

DIGITAL TRAINING FOR EUROPEAN WELDING INSPECTORS

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DIGITAL TRAINING FOR EUROPEAN WELDING INSPECTORS (D-EWI)

START DATE: 03.01.2022

DURATION: 24 MONTHS

END DATE: 02.01.2024

COORDINATOR: NATIONAL R&D INSTITUTE OF WELDING AND MATERIAL TESTING
ISIM TIMISOARA

PARTNER 1: EUROPEAN FEDERATION FOR WELDING JOINING AND CUTTING - **EFW**

PARTNER 2: SPANISH ASSOCIATION OF WELDING AND UNION TECHNOLOGIES - **CESOL**

PARTNER 3: INSTITUTE OF WELDING AND QUALITY - **ISQ**

PARTNER 4: UNIVERSITY OF MISKOLC - **UOM**

PARTNER 5: ITALIAN INSTITUTE OF WELDING - **IIS**

PARTNER 6: INTERNATIONAL INSTITUTE OF WELDING - **IIW**

PARTNER 7: **BRANDWARE** MEDIA SRL

Project's Overview

Priorities addressed by the project:

HORIZONTAL: Addressing VET through development of digital readiness, resilience and capacity

- VET: Adapting vocational education and training to labour market needs;
- VET: Contributing to innovation in vocational education and training.

Topics addressed by the project:

- Created new, innovative or joint curricula or courses;
- Information and communication technologies (ICT);
- Open and distance learning .

Project's Overview

General Project Objective

Enhancing training capabilities of VET teachers and trainers and developing of digital educational materials to support implementation of digital technologies for teaching and learning in the field of welding inspections.

Specific Objectives

O1: International standardisation of practices in e-learning and improving the VET trainers' skill in developing and implementing of digital tools, to foster innovation in welding-related practices;

O2: Developing innovative e-learning educational materials, to improve the level of key competences in welding inspections.

Project's Overview – Welding Inspector Guideline (IAB041)

Level	Education and training		Examinations (route 1)		
	Welding technology (*)	Welding inspection	Welding technology	Welding inspection	Practical
IWI-C	WT-B (47h) + WT-S (30h) + WT-C (26h) Total: 103h	WI-B (55h) + WI-S (41h) + WI-C (32h) Total: 128h	WTE-C + WTE-S + WTE-B	WIE-C + WIE-S + WIE-B	PE-C + PE-S
IWI-S	WT-B (47h) + WT-S (30h) Total: 77h	WI-B (55h) + WI-S (41h) Total: 96h	WTE-S + WTE-B	WIE-S + WIE-B	PE-S
IWI-B	WT-B (47h) Total: 47h	WI-B (55h) Total: 55h	WTE-B	WIE-B	PE-B

(*) Subject to an ATB assessment, the Welding Technology exams can be skipped at the appropriate level before entering Welding Inspection education and training.

IO1: “Guide for teachers and VET trainers on implementation and usage of e-learning digital tools” consist of educational materials (e.g. text and figures, presentations, videos) developed to be aligned with the ***requirements of IAB-195 Guideline on e-learning.***

The education materials are addressed to the project staff, teachers / trainers of the future EWI courses, being essential for implementation of the e-learning.

All documents was prepared in **English** and are **open-access**.

IO1: Guide for teachers and VET trainers on implementation and usage of e-learning digital tools

Leader: UoM; participants: all.



PROJECT TIMETABLE																										
		MONTHS	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
IO1/A1																										
IO2/A1																										
IO3/A1																										
IO4/A1																										
IO5/A1																										

IO2: E-learning educational materials on quality assurance /quality control in inspection – Module 1: Quality assurance /quality control in inspection (20 hours)

Leader: CESOL; participants: all.

The e-learning educational materials was developed by the project partners, for each topic of the module 1.

These educational materials included: **text** documents as well as **photos**, **graphics**, **audio** and **video**, **multiple-choice tests**.

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IO1/A1																										
IO2/A1																										
IO3/A1																										
IO4/A1																										
IO5/A1																										

Module 1. Quality Assurance / Quality Control in Inspection

- 1.1 Scope of activity, terms and definitions
- 1.2 Role of Welding Inspection Personnel
- 1.3 Management of inspection function
- 1.4 Quality Assurance Principles in Welding
- 1.5 Welders/Welding Operators and Welding Procedures approval
- 1.6 Measurement, inspection and control during welding
- 1.7 Types of imperfections
- 1.8 Evaluation of Imperfections
- 1.9 Engineering Critical Assessment

IO2: E-learning educational materials on quality assurance /quality control in inspection

Module 1: Quality assurance /quality control in inspection



IO3: E-learning educational materials on testing of welds and reporting – Module 2: Testing of welds and reporting (18 hours)

Leader: ISIM; participants: all.

The e-learning educational materials was developed by the project partners, for each topic of the module 2.

These educational materials included: **text** documents as well as **photos, graphics, audio and video, multiple-choice tests.**

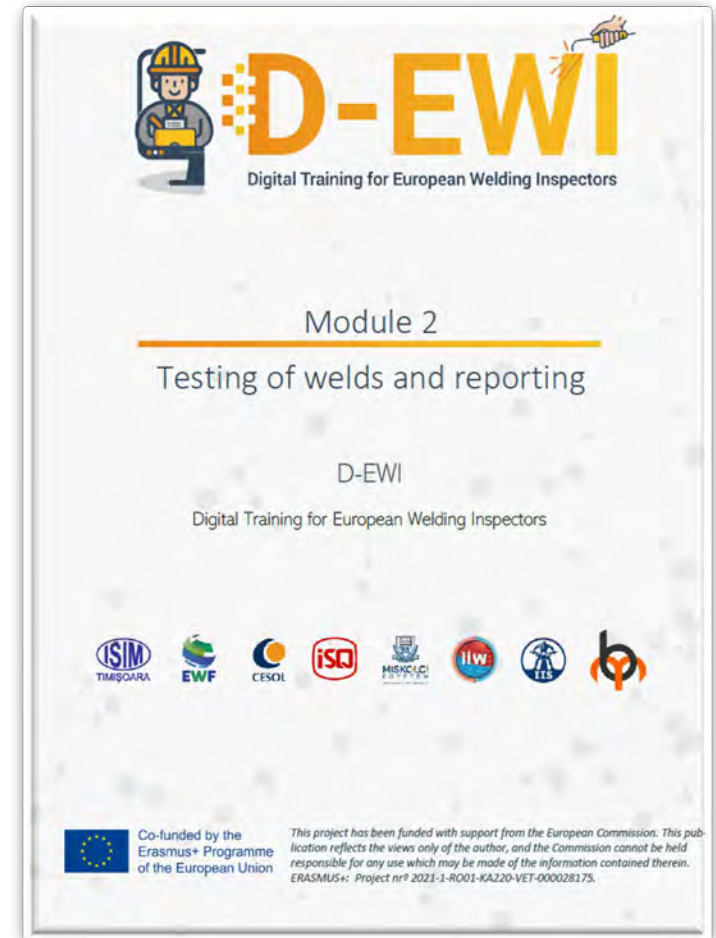
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IO1/A1																									
IO2/A1																									
IO3/A1																									
IO4/A1																									
IO5/A1																									

Module 2 Testing of welds and Reporting

- 2.1 Destructive testing of welded joints
- 2.2 Overview of NDT methods
- 2.3 Visual Inspection
- 2.4 Liquid penetrant testing (PT)
- 2.5 Magnetic particle testing (MT)
- 2.6 Radiographic testing (RT)
- 2.7 Ultrasonic testing (UT)
- 2.8 Advanced and other NDT methods
- 2.9 Critical review of selection of NDT methods
- 2.10 Other test methods (pressure testing, dimensional tests, etc.)
- 2.11 Qualification and certification of NDT personnel
- 2.12 Documents for quality control in welding
- 2.13 Economics in Welding Inspection

IO3: E-learning educational materials on testing of welds and reporting

Module 2: Testing of welds and reporting



IO4: E-learning educational materials on practical work on testing – Module 3: Practical work on testing (17 hours) - Welding inspection

The educational materials includes videos showing how the practical work is done.

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IO4/A1																										
IO5/A1																										

Module 3. Practical work on testing

- 3.1 Radiographic interpretation
- 3.2 Witnessing mechanical tests
- 3.3 Visual inspection of Welds
- 3.4 Metallographic (Micro and Macros)
- 3.5 Liquid penetrant and magnetic particle testing
- 3.6 Ultrasonic testing (advanced techniques for IWI-C)
- 3.7 Witnessing Welders approval (for IWI-B) and WPQRs (for IWI-S)
- 3.8 Application of testing in different fields and case studies (not only NDT)

Module 3. Practical work on testing



D-EWI
Digital Training for European Welding Inspectors

Destructive testing of welded joints



D-EWI
Digital Training for European Welding Inspectors

IO5: International Standardisation of practices in e-learning by digital tools

Leader: IIW; participants: all.

- Identifying gaps in current international standards related to the project topic;
- Improvement of the Guideline for the Education and training of International Welding Inspectors;
- Improvement of the Guideline for distance learning;
- Improvement of Rules and Operating procedures;
- Transfer of the improvements to the relevant bodies.

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Short-term joint staff training events

- **C1**: Short-term joint staff training event in HU (organized by UoM) (**M7**)
- **C2**: Short-term joint staff training event in IT (organized by IIS) (**M21**)

PROJECT TIMETABLE																									
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C1								UoM																	
C2																					IIS				
		Ian	Febr	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Ian	Febr	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Noi	Dec
		2022												2023											

C1: Short-term joint staff training event in HU (organized by UoM) (M7)

This task contributes to the realization of project objective O1: **“International standardisation of practices in e-learning and improving the VET trainers' skill in developing and implementing of digital tools, to foster innovation in welding-related practices”**. **Teachers, VET trainers and experts** from the partners' countries participated in the course.

- The courses was organized in Hungary at UoM headquarter.
- The lecturers were IT specialists from the UoM and from Branware Media.

12 certificates of attendance were issued by UoM to participants.

C1: Short-term joint staff training event in HU (organized by UoM) (M7)



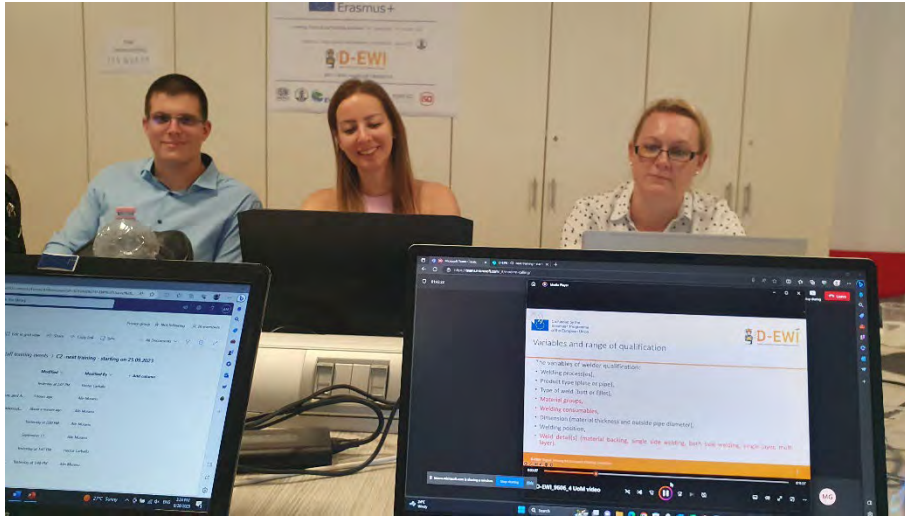
○ **C2: Short-term joint staff training event in IT**
(organized by IIS) (**M19**)

- The course was held in Italy at the **IIS headquarters**. The lecturers were experts and EWI from the partners;
- The course was also delivered online, so that other participants could make an important contribution to improving the educational materials;
- In addition, at the end of each day of the course, there will be discussion and exchange of best practice on the topics planned;
- On the last day of the event, 1 hour was allocated for participants feedback and the final conclusion.

15 certificates of attendance were issued by IIS to participants.



○ C2: Short-term joint staff training event in Italy (organized by IIS) (M21)



Events – dissemination of the project results

- **E1:** Workshop for promoting the D-EWI project results in Romania (organized by ISIM)
- **E2:** Workshop for promoting the D-EWI project results in Spain (organized by CESOL)
- **E3:** Workshop for promoting the D-EWI project results in Hungary (organized by University of Miskolc)
- **E4:** Workshop for presenting the D-EWI project results in Italy (organized by IIS+IIW)
- **E5:** Workshop for presenting the D-EWI project results in Portugal (organized by EWF+ISQ)

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E3																									UoM
E4																									IIS+IIW
E5																									EWF+ISQ

Project sustainability

- **expanding the training offer** of the partners by integration of the project results into the current teaching practices through a new e-learning training course for EWI;
- **training courses will be organized** at least **once/year** in the following **3 years** after the project ends. In these 3 years at least a total of **100 certificates** will be issued by the **project partners**. The resources needed to sustain this activity will be obtained by the enrolment **taxes paid by the participants**;
- during sustainability period, the **project's website will continue to be in place** and will be **updated** with the latest information regarding the continuation of the e-learning courses for EWI;
- the **development of new projects** that could aimed to improve the current policy at national / EU level, improve the current teaching techniques, using new platforms or compatibles e-learning schemes for the training courses.

- ✓ <https://d-ewiproject.eu/results.html>
- ✓ A képzés tananyagainak fordítása megtörtént az MHTE finanszírozásából, azt a szervezet a nemzetközi gyártásellenőri képzésen használja.
- ✓ A képzések MOODLE formátumban is elérhetők.
- ✓ Miskolci Egyetem e-learning felületén ingyenes oktatásmódszertani kurzus.



THANK YOU !