with labour market needs and industrial standards.

The implementation of a modular approach to the design of qualifications brings flexibility and relevance to learners and training providers. The EWF methodology structures qualifications into Competence Units (CUs), which can be taught, assessed and validated individually. This modular approach is being progressively applied to the redesign of existing qualifications and to the development of new qualifications.

With this approach, the qualifications can be easily updated with specific content in response to technological evolution or industry demands.

Quality assurance is a cornerstone of the EWF qualification system. Operational procedures are supported by a robust quality assurance framework and are continuously updated to maintain alignment with relevant European and international requirements.

The development process actively involves representatives from:

- Industry and sector organisations
- Research and development institutions
- VET and higher education institutions



- National Qualifications Authorities
- European policymakers and standardisation bodies

This multi-stakeholder collaboration guarantees a holistic and comprehensive approach, ensuring that qualifications remain aligned with evolving industry requirements and technological innovation.

3. EWF's Methodology for Qualifications Design

The European Federation for Welding, Joining and Cutting's methodological approach to the design of Qualifications implies the use of a common terminology applicable to all its Qualifications, developed on a modular basis where each Qualification comprehends a set of Competence Units, organised in Learning Outcomes.

EWF considers CEDEFOP "[Terminology of European Education and Training Policy](#)" (2014) to facilitate the understanding of Vocational Education and Training (VET) main concepts, such as:

- **Qualification:** A formal outcome (certificate, diploma or title) of an assessment process which is obtained when an individual has achieved the required learning outcomes. It includes the job requirements: knowledge, skills, autonomy and responsibility required to perform specific tasks attached to a particular work position. In terms of structure, a Qualification is composed by a definition of a certain professional profile and a respective Curricula, containing all the activities related to the design, organisation and planning of its education or training actions.
- **Competence Unit:** Components of qualifications, consisting of a coherent set of knowledge and skills, organized in learning outcomes and minimum or recommended workload, that can be individually assessed and validated.
- **Learning Outcomes:** A set of knowledge, skills and/or competences an individual has acquired and/or is able to demonstrate after completion of a learning process, either formal, non-formal or informal

or



Statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence.

- **Workload:** The estimation of the time learners typically need to complete all learning activities such as lectures, seminars, projects, practical work, work placements, individual study required to achieve the defined learning outcomes in formal learning environments.

This methodological approach is currently being applied both to the redesign of existing qualifications and to the design of new qualifications.

Qualifications' Design

This section addresses EWF's outline concepts for the design of its Qualifications, including the approach for the definition of professional profiles and strategy for the design of upskilling Qualifications, while the next section will address the approach for the design of the Curricula.

EWF's methodology for Qualifications' design is structured into a top-down approach where, based on the professional profile, the mapping of the major job functions and related activities lead to the development of Competence Units with description of Learning Outcomes in terms of Knowledge and Skills to guarantee that the learners are fully competent in a specific job requirement.

This approach is based on the principles of functional analysis to define the occupational competencies and to set the boundaries between different occupations within EWF's Qualifications. It enables the operationalization of a cumulative system and individual learning pathways, where learners validate each Competence Unit independently and whereas such Competence Unit is part of several Qualifications, it is automatically recognized once it has been successfully completed, thus preventing its repetition.

To support the design of a Qualification, the following questions should be answered:

What...	is the general description of the professional occupation?	Professional profile
	job functions respond to the general description?	Major functions
	are the necessary activities to comply with each job function?	Basic functions
	is the required knowledge and skills to perform these activities?	Learning outcomes

Table 1 - Questions to support the design of qualifications

The professional profile offers the “big picture” about a certain profession. Therefore, the definition of the professional profile must contain a general description of the main objective of the profession, its general responsibilities and tasks.

The grounding for this description is defined based on the labour market’s current requirements and anticipation of future needs as well as on existing International, European and/or National Standards related with the regulation of professional activities.

Necessarily, the professional profile shall be directly interlinked with a reference proficiency level, providing the general descriptors in terms of knowledge, skills, autonomy and responsibility that a specific Qualification will address, as illustrated on Table 3- EWF Systems Framework, ahead in this document.

PROFESSIONAL PROFILE						
European Welding Practitioner						
PROFICIENCY LEVEL	E W F	E Q F	SUMMARY DESCRIPTION	QUALIFICATION DESCRIPTORS		
				KNOWLEDGE	SKILLS	AUTONOMY & RESPONSIBILITY
ELEMENTARY			He / she will be able to:			
		4	- Develop solutions on basic and specific problems in the field of welding technology - Supervise basic welding applications and related professional activities - Take responsibility for decision making in basic work in the field of welding technology - Take responsibility to supervise the tasks of welding and related personnel	Factual and theoretical knowledge (basic understanding) in the field of welding technology.	Fundamental/basic cognitive and practical skills required to develop proper solutions on simple and specific welding problems.	Self-manage of professional activities and simple standard applications. Take responsibility for supervising routine welding tasks and related personnel, as well as for decision making in basic work.

Figure 1 - Example of professional profile description

The mapping of the major professional functions is made based on the professional profile, subsequently from the previously defined general descriptions, specifying which are the core tasks of such professional activity.

Each main job function is then broken down into sub-functions/activities. The following examples illustrate how this functional analysis methodology is applied within existing EWF qualification frameworks, providing the methodological basis for the modularisation approach applied to the EWI Guideline:

CU	EQF/ EWF LEVEL	JOB FUNCTIONS	JOB REQUIRED ACTIVITIES	CONTACT HOURS	WORKLOAD
Fit and set-up of DED-Arc systems	4 Independent	Fit and set-up the DED-Arc system	Verifying the DED-Arc system set-up the procedure determined by the machine manufacturer and required operational conditions (e.g. electric arc power supply, gas supply, cooling system, torch)	21	42
			Preparing and verifying the build platform and feedstock		
			Performing Additive Manufacturing file loading and build jobs specs verification based on the AM procedure specification (includes inserting/verifying process parameters if needed)		
			Verifying parameter specifications (e.g. voltage, current, wire feed speed, travel speed, contact tip to work distance, positioning of the substrate)		
			Following HSE procedures for the fit and set-up of the DED-Arc system		
			Following and completing work documentation created by the DED-Arc Engineer		

Figure 2 - European/International Metal Additive Manufacturing Operator Directed Energy Deposition – Arc (DED-Arc) - Job functions and activities related fit and set up of DED-Arc systems

QUALIFICATION	EQF/ EWF LEVEL	JOB FUNCTIONS AND ACTIVITIES - TESTS USED FOR THE QUALITY CONTROL OF WELDED JOINTS (high levels can perform lower level functions)
EWE	7 / EXPERT	1. Assess if an imperfection is likely to be material related or induced during manufacturing. 2. Assess the need and the appliance of Critical Engineering Assessment 3. Define and select the appropriate acceptance criteria to monitor the results and make the fitness for service decision
EWT	6 /ADVANCED	1. Select and define the need for special testing to be specified for a certain project recommending specific tests to achieve specified quality requirements 2. Define and select acceptance standards for weld imperfections for a certain job determining the results. 3. Define and select the features of weld design that may prevent or adversely affect application of NDT methods 4. Define and select the type of destructive, non-destructive tests and personnel needed for a certain welded construction
EWS	5/SPECIALIZED	1. Select and define the correct acceptance level for welding imperfection for a certain job in basic constructions
EWP	4/INDEPENDENT	1. Identify the places where welding repair will be made based on the information given on NDT non-destructive tests reports 2. Implement the use of acceptance standards for weld imperfections.

Figure 3 - European Welding Coordinators - Job functions and activities related with quality control of welded joints

Based on the definition of the job function and related required activities, it becomes possible to identify the required knowledge and skills that learners should achieve during training, thus settling the framework for the definition of a Qualification/learning pathway structured into Competence Units, organized in Learning Outcomes. The structure and approach for designing Competence Units will be presented in the next section:

Strategy for Design of Upskilling Qualifications

EFW's Qualifications are designed in a way that enhance and allow upskilling pathways, either within the same field of activity (such as Welding Coordinators), or among different specialization areas (such as Welding Inspection and Welding Coordination or Additive Manufacturing (AM) Operators and AM Process Engineers). Similarly to SOLO Taxonomy's principles' structure, EWF's methodology for the design of upskilling qualifications encompasses the assignment of levels of increasing complexity in learners' understanding of subjects, that can be resumed as follows:

- The progression of levels is made from the lowest to the highest level in building blocks:

- The highest levels start the training courses along with the lowest levels, ensuring the development of solid fundamental knowledge and skills of concepts and principles:
- Upon successful completion of the lowest levels, learners start more complex levels.

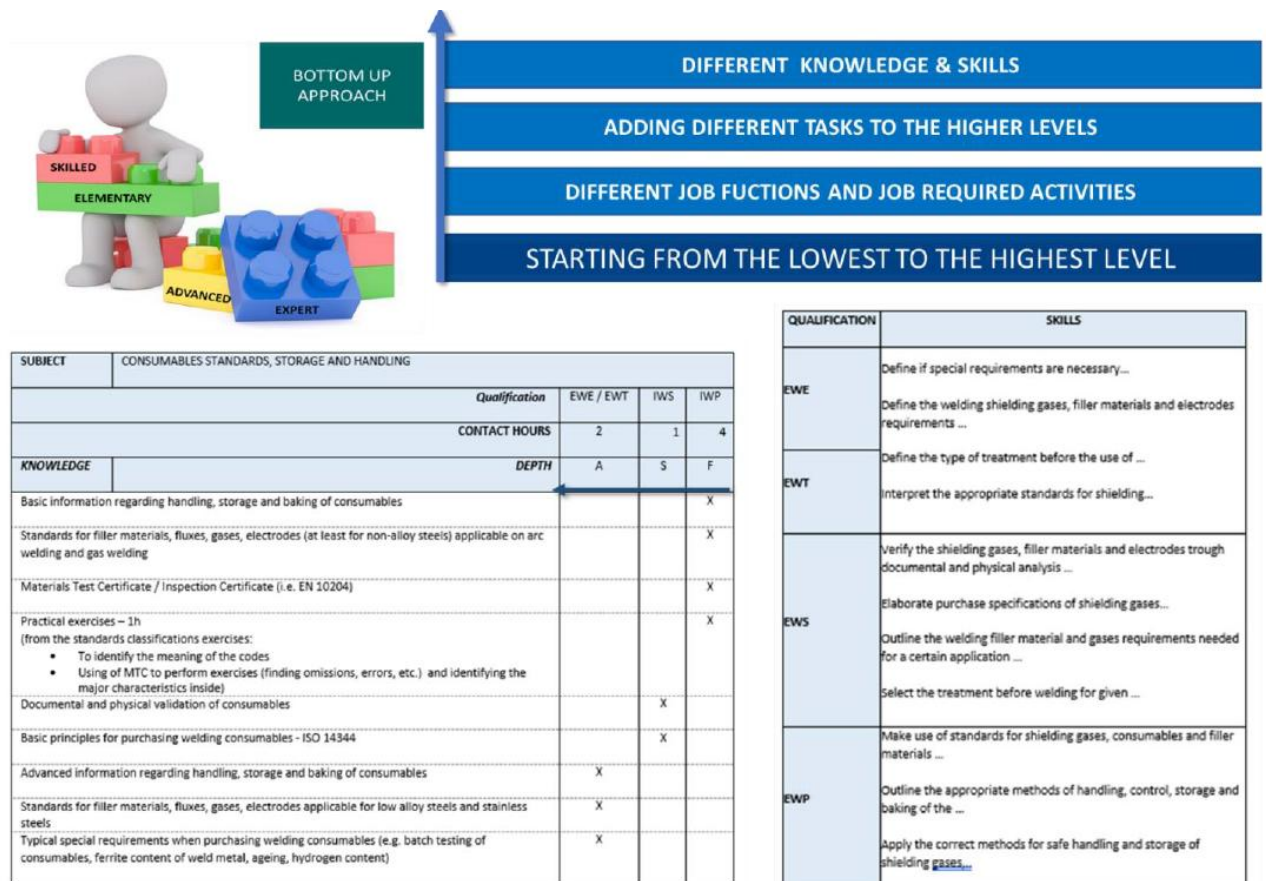


Figure 4 - EWF strategy for design of upskilling qualifications/competence units

Competence Units Design

The Curricula Design of EWF's Qualifications encompasses the definition of the following activities:

- Competence Units organized in learning outcomes in terms of Knowledge and Skills, with a specific workload containing the minimum required or recommended contact hours (including theory, practice/laboratory hours);
- Methods and tools for a harmonized assessment of the learning outcomes;

- Minimum requirements for the necessary Materials (resources – activities, equipment, etc).

This document only presents the approach for the design of Competence Units.

Competence Units are the smallest set of knowledge and skills, organized in learning outcomes, that can be individually assessed and validated. Competence Units can also be part of a qualification or implemented individually.

Within EWF 's qualifications, there are two types of Competence Units:

Competence Units Structure	
Functional Competence Unit	Cross-cutting Competence Unit
Direct link to specific job functions & required activities	Indirect link to job functions & required activities

Figure 5 - Types of competence units

Cross-cutting Competence Unit - A competence unit whose learning outcomes are not directly linked with one specific job function since the knowledge and skills achieved will be mobilized in several job functions and activities.

Functional Competence Unit - A competence unit whose learning outcomes are directly linked with at least one job function and in which the knowledge and skills achieved will be mobilized in specific job functions and related activities.

Qualification Systems Framework

The EWF Systems ensure harmonised knowledge, skills, autonomy and responsibility for any holder of a diploma, in any region of the world, and comprise Education, Examination and Qualification Guidelines for different professional/proficiency levels.

For that purpose, EWF System has its own reference framework, containing different proficiency levels, currently organized in statements of general descriptors and defined in terms of knowledge, skills, autonomy and responsibility for each



proficiency level that its qualifications encompass. This approach ensures EWF Qualifications' transparency, recognition and linkage to both National (NQF) and European Qualifications frameworks (EQF).

EWF Systems Framework is a result deriving from 2013th first self-referencing process to the European Qualifications Framework, comprehending an early mapping of EWF's qualifications and their alignment with EQF, the Framework for Qualifications of the European Higher Education Area (QF-EHEA) and the International Standard Classification of Education (ISCED).

4. Application of the Modular Approach to the European Welding Inspector Guideline

The Guideline defines the core education and training requirements for professionals engaged in welding and inspection activities at different levels. It has been developed to ensure that individuals responsible for performing inspection tasks are trained to a consistently high standard.

The Guideline establishes the minimum requirements for education and training, which have been agreed upon by all EWF Authorised Nominated Bodies (ANBs). It sets out the objectives, scope, learning outcomes, and the number of contact (teaching) hours necessary to achieve them. These requirements are periodically reviewed by the EWF Technical Committees and Competence Area Qualification Systems to ensure they remain up to date and reflect the latest developments in welding inspection technologies.

Students who successfully complete the prescribed education and examinations are expected to demonstrate a level of competence consistent with the qualification diploma, enabling them to apply welding technology effectively within their role.

The training is delivered using a modular structure, which allows learners to progress step by step and develop their qualifications progressively. The resulting modular structure of the EWI Guideline, including its organisation into Competence Units, is presented in the following sections

The Welding Inspector Role

The role of the welding inspector is central to ensuring the quality, safety, and compliance of welded products. This responsibility begins well before welding starts, continues throughout the welding operation, and only concludes once all inspection results have been fully documented and reported.

As part of the organisation's quality management system, inspection activities are defined in a dedicated Inspection and Test Plan (ITP). This plan clearly specifies the requirements, acceptance criteria, and the extent of verification to be performed. The inspector also plays a critical role in ensuring traceability, maintaining documentation that links materials, welding activities, and inspection results.

Before Welding	During Welding	After Welding
• Verify base materials and consumables meet specifications. • Confirm approved welding procedures are in place and up to date. • Check welders' qualifications and certifications. • Ensure all conditions are ready for welding to proceed without risk.	• Witness and monitor welding operations. • Verify adherence to approved procedures. • Check fit-up, joint preparation, and welding parameters. • Identify and address any signs of non-conformance.	• Perform inspections according to the inspection programme. • Maintain records of examinations and tests. • Supervise required NDT and/or mechanical testing. • Verify correct heat treatment processes and documentation.

Figure 6 - The Welding Inspector role

The inspector's responsibilities conclude only after all results have been properly documented. This includes:

- Completing detailed inspection reports.
- Ensuring that all findings, including any non-conformances, are clearly recorded.
- Verifying that traceability of materials, processes, and results has been maintained throughout the project.



The inspector must have sufficient knowledge of welding techniques, inspection methods, and reporting requirements to have full confidence in the quality and compliance of the welded product.

Training Levels

The European Welding Inspector sets out the education and training for three levels of welding inspection personnel as follows:

BASIC (EWI-B) – Provides general knowledge of welding and inspection. Candidates can perform visual inspections, verify materials and documentation, ensure compliance with standards, witness tests, read inspection plans/drawings, and report findings to supervisors.

STANDARD (EWI-S) – Builds on EWI-B with advanced knowledge. Candidates can supervise EWI-Bs, develop instructions and quality plans, witness procedure qualification tests, review compliance of welding procedures and personnel qualifications, assess quality documents, verify NDT techniques, and make acceptance decisions.

COMPREHENSIVE (EWI-C) – The highest level, requiring expert knowledge. Candidates can manage all welding inspection activities, supervise EWI-S and EWI-B, act as technical experts, develop quality plans for non-standard applications, and manage inspection activities involving non-conventional materials, processes, and advanced testing techniques.

Following a comparison of the EWI training levels:

Level	Knowledge	Key Responsibilities
BASIC (EWI-B)	General knowledge of welding and inspection	- Conduct unaided visual inspections - Verify materials, certificates, and traceability - Check compliance with standards & WPS for conventional applications - Witness welder approval & production test coupons - Read inspection/testing plans & drawings - Report findings to a qualified supervisor
STANDARD (EWI-S)	Advanced knowledge (builds on EWI-B)	- Supervise and instruct EWI-Bs - Develop & review quality control and inspection/testing plans - Witness procedure qualification tests - Assess compliance of WPSs, welder qualifications, PWHT specifications, and material certificates - Make acceptance decisions based on quality documents (e.g., NDT, material tests) - Verify adequacy of radiographic films and NDT techniques
COMPREHENSIVE (EWI-C)	Expert knowledge (builds on EWI-S & EWI-B)	- Manage all welding inspection activities - Supervise EWI-S and EWI-B - Act as technical expert for inspection - Develop quality plans for non-standard applications - Manage inspections for non-conventional materials, processes & advanced testing (NDT/destructive)

Table 2 - EWI training levels – comparison table

The qualification descriptors and learning outcomes are summarised below:

QUALIFICATION	KNOWLEDGE	SKILLS	AUTONOMY & RESPONSIBILITY	EWI PROFICIENCY LEVEL	EQF LEVEL
EWI-C	Advanced knowledge and critical understanding of the theory, principles and applicability of welding inspection and related applications	Advanced problem-solving skills including critical evaluation, and development of solutions, allowing to optimize the proper technical and economical solutions, when applying welding inspections in complex and unpredictable conditions	Manage the applications of welding inspection activities in a highly complex context. Act autonomously in decision making and in the definition of the welding inspection activities, methods, techniques and personnel's tasks.	ADVANCED	6
EWI-S	Specialised, factual and theoretical of theory, principles and applicability of welding inspection and related applications	Specialised range of cognitive and practical skills, allowing to develop solutions or choose the appropriate methods, when applying welding inspections, in common/regulator problems.	Manage and supervise common or standard welding inspection activities, in regular and common welding inspection activities. Take responsibility in standard work and supervise the welding inspection activities, methods, techniques and personnel's tasks.	SPECIALIZED	5
EWI-B	Factual and broad concepts in the field of welding inspection and related applications	Fundamental cognitive and practical skills required to implement proper solutions and application of welding inspection procedures and tools on simple and specific welding inspections.	Self-manage of professional activities and simple standard applications of welding inspection activities in predictable contexts. Verify routine tasks and similar function workers, as well as take responsibility for decision making in basic work.	INDEPENDENT	4

Table 3 - EWI qualification descriptors and learning outcomes

The Modules or Competence Units subjects are below:

COMPETENCE UNITS	Contact Hours*		
	IWI-C	IWI-S	IWI-B
WELDING TECHNOLOGY			
CU1 – WELDING PROCESSES AND EQUIPMENT – BASIC			17
CU2 – WELDING PROCESSES AND EQUIPMENT – STANDARD		7	
CU3 – WELDING PROCESSES AND EQUIPMENT – COMPREHENSIVE	14		
CU4 - MATERIALS AND WELDABILITY - BASIC			20
CU5 - MATERIALS AND WELDABILITY - STANDARD		20	
CU6 - MATERIALS AND WELDABILITY - COMPREHENSIVE	11		
CU7 - DESIGN AND ENGINEERING APPLICATIONS - BASIC			11
CU8 - DESIGN AND ENGINEERING APPLICATIONS - STANDARD		7	
WELDING INSPECTION			
CU9 - QA QC IN INSPECTION - BASIC			17
CU10 - QA QC IN INSPECTION - STANDARD		12	
CU11 - QA QC IN INSPECTION - COMPREHENSIVE	7		
CU12 - TESTING OF WELDS AND REPORTING - BASIC			38
CU13 - TESTING OF WELDS AND REPORTING - STANDARD		33	
CU14 - TESTING OF WELDS AND REPORTING - COMPREHENSIVE	29		
CONTACT HOURS PER LEVEL	61	79	103
CUMULATED SUBTOTAL	243	182	103
WORKLOAD**			
PER LEVEL	106	138	189
TOTAL	433	327	189

Table 4 - EWI Guideline in competence units

* Contact Hours are the minimum for the Standard Route

** Workload is the amount of self-study hours

Resulting Modular Framework for the EWI Guideline

The modularisation of the EWI Guideline results in a structure where the existing training content is organised into clearly defined Competence Units (CUs), while maintaining the three established EWI qualification levels: Basic (EWI-B), Standard (EWI-S) and Comprehensive (EWI-C).

As presented in Table 6, the Competence Units are organised according to the main areas of Welding Technology and Welding Inspection and distributed across the relevant qualification levels. This structure enables individual Competence Units to be identified, updated or complemented in response to specific technological and



industry needs, while preserving the overall coherence of the EWI qualification pathway.

Within INSPIRE, this modular framework provides the basis for the subsequent identification and development of complementary learning content addressing the specific competence needs associated with welding inspection for hydrogen pipelines.

The modularisation approach provides a structured basis for maintaining existing EWI competences while enabling additional specialised content to be incorporated in response to emerging industry needs. Within INSPIRE, this framework supports the subsequent development of complementary training addressing hydrogen pipeline welding inspection.

Existing EWI framework	Modularisation approach	INSPIRE application
EWI-B / EWI-S / EWI-C qualification levels	Qualification structured through Competence Units and learning outcomes	Provides the framework for complementary H ₂ -related training
Existing welding inspection competences	Existing competences are retained within the modular structure	Avoids duplication of existing EWI training content
Emerging H ₂ pipeline inspection competence needs	Modular structure enables the addition of specialised Competence Units.	Provides the basis for the H ₂ -specific content developed under WP3 T2

Table 5 - Application of the EWI modularisation framework within INSPIRE

5. Definition and Description of Micro-credentials

Micro-credentials are records of the learning outcomes that a learner has acquired following a small volume of learning. They are awarded following an assessment based on transparent and clearly defined criteria

While micro-credentials and Competence Units (CUs) share characteristics such as modularity, defined learning outcomes and assessment, they are not equivalent concepts. A CU represents a structured unit of learning, while the formal recognition issued upon successful completion of that CU may constitute a micro-credential, provided that the applicable requirements for assessment, quality assurance, transparency and recognition are fulfilled.

Micro-credits are a mechanism in education and training to validate and certify small units of learning. They allow learners to progressively accumulate knowledge, skills, and competencies without having to complete a full qualification at once. The micro-credits concept is strongly aligned with European Union education policies on flexibility and lifelong learning.

Micro-credits have the following key characteristics:

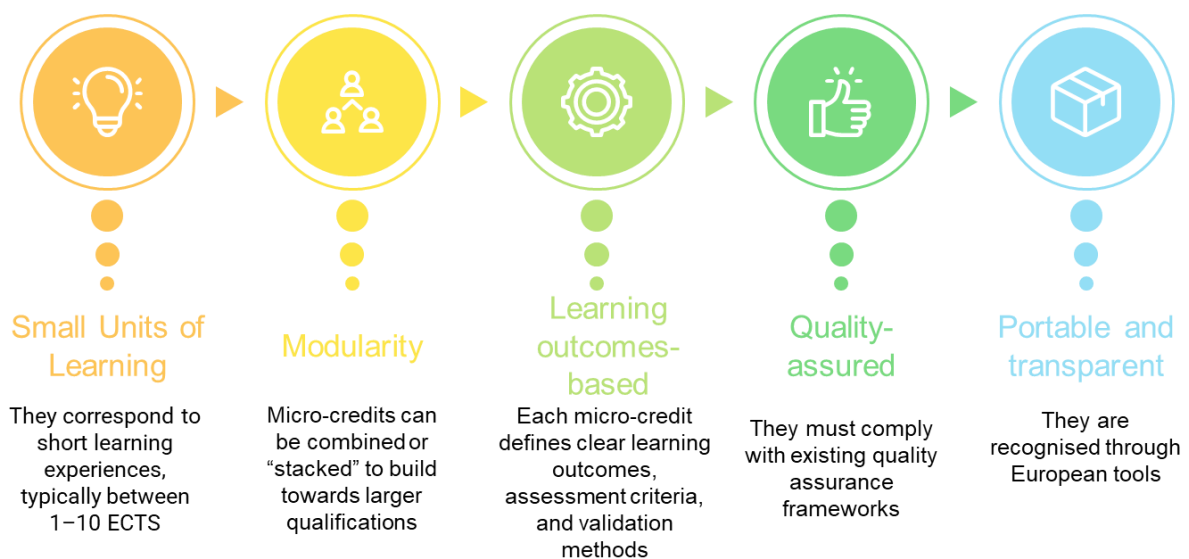


Figure 7 - Micro-credentials key characteristics

European Union Policy Context

The European Union has been working to make learning more flexible and accessible for all individuals, especially in a fast-changing labour market. One of the key steps taken in this direction was the adoption of the European Commission Recommendation on a European approach to micro-credentials for lifelong learning and employability (2022). This Recommendation establishes a common EU-wide



definition of micro-credentials and sets quality standards for their design, issuance, and recognition.

The purpose of this initiative is to help people upskill and reskill more easily, particularly in fast-changing sectors such as digitalisation, the green economy, hydrogen technologies, and other emerging areas. Micro-credentials allow learners to gain targeted, short-duration training that can be quickly adapted to industry needs.

This approach supports the objectives of the European Skills Agenda and the Council Recommendation on Vocational Education and Training (VET) (2020), both of which encourage the development of flexible learning pathways. These pathways make it possible for learners to progress step by step, collecting smaller blocks of learning that eventually lead to full qualifications.

In the Vocational Education and Training context, micro-credentials can complement existing modular structures and are closely related to the approach used in Competence Units (CUs). CUs, where appropriately assessed and quality assured, may provide a suitable basis for developing micro-credentials that recognise specific learning outcomes.

Micro-credentials allow workers or learners to focus on specific skills or knowledge areas—such as a particular welding inspection technique—without having to commit immediately to a full qualification. This is especially useful for adult learners or workers who need to upskill while staying in employment.

Furthermore, micro-credentials are connected to the **validation of non-formal and informal learning**. This means that prior professional experience or skills gained outside formal education can be recognised, reducing duplication and making learning more efficient.

Benefits of Micro-credentials in VET

Micro-credentials bring multiple benefits to learners, training providers, and employers. They are a powerful tool to address current and future skills needs, especially in sectors undergoing rapid technological and environmental transformation.



Greater flexibility and personalisation for learners

Micro-credentials allow learners to acquire knowledge and skills in short, targeted blocks of learning, rather than committing immediately to a full qualification.

They make it easier for learners to study at their own pace and combine training with work or personal responsibilities.

This flexibility is particularly important for adults returning to education, workers upskilling while in employment, or jobseekers needing to quickly acquire specific competences.

Responsiveness to Labour Market Needs

Because micro-credentials are modular and smaller in scope, they can be developed and updated quickly. This makes them an ideal way to respond to emerging industry requirements, such as new standards, technologies, or regulations.

In fast-changing sectors—such as hydrogen infrastructure, renewable energy, digital manufacturing, and the green economy—micro-credentials provide workers with the exact skills they need without delay, allowing upskill or reskill the workforce more effectively and reduce skills gaps.

Inclusiveness and wider participation

Micro-credentials lower barriers to training by reducing time and financial commitments. They can reach groups traditionally under-represented in formal education, supporting lifelong learning and improving equity in access to training.

Learners can choose the specific skills they need and build confidence progressively.

They play a role in addressing the EU target of 60 % of adults participating in training per year and achieving fair transitions.

Stackability and recognition

Micro-credentials may be designed to be stackable, allowing learners to accumulate learning achievements over time and, where permitted by the relevant qualification or training framework, combine them towards broader learning pathways or qualifications. This system ensures that even short learning experiences have lasting value and can be carried forward in future learning pathways.



By aligning with European frameworks such as the European Qualifications Framework (EQF), micro-credentials can support greater transparency, comparability and portability of learning outcomes across Member States.

Trust & Transparency

EU standards promote high transparency; guaranteeing that micro-credentials are issued under clear assessment and quality assurance, building a mutual trust among stakeholders.

For training centres and VET providers, micro-credentials open up new opportunities to design flexible, learner-centred courses. They can also make use of innovative delivery modes—such as AR/VR tools, online modules, and blended learning—which are particularly relevant in providing attractiveness to VET.

Also, the modularity of micro-credentials can help providers engage more effectively with industry, designing short courses that respond directly to employer needs.

Potential and Strategic Impact

Micro-credentials have strong potential to transform learning and training in Europe by supporting key policy priorities and addressing labour market needs.

Supporting Green and Digital Transitions

Micro-credentials make it possible to deliver rapid training on new technologies and standards, which is essential for sectors undergoing fast changes such as renewable energy, hydrogen, and advanced manufacturing.

Enhancing Employability

Research shows that credentials gained from short courses—such as online MOOCs—can significantly improve job outcomes. For example, participants who completed such courses were found to be 6% more likely to find a job and 8% more likely to secure employment directly related to the credential.

Micro-credentials provide clear, visible proof of competence to employers, increasing confidence in a candidate's skills and improving career prospects.

Building a Cohesive European Ecosystem of Micro-credentials



The European Union Recommendation calls on Member States to map and integrate micro-credentials into their national qualification's frameworks. This includes the validation of non-formal and informal learning and the development of clear reporting on national policies.

Strong cooperation between education institutions, employers, social partners, and policymakers is required to ensure standardisation, quality assurance, and widespread adoption of micro-credentials.

Risks and Challenges to Mitigate

The current rapid growth of certificates and short courses, particularly if they are not regulated, may risk undermining trust in micro-credentials.

To maintain credibility, providers must align with recognised European frameworks such as the European Qualifications Framework (EQF), ECTS/ECVET, and Europass.

They should also ensure transparency by using clear metadata and external validation procedures.



6. Conclusion

The activities completed under WP3 Task 1 represent an important step in modernising the European Welding Inspector training programme. By establishing a framework for the modularisation of the European Welding Inspector Guideline, the project supports a more flexible and learner-centred training structure, capable of adapting to evolving industry needs.

This transformation not only facilitates greater accessibility and customisation but also supports the integration of micro-credentials, enabling learners to progressively build qualifications in line with their career paths. The revised modular structure will serve as a strong foundation for future developments within the project and will provide valuable insights into the broader implementation of modular learning in vocational and professional training.

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