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Learning Resources for the course:

Steel Structure Inspector Course for PED INSPECTOR

This document covers only:

Competence unit no. CU-1 INTRODUCTION, ICT

Table of Contents

Introduction

Note. It is assumed that the teacher has in depth knowledge of the industry requirements for the topics discussed in this CU.

Reference document covering the course structure, see document D2.2
The content of this document covers deliverables for D4.1 and D4.2

The course consists of a number of CU´s. A CU is the smallest element in the education system that specifies Learning Outcomes, Skills and Competence. A CU can be delivered individually or it can be delivered in combinations with other CUs in order to cover a defined range of knowledge and competence.
The course will clarify the inspector's role in manufacturing where it begins well before welding starts, continues during the welding operation, involves action after welding is completed, and is finalized only when the results are properly reported and that the product is accepted by the client.

The course will be work-based and follows the manufacturing process from the order is received until the welded product is ready for delivery. The inspector is responsible for producing documents that ensure traceability of the components and related manufacturing action throughout this process.

The activities in this course are work-based and follows a product from the initial request for tender through the ordering phase and it follows the production in the factory until it is ready for delivery. The manufacturing process has been divided in logical steps whereby the learning activity and learning content and tasks, are distributed according the status of the manufacturing process.
Activities in the course will be both planning activities as well as practical tasks to be carried out in the workshop together with the company mentor, if that is available, or in a laboratory in the VET school.
The learning material will be distributed through the LMS (Learning Management System) system provided for this course.
Learning methods will be a mixture of solving planning and reporting tasks through the classroom or reported through the LMS (Learning Management System) system and practical hands-on training in the workshop.

The students have to submit all tasks, both practical and theoretical, given through the different course CUs. All CUs have practical tasks for the students.

Objective.

This, CU-1, is a general CU which can be used for a number of different courses. The introduction is to let the students get hands on experience of the IT tools that will be used throughout all CUs as well as how the communication with the teacher shall be throughout the course.
In this course the Learning Management System, LMS, that has been selected is Its Learning and the video communication system is ZOOM.

A. Teacher Guideline.

Introduction to the course.

This is a general introduction to the course where we want you to:

- get accustomed to the data tools that are used
- get familiar with how to access the learning material
- go through the multiple choice questions and how to answer
- submit written tasks
- upload video material and pictures

We have also added a set of standard resources that you can use through the course.
Please notice that some of these resources contains material that also will be used in more than one CU. We recommend you to identify the content so that you at a later date can go back to these resources. Additionally some of the resources contain more material than needed. You should therefor highlight which pages in the material that will be mandatory.

Teacher actions in CU 1.

* The teacher should decide if the students should be divided into groups for this course. If so assign the students to the different groups.
* How do you want the students to use the course material? Should the students also use Internet as an additional resource? Please note that material may have copyright references.
* Should the students be asked to present their own experience into the course with examples?
* Shall you ask questions during the Zoom face-to-face activities and let these be basis for short group discussions?
* If the students want to share information outside the LMS (Learning Management System), sharing common data, you may create a common Dropbox folder that the students can share for private use. Test this before the start if required.
* Use the one hour Zoom meeting to demonstrate how to use Zoom, how to share screen, both for yourself and also for the students and use the chat function. You should also emphasis on how to set up the background and light so that the students face do not disappear. Test sound and sound settings as well. (Note a separate document for setting up a Zoom environment will be available).
* Highlight the EWF Special course-RMWF. Discuss with the students the risk factors they foresee when implementing a new product in the company (maybe a product type they have not produced before) and ask them to create a short risk report/evaluation.

When CU 1 will close you have gone through how to use the LMS tool and how the students shall answer questions and submit tasks.
The students should all have uploaded a video or pictures from their phone into the system in allowing them to show that they are able to carry out this task in practices.
It is very important that the students feel safe and secure in how to use the LMS tool and how to submit answers and different tasks. Use the time required so all students can try by themselves and learn to be comfortable in using the IT systems

Additional questions that can be relevant for discussions in CU 1:
This can be asked as short questions for discussions by the students:

* Piping might either be of unalloyed steel or of stainless steel at any grade. Will this have any influence how you will plan for the production?

* If you have been producing piping spools in mild steel before and now can get an order for stainless steel pipes, will this create any problems or risks in your production facilities?
* Health and safety is an important topic in welding fabrication. Which tasks is most important to be carried out?

* Which of the welding processes will be most environmental friendly and cost effective ? Can this be combined?

B. Students Guideline

General comments:
This is a general introduction to the course where we want you to:

- get accustomed to the data tools that are used
- get familiar with how to access the learning materials
- go through the multiple choice questions and how to answer them
- submit a set of written replies to the tasks
- upload video material and pictures

We have also added a set of standard resources that you can use through the course. Please notice that some of these resources contains material that will be used in more than one CU. We recommend you get an overview of the content such that you later can go back to these resources.

Where do you find information and learning materials etc.:
Under folder with “Resources and activities”. The material is available as pdf-files, word- and excel files,

and video material (online at YouTube and as mp4 files stored in the learning management system). Please notice that the written assignments should be answered by using the word-files that are embedded into the description of the tasks. **You shall not use** the Office package installed on your own device.

Type of work:
You will usually have 2 weeks to complete each CU. The first week should be preparation activities, while the second week should be used to solve the tasks, exercises and hand in your results to the teacher. The learning activities include *i*ndividual studies, work-based training in your company, group activities, classroom training and a digital Zoom video meeting with the teacher once per week (Saturdays)

Questions from teacher:

- An evaluation of your previous work experiences that you must reply on.
- All learning materials are stored in a separate catalog.
- A list containing descriptions of tasks and learning activities that you must complete. They are named Task 1, Task 2, Task 3 and so on.
- An evaluation of the first classroom training activity.

Delivery to the teacher:

- You must complete the tasks that are given in this CU before proceeding to the next CU
- You should take a photo or a video from an inspection process and hand it in to the teacher.

Estimated length of this CU 1: 4 hours meeting and additional 1 hour zoom meeting to learn the functionality of using zoom meetings

C. Learning resources

Support resources from selected from the Internet.

Title	Producer	Language	No of pages	Copyright
Welding Fabrication Standards	Instituto Italiano della Saldura	English	95	no
Minimum Requirements for the Education, Examination and Qualification	European Welding Fabrication	English	84	yes
EWF Risk management	EWF	English	23	yes
Reference PED	EU Official journal	English	96	no
Guideline International Welding Inspection Personnel IAB-041r5-19	IIW Guideline	English	84	

Resources specially created for this CU

Title	Producer	Reference	Language	No of pages	Copyright
Product Inspector Pilot Course-1.8	Matrai		English	12	no

Video content for the CU:

Title	Producer	Time	Reference	Language	Format	Copy-right
Crane loading accident	https://www.youtube.com/watch?v=BTNgFoZTYTc	0.40	ISIM		MP4	No
New Pressure Equipment directive	TUV	6.07	QMS	English	MP4	No
Zoom tutorial for beginners	Zoom	39.04	QMS	English	MP4	No

D. Students tasks

1. Evaluate the risks of implementing a new product into the organization. Write a short risk report and submit it.

2. Discussion for group-work or individual work:

We are introducing a new generation of piping systems in our factory according drawings:

Evaluate the risks for our company introducing this technological product.

Create a short risk report for the company from an inspection point of view.

E. Course evaluation questions

1. **What are your impressions of the data tools we are using in the course ?**

* It seems to be difficult to use.
* It seems to be easy to use.
* Too early to say at this stage.
* I have to use it for some time and then I can give feedback.
* I do not know.

2. The structure of the course with theory and practical work.

* I can carry out the practical work in my company.
* I would like to carry out the practical work in a class (lab) with the teacher.
* I think we have products in our company which I can use for the practical tasks.
* I do not have a mentor in the company so I have to do the practical work by myself.
* I do not know.

3. Presentation of the theoretical material.

* I would like to have more focused theoretical material-like a course book.
* I would like to have a combination of video presentation and theoretical material.
* Too early to say, I need more time to evaluate this question.
* I do not know.

4. Questions and multiple choice questions.

* I feel it will be valuable to have quiz and multiple choice questions after each training module.
* I prefer to write an answer instead of having multiple choice questions.
* I prefer to give an oral answer instead of writing answers
* If I can use video for answering a question, then I will prefer that.
* I do not know.

5. We will use a combination of self study combined with tasks and Zoom video conference.

* I think this combination will be a good way of going through the course ?
* I would prefer more face to face classroom activity.
* I want to try it out first before giving any comments.

5. **What was positive and negative experience in this CU?**

What could have been altered in order to get a better result/outcome of this CU?

F. Appendix

Course material developed for this CU.

CU-1
Product Inspector PILOT Course -1.8-**ver1**

INTRODUCTION

Pilot Distance Course – **pdiwi-S**

CU-1
Product Inspector PILOT Course-1.8.-**ver1**

Good day

the order of the classes can be found in the program available to you,

Our common goal in the course is:

- to develop the ability to supervise production processes in a professional manner and to deal with any technical problems that may arise,
- professional knowledge can be learned and acquired through some examples,

CU-1
Product Inspector PILOT Course -1.8-**ver1**

- **Our chosen example:**
- relating to the manufacture of metal structures,
- a simple pressure vessel is tested as a sample,
- its design, manufacture and application fall within the legally regulated area (legislation, harmonized standards, and best practice), so this welded product can be used well to fulfill the purpose of our training,
- Before learning more about the course, review the design, manufacturing, and application characteristics and use risk analysis as one of the tools. factor

CU-1
Product Inspector PILOT Course -1.8-**ver1**

- review the design, manufacturing, and product application characteristics before learning more details about the course, using risk analysis as one of the tools;
- Going further with our topic, let's identify some of the key factors influencing the design, manufacture, and use of this very important welded structure, which is considered to be "typical" in the metal industry.

CU-1
Product Inspector PILOT Course-1.8.-**ver1**

- Legal characteristics of a simple pressure vessel:
- field of application:
  - storage of air and nitrogen
  - pressure limits: 0.5 bar - 30 bar,
  - the value used for the characteristic load-bearing design: the product ‘pv’ (p-pressure, v-cubic content),
  - the base material may be steel and aluminum alloy,
  - can be made in several geometric shapes and sizes,
  - should not be exposed to heat under operating conditions,
  - the relevant and general safety requirements must be met,

CU-1
Product Inspector PILOT Course-1.8.-**ver1**

- the welded structure manufactured in accordance with the law must bear the CE marking,
- recognition of a Notified Body may also be required for a legally regulated industrial activity,
- if the operating pressure is less than 50 bar.
- liter, it can be manufactured using general engineering and technical experience - which is a common practice in the EU - BUT the CE marking cannot be on the product,
- the minimum allowable operating temperature - 50C ° for the design, manufacture and application of legislation
- required by the relevant EU Directive (Directive): 2014/29 / EU).

The EU Directive defines groups of pressure vessels based on the pv value and this regulates the operational load capacity

CU-1
Product Inspector PILOT Course-1.8.-**ver1**

- Az EU Irányelv a pv – érték alapján nyomástartó edény csoportokat határoz meg és ez szabályozza a hegesztett termék üzemi terhelhetőségét, az irányelv (direktíva) érvényes a piaci, kereskedelmi forgalomba hozásesetére és az EU területén történő üzembeállításra – az előírás érvényes az EU-ba történő behozatal esetében is.

CU-1
Product Inspector PILOT Course-**ver1**

- *It can be seen that the inspector must have a thorough knowledge of the product, its purpose of application, area, design, production and commissioning conditions, and its characteristics for safe operation. the manufacturer of the pressure vessel presented must be certified by the accreditation body.*

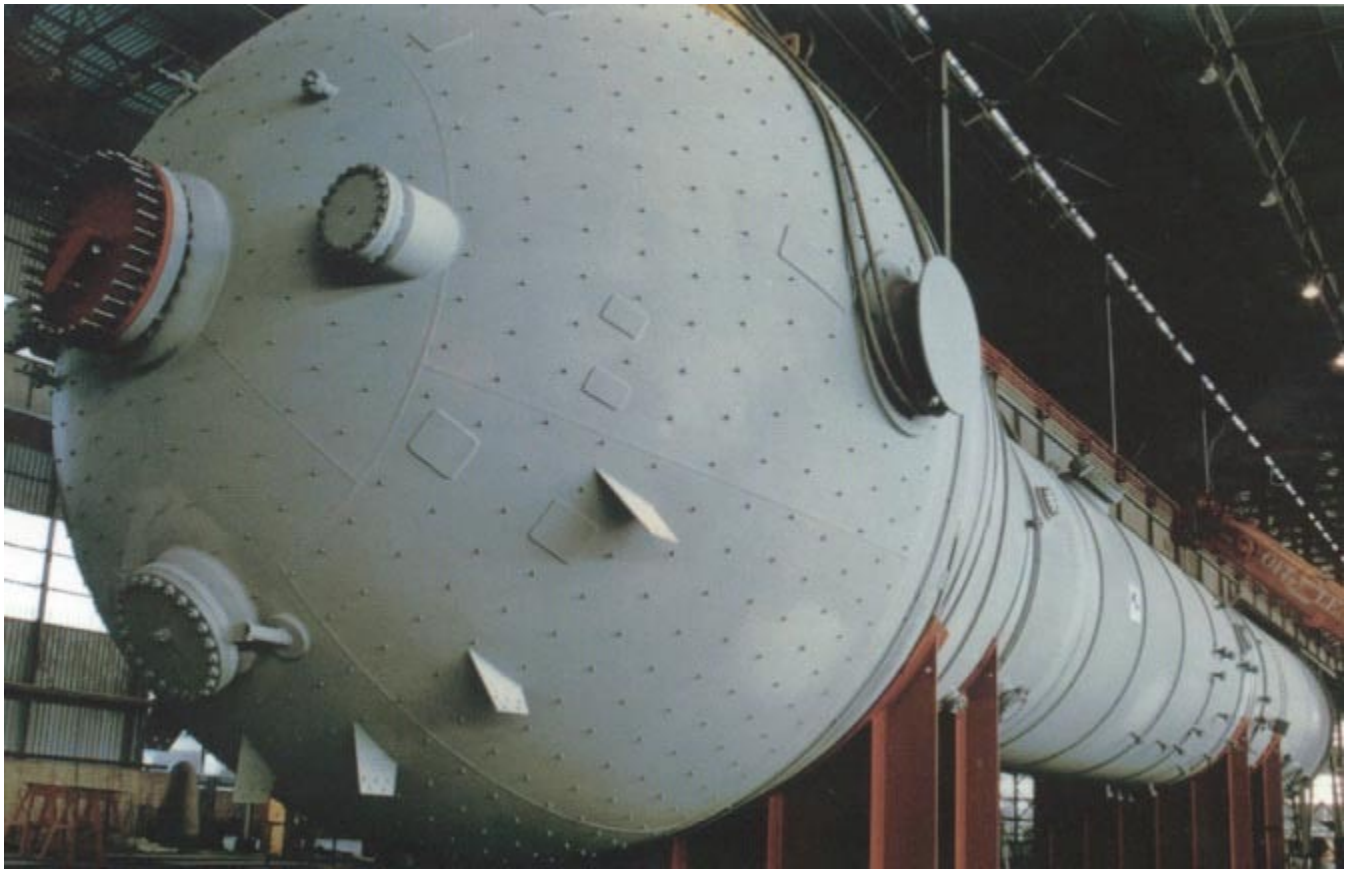
CU-1
Product Inspector PILOT Course-1.8.-**ver1**

- It is precisely because of the “Industry 4.0” that the inspector needs to get to know and practice the computer technology necessary for both his training and his daily work and practice,
- Thus e.g. Itm ?, ZOOM, TEAMs, STIMULY - we use these
- These are presented in separate lessons.
- RECOMMENDED AFTER THE LECTURES:
- repetitive review of the curriculum

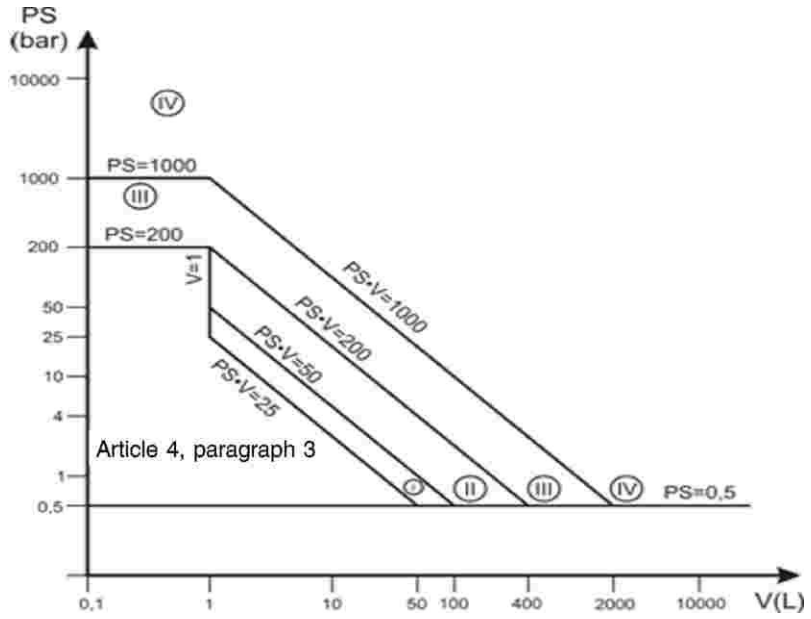
CU-1

Product Inspector PILOT Course-1.8- **ver1**

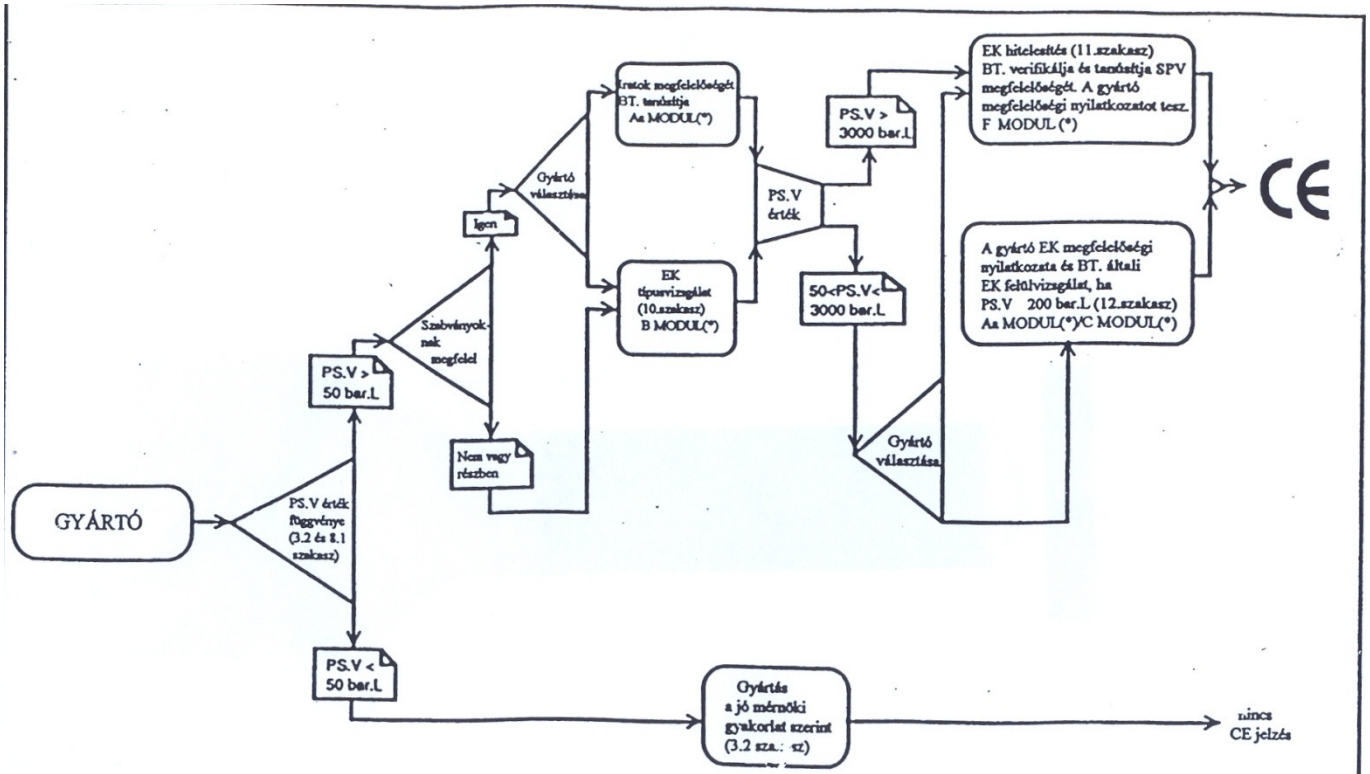
Tipikus szerkezet



CU-1
Product Inspector PILOT Course-1.8.-**ver1**



CU-1
Product Inspector PILOT Course-1.8.-**ver1**



A 87/404/EGK Irányelv szerint az egyszerű nyomástartó edények megfelelőség tanúsítási eljárásai folyamatábrája

(*) Ezeket az eljárásokat az előtt hagyták jóvá mielőtt a 90/683/EGK sz. a megfelelőség tanúsítási eljárásokra vonatkozó (modulok) Tanácsi Határozatot (amelyet a 93/465/EGK Határozat módosított) elfogadták. Ezek rendelkezései ezért nem lehetnek azonosak a modulokéval.