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Learning Resources for the course:

Steel Structure Inspector Course for PED INSPECTOR

This document covers only:

Competence unit no. CU-3 DESIGN REVIEW

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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.

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 design review processes is an essential milestone where you assess the product design against a set of specific criteria. In this context the criteria will be production and inspection view, that means how easy is it to produce the design and how easy is it to inspect the product through the production process.

The output from this design review should be a review report and also, if deemed necessary, a design modification request.

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. The course requires that the student has access to a workshop where products are manufactured. The products in the workshop will be used during the practical training sessions in this course.

A document tagged with copyright, has a copyright statement in the document itself. The teacher has to read the statement before using the resource. If only a copyright statement is given, the contact the source for the information in order to clarify the meaning

Objective.

The objective is to carry out a design review task from a production and inspection point of view. The result of this task shall be a design review report highlighting any findings for the company and eventually resulting in a design modification request.

The main objective is to ensure that the design meet the company's ability to produce and inspect the product in an effective way.

A. Teacher Guideline.

Content of the Teacher Guideline:

The topic for CU 3 is Design review.

A general focus should be why is the design review important, how shall the design review be carried out and who shall participate from your company in the design review process.

Based on the design review the following questions should be:

- * Why do we want to carry out a design review?
- * How shall we handle any findings in the design review?
- * What are the consequences of the design review?

Additional relevant questions might be:

- * What is the cost results of the design review?

It is important to stress that the design review should be carried out from a production point of view. This means that you should evaluate if you have the right equipment for producing the parts or if not, is it possible to modify the design in to suit your production equipment? How do you want to organize the fabrication process in steps? And so forth...

If the design review results in findings then it should be discussed how to follow up the findings. Should a design modification be submitted? Who should be responsible for such queries? These topics should be raised by you as the work proceed.

Some topics for discussions for student group or individual work:

Review the documents delivered for the inquiry.

- * List minimum 3 areas/topics that needs to be evaluated in order to have a “fabrication friendly” design of a welded structure
- * Verify the design from an inspection point of view. Should the design be accepted, or should the design be modified?
- * What shall the inspector’s role be for this design?
- * Deliver an inspection plan for the product in this course
- * Create a findings report for the drawings delivered for this course

B. Students Guideline

CU 3 covers a topic that is very important in the company. It may happen that the design contains elements that might be difficult to produce or that may require additional training or purchase of new production equipment. The purpose of the design review is to highlight any possible problems that can arise from the design.

If the design is not suitable for your production system, then a design review findings report should be released and an action plan for how to address this should be developed. Maybe a request for design modification might be the result of the work carried out. Or maybe new knowledge and competence must be planned for.

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 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 individual studies, work-based training in your company, group activities, classroom training and a digital Zoom video meeting with the teacher once per week (Saturdays) of using zoom meetings

C. Learning resources

Support resources from selected from the Internet.

Title	Producer	Language	No of pages	Copy-right
Design review Flow chart		English	1	No

Learning resources developed in the project.

Title	Producer	Language	No of pages	Copyright
Inspection and testing plan	ISIM	English	6	No
Golden weld report	ISIM	English	1	No
Work-shop Inspection and test plan	ISIM	English	1	No
Evaluating an inquiry	Matrai	English	18	No
Evaluating an inquiry-2	Matrai	English	7	No

Video resources created for this CU

No special resources have been created for this CU

D. Students tasks

Discussions for student group or individual work :

Review the documents delivered for the inquiry.

*List minimum 3 areas/topics that needs to be evaluated in order to have a “fabrication friendly” design of a welded structure

*Verify the design from an inspection point of view. Should the design be accepted, or should the design be modified?

* What shall the inspector’s role be for this design?

* Deliver an inspection plan for the product in this course

Write a short report based on your findings.

* Deliver an inspection plan for the product in this course

* Create a finding report for the drawings delivered for this course

If the control is related to the structure and the design, then a specification shall be written.

* Who is responsible for creating such a procedure ?

* Who shall write such a procedure?

* Shall the procedure be valid for a person or a group of persons ?

E. Course evaluation questions

1. Did you find this module relevant?

* Yes

* No

* I don't know

2. Was it time enough for going through the material?

* Yes

* No

* I do not know

3. Was the resources relevant for this module?

* Yes

* No

* I do not know

F. Appendix.

Learning resources developed for this CU.

INSPECTION & TEST PLAN	CLIENT	
WELDING & FABRICATION FOR WORKSHOP & SITE	CONTRACT	
Document No.	ISSUE No./REV 0	

SAMPLE Ltd

Task No.	Description	Activity	Reference Document	Acceptance Criteria	Verifying Document	LS	2P	3P
1	Receipt of order	Contract review	Project specs	Scope of work Client specifications relevant standards	drawings P&ID's contract docs	R R R		
2	Review construction drawings	Register all documents received Confirm latest revision	drawings Project specs	drawings	Drawing register	R		
3	Fabrication facility approvals	Visit , review & audit on & offsite fabrication facilities	Relevant standards & project specs.	Relevant standards & project specs.	Client approval			
4	Review clients specific quality & inspection requirements	Ensure all quality & inspection activities have been identified.	Project specs	Scope of work Client specifications project specs.	Quality manual	R		
5	Prepare Quality manual	Write the project specific Quality Manual. Ensure all the related activities are identified	Relevant standards & project specs.	Client review & acceptance	Quality manual	R		
6	Submit WPS's & WPQR's to client for approval	Check suitability of the weld procedures.	ASME IX	Project specifications ASME IX	WPS's & WPQR's			
7	Welder approvals	Test welders to the weld procs Submit WPQ certs to client		ASME IX	WPQ certs			
8	Submit PWHT procedures (if required)	Prepare PWHT procedures & submit for approval	Project specifications ANSI B31.1	Project specifications ANSI B31.1	PWHT subcontractor procs.			
9	Submit NDT procedures , safety policies & technicians qualifications for approval	Prepare NDT manual & procs. check suitability of the NDT procs.& techs qualifications.	Quality Manual ASME V	Project specifications ASME V	NDT company QA plan , rad procs & techs quals.			
10	Submit proposed hand over documentation pack.	prepare pack & submit (in quality manual)	Project specifications	Clients standards proposed pack	submitted pack Quality manual			
11	Submit pressure testing procedures for approval	Prepare proposed PT method & safety statements	method statements	Relevant standards & project specs.	test procedures & safety policy			
12	Review MTO against take off	Check against drawings & delivery sched.	drawings Line list	Material certification Relevant standards & project specs	Material certificates Delivery dockets Material receipt form			
13	Prepare for receipt of materials & consumables	Ensure lay down areas & stores are clean secure & suitable.Prepare spool storage	Project specifications	Project specifications	Quality manual			
14	Materials received Inspection	Check material against delivery dockets , certification & for damage. Quarantine non conforming items	Project specifications material certs Delivery dockets	Project specifications material certs	Material receipt report			

Manufacturer Logo		Supporting Procedure:		FIELD WELDING & GOLDEN WELD PROCEDURE	
		Project		NATURAL GAS pipeline	
Doc.	Rev.0	Dated	GOLDEN WELDS REPORT		

GOLDEN WELDS REPORT				Date:			
				Place			
				Report No.			
				Page:	1	Of	1

WELD DATA							
Golden Weld Number	Date of weld	Acc. WPS	Location of Weld	Welders			
PIPE DATA							
#	Item	ID Number	Heat Number	Material	Diameter [inch]	W.T. [mm]	Length [m]
1							
2							
Weld No	Visual test report	X-Ray test report	Ultrasonic test report	Magnetic particle test report	Observations		
Report No.							
Date							
Result							

CHECKED	CONTRACTOR	2 nd Party	3 rd Party
NAME/ SIGNATURE			
POSITION			
DATE			

SAMPLE Ltd			Document No.	
	QUALITY WORK INSTRUCTION		SPL-ITP-001	
	Project		Date	
	INSPECTION AND TEST PLAN		21.05.2021	
		Rev.	0	

INSPECTION AND TEST PLAN

REVISION	DATE	DESCRIPTION OF REVISION	ISSUED BY	CHECKED By	APPROVED BY
0		For Approval	HCE	Samer Abboud	Botros

Signatures - I have reviewed and approved this procedure:

CONTRACTOR	CLIENT	2 nd PARTY	3 rd PARTY

SAMPLE Ltd			Document No.
	QUALITY WORK INSTRUCTION		SPL-ITP-001
	Project		Date
	INSPECTION AND TEST PLAN		21.05.2021
		Rev.	0

1. SCOPE OF WORK

This ITP for Carbon Steel pipeline, is prepared by **Sample Ltd.** (hereafter the CONTRACTOR) for the execution of **[insert the name of the client]** (hereafter the CLIENT) Project, **[insert the name of the project]** (hereafter the PROJECT)

Line	Diameter/WT/Material	Weld Numbering
Gas Line		SPL-Y-XXX

2. REFERENCES DOCUMENTS (last revision)

- ASME B31.3 Process piping
- IGEM UP/1 Strength testing, tightness testing and direct purging of industrial and commercial gas installations
- ASME IX Welding and brazing qualifications
- ASME V Nondestructive Examination
- EN10204 Metallic products- types of inspection documents
- Other relevant EN/ISO requirements
- The designer specifications and drawings

3. INSPECTION LEVELS & DEFINITIONS

M	MONITORING is meant that the representative of the designated ORGANISATION attended the Activity and/or personally satisfied himself that the correct Testing Procedure was followed and the utilised equipment was in proper working condition (Stamp+ Signature).
A	APPROVAL is defined as the Act of Approving the outcome of a certain Activity (Stamp+ Signature).
H	HOLD POINT defined in an appropriate document, beyond which an activity must not proceed without the Approval of the designated organisation or Authority. The Approval to proceed beyond a Hold Point is, usually, given in written form but it may be given by any other agreed system of authorization. (Stamp+ Signature).
R	REVIEW is defined as the Examination of Documentation in order to verify Completeness and Acceptability, according to Project Requirements.
W	WITNESS is meant that the representative of the designated organisation is phisically present during the action being witnessed.
N/A	Non Applicable

SAMPLE Ltd			Document No.
	QUALITY WORK INSTRUCTION		SPL-ITP-001
	Project		Date
			21.05.2021
	INSPECTION AND TEST PLAN		Rev. 0

Activity Description	Reference Document	Acceptance Criteria	Quality Record	Contractor	2 nd Party	3 rd Party
Latest version of specifications and drawings - IFC	Contract Specifications and Drawings	All specifications and drawings received from the client that are stamped and approved for construction will be stamped by the Contractor	Issued For Construction (IFC) Drawings Register	H	R	R
Construction Procedures	The procedures	Procedures describing the execution of the works	Master Controlled Document List	H	R	R
NCR	Quality Management Plan	For any request issued by the Contractor asking the client to agree to changes of the methods of work described in the engineering plan, execution plan or the approved Procedures	Quality Management Plan Procedure and NCR Report	H	R/A	R/A
Deviation Request	Quality Management Plan	Non Conformance is considered as items or activities that do not conform to prescribed technical and/or quality requirements or deviate from the standards and specification	Quality Management Plan Procedure and Deviation Report	H	R/A	R/A
Receive & Inspect materials	Materials Handling Procedure	Inspect material during receipt for: <ul style="list-style-type: none"> quantities conformance to requirements dimensional damage MTR - material test report 	Material Receipt and Visual Inspection Report	H	R	R
Cutting a pipe	Pipe Log and Traceability Procedure	Pipe number and heat number to be transferred to both sections after pipe is cut. Heat number should be clearly marked on each stump	The procedure	H	M	M
Pipes and fittings tracking	Pipe Log and Traceability Procedure	Marking the pipes HN over pipes and fittings, After welding filling the welding book for tracking the materials	The procedure itself	H	R	R

SAMPLE Ltd			Document No.
	QUALITY WORK INSTRUCTION		SPL-ITP-001
	Project		Date
	INSPECTION AND TEST PLAN		21.05.2021
	Rev.		0

Activity Description	Reference Document	Acceptance Criteria	Quality Record	Contractor	2 nd Party	3 rd Party
Flange Closing	Flange Closing Procedure	Closing in accordance with the approved procedure and to the required torque	Bolt Torque Closing Report	H	R	R
WPS/PQR	WPS Documents	According ASME 31.3 and ASME IX, Including Passing The Mechanical Tests And NDT	Approved WPS and PQR	H	W	W
Welders Qualifications	Welding Procedure	ASME IX and/or relevant EN/ISO requirements	Welder Certificate	H	W	W
Welding Electrodes	Welding Electrode Procedure	Manufacturer quality certificate report including mechanical & chemical parameters	Mechanical & Chemical test report	H	R	R
Weld Inspection	Welding Procedure	Welding inspection before/during/on completion of the welding process, welding parameters will be taken on daily basis one per day per each welder.	VT Weld Report	H	R	R
NDT	NDT procedures	NDT According to ASME B31.3/ ASME V or according to relevant EN/ISO requirements	Laboratory NDT Reports	H	R/A	R/A
Weld Repair	Welding Procedure	Repair According To WPS After Marking The Exact Location For Repairing / Add "R" to the weld Number Fill weld repair report including: repair reason, location and depth, welder ID, welding parameters.	Welding Book & Repair Weld Reports	H	R/H	R/H
Weld Cut Out	Welding Procedure	Cut and quarantine / Add "N" to the new weld Number	Welding Book & Weld Report	H	W	R

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	QUALITY WORK INSTRUCTION		SPL-ITP-001
	Project		Date
	INSPECTION AND TEST PLAN		21.05.2021
	Rev.		0

Activity Description	Reference Document	Acceptance Criteria	Quality Record	Contractor	2 nd Party	3 rd Party
Production Weld	IGID	Perform two specimens for tensile, two for root bend face and two for face bend test as per ASME B31.3 and/or relevant EN/ISO requirements	Laboratory report	H	W	W
Golden Welds (if applicable)	Welding Procedure	According To The Relevant Procedure. Add "GW" to the weld Number	Golden Weld Report	H	H	H
Welding Book	Welding Procedure	Record The Weld Data In The Welding Book File	Welding Book	H	R/A	R/A
Coating and wrapping	Joint Coating Procedure	Perform coating in accordance with the project specification, the coating procedure and manufactures instructions	Pipe Coating Report	H	R	R
Painting	Above Ground Painting Procedure	Perform painting in accordance with the project specification, the painting procedure and manufactures instructions	Above Ground Painting Report	H	R	R
Holiday inspection	Joint Coating Procedure	Perform holiday testing in accordance with the coating procedure and manufactures instructions. <u>No holiday are allowed</u> Holiday test entire joint including field weld. Repair any holidays and re-inspect by Holiday test.	Holiday Test Report	H	H	H
Trenching	Excavating Procedure	Trench profile in accordance with the procedure, drawings and in accordance with safety requirements	Coordination with all infrastructures and landowners/ Trenching report	H	R	-
Lifting and Lowering in	Lifting and Lowering in Procedure	Lifting Approval- Lifting plan Lowering Approval – check list to assure all pre-works have been completed successfully before lowering	Approval for Lifting and Lowering/ Lowering report	H	R	-

SAMPLE Ltd			Document No.
	QUALITY WORK INSTRUCTION		SPL-ITP-001
	Project		Date
	INSPECTION AND TEST PLAN		21.05.2021
			Rev. 0

Activity Description	Reference Document	Acceptance Criteria	Quality Record	Contractor	2 nd Party	3 rd Party
Padding and Backfill	Backfilling procedure	Backfilling Approval – check list to assure all pre-works have been completed successfully before backfilling	Check list for Backfilling	H	R	-
Pressure Test procedure	Pressure Test Procedure	The "Pressure Test Procedure" must be signed by all the parties prior to commencement of the pressure test	The procedure itself	H	R/A	R/A
Measuring Equipment	Pressure Test Procedure	Show evidence of calibration and materials meet the project requirements	Certificates of facilities and materials	H	R	R
Check list for pressure test	Pressure Test Procedure	Assure pre works prior testing have been completed successfully.	Check list for pressure test	H	H	H
Cleaning	Cleaning Procedure	Inspection of cleaning of the line	Cleaning Report	H	R	R
Pressure Testing	Pressure Test Procedure	Pressure testing the lines according the procedure. Results shall meet ASME and/or relevant EN/ISO requirements	Pressure Test Report	H	W	W
As Made Documents		Issue As made documents and Drawings	As made documents	H	R/A	R/A

CU-3 Evaluating an inquiring Welding inspector course 1

Test and Inspection -1

(ISO 3834-2 - Chapter 14)

14.2 Pre-welding inspection and inspection-a :

- the adequacy and validity of certification certificates for welders and
- welding machine operators,
- compliance with the welding instructions,
- identification of the raw material,
- identification of the welding consumable,

Test and Inspection -1

(ISO 3834-2 - Chapter 14)

14.2 Pre-welding inspection and inspection-b:

- preparation of the joint (eg shape, dimensions),
- fitting, clamping and lacing,
- special requirements according to the welding instructions (eg avoidance of warping),
- the suitability of the operating conditions for welding, together with the environmental conditions,

Test and Inspection -3

(ISO 3834-2 - Chapter 14)

14.3. during welding tests, inspection of:

- cleaning and shaping of weld seams and layers,
- root carving, (by mechanical and thermal methods)
- the welding sequence,
- proper application and handling of welding consumables,
- warp inspectionall intermediate tests (size check)

Test and Inspection -4

(ISO 3834-2 - Chapter 14)

14.3. during welding tests, inspections -b:

- application and use of actual welding parameters (eg welding current, arc voltage, welding speed, etc.)
- preheating and intermediate temperature,
- cleaning and shaping of weld seams and layers, e.g. are the edges clean?
- all required intermediate tests (sizing)

Test and Inspection -5

(ISO 3834-2 - Chapter 14)

14.3. during welding tests, inspection -c:

- the welding sequence,
- proper application and handling of welding consumables,
- warp inspection,
- all intermediate tests (eg checking dimensions, tolerances)

Test and Inspection -6 (ISO 3834-2 - Chapter 14)

14.4. inspection and inspection after welding:

- visual inspection,
- non-destructive testing,
- destructive testing,
- examination of the shape, form and dimensions of the structure,
- post-welding operations e.g. heat treatment, aging results,

Test and Inspection -6 (ISO 3834-2 - Chapter 14)

14.5 Tested and inspected condition - marked:

- on the product itself,
- on an accompanying sheet,
- sorting, archiving and handing over documents proving conformity

Welding and logistics **SAMPLE** of some administrative forms concerning the scope of activities of a production inspector - as an example

Material handling (application of systems theory):

- inventory management,
- transport, warehouse management: FIFO, LIFO (last is first out), PRI: priority, RND: random receipt, pick-up, take-back, transfer and sales tickets,
- material handling,
- wrapping,
- information processes,

Welding and Logistics SAMPLE Warehouse Management

RAKTÁRI NYILVÁNTARTÓ KARTON

Megnevezés, méret, minőség:					Nyilvántartási szám:		
					Raktári elhelyezés:		
A főkönyvi számla száma:			Termékjegyzékszám:		Raktári kód (megnevezés):		
Készlet: legkisebb:			Mértékegység:		Egységár:		
Készlet: legnagyobb							
Dátum	Bizonylatszám	Mozgásnem	Szöveg -	Beszerzési ár	Növekedés	Csökkenés	Készlet
		bevét	vevő				
		kivét	hegesztő műhely				
		átadás	külföldi vevő				
		↓					

Welding sequence plan

.....SZ. **Hegesztési sorrendterv**lapszám

Sorszám	Műveletek (rövid leírása)	A varrat		Eljárás, hozaganyag	Hegesztési irány nyíllal jelölve	Megjegyzés (ábrák, vázlatok, magyarázat)
		sorszáma	mérete, helyzete			
Készítette:		Anyagminőségek:		Hozaganyagok:	Tömeg: kg	Főméretek: mm
Dátum:		Megnevezés (főegység):			Hegesztők minősítése:	
		Megnevezés (részegység):			Rgt. UH-vizsgálat:	
				Rajzszám:		

4.34. ábra.
Hegesztési sorrendterv minta

SAMPLE - Quality Control Plan

Gyártó cég: JÓ SZERENCSET IPARI MŰVEK		MINŐSÉG ELLENŐRZÉSI TERV		MIR-JELE: MIR/ISO 7.5.	Eljárás szám: JSI – MIR – 7.5.
Termék megnevezés: HEGESZTETT ÓRIÁS KIFLI		Rajzszám/Azonosító: ABCD -2333-111-aaa		Rendelő/Vevő megnevezés: HEGESZTETT KILFLI GYÁR	Kiadás dátuma: 2011.03.10.
ELJÁRÁS/FOLYAMAT		ELŐÍRÁS	FELELŐS	MEGFELELŐSÉG IGAZOLÁS	MEGJEGYZÉS
1.	Beszerezés: a/rendelés, b/rendelésellenőrzés, engedélyezés, c/határidőre történő beszállítás biztosítása, d/szállítási határidő felügyelete, követése	MIR-DOK:- 10	KER. OV.	aláírás, pecsét, munkatársi ellenőrzés, projekt menedzseri ellenőrzés	A munka és/vagy kiadása más vállalkozónak akkor lehetséges, ha van EN 15085/ISO3834 szerinti tanúsítás


SAMPLE-Quality Control Plan -b

<p>Átvétel, raktározás és vizsgálat: a/szállítmány átvétel, b/átvételi vizsgálat: 1/azonosságra, 2/ keménységre, 3/ tömegre, 4/ külső állapotra, megjelenésre, 5/rendelési űrlap és a szállítólevél azonosságára, 6/ megfelelőségi dok. -ra, 7/ megkülönböztető jelzés felvitele, 8/ betározás, 9/vizsgált állapot jelzése, 10/kiadás feldolgozásra.</p>	<p>MIR – DOK: - 11</p>	<p>Beszerezés Raktár és Minőségellenőrzés</p>	<p>aláírás, pecsét, megkülönböztető színjelölés és bevétele a raktári nyilvántartásba</p>	
	<p>MIR-DOK – 13 – Jelzés</p>	<p>Raktár és Minőségellenőrzés</p>	<p>Hivatalos Min.ell. igazolás</p>	
	<p>MIR-DOK: 13 – tárolás</p> <p>MIR-DOK- 14: raktári kiadás</p>			

SAMPLE-Quality Control Plan -c

3.	<p>Készülékek különleges szerszámok: a/készüléktervezés,</p>	MIR-DOK-15	Termelés	Min.ell. által is ellenőrzött rajz – aláírásokkal
	<p>ellenőrzés,verifikálás, c/ készülékgyártás d/ készülék ellenőrzés, bemérés és a próbagyártás engedélyezése, e/ készülék engedélyezése a sorozatgyártáshoz</p>	<p>munkadarabra szerint</p> <p>munkadarabra szerint</p>		<p>Min.ell. dokumentált ellenőrzése,</p> <p>mérőlap és min.ell. megfelelési gazolás kiadása</p>
4.	<p>Ellenőrző, vizsgáló mérőeszközök a/ eszközök felülvizsgálata, b/nyilvántartása, azonosítása, c/ az adott feladathoz mérőeszköz kiválasztása</p>	MIR-DOK 16	<p>MIR – iroda</p> <p>Min.ellenőrzés</p>	<p>min.ell. által azonosított mérőlapok és egyéb azonosító dokumentumok és PC-szoftverek</p>

SAMPLE-Quality Control Plan -d

5.	Munkatársak minősítése a/ HEGESZTŐK 1/minősítés EN 287-1 szerint, 2/ hegesztőnévsor összeállítása az adott munkafeladatra, b/ lángvágót kezelők, stb.,	MIR-DOK-17 és EN 287-1 – szabvány szerint	TERMELÉS Felelős hegesztőmérnök	hegesztők minősítési dokumentumai	
6.	Munkautasítások: anyagvételezés, szabás: - 1/anyagvételezési lap - 2/adagszám „átütés”, - 3/ vágási, darabolási terv, - stb.	MIR-DOK-18 MIR-DOK-19 munka/techn. utasítás szerint	Technológiai o. Felelős hegesztőmérnök, beszerzés, raktár		
7.					

Handling of welding tools I.- SAMPLE welder - flame cutter - meter

HEGESZTŐ – LÁNGVÁGÓ – MÉRŐ- ESZKÖZT NYILVÁNTARTÓ LAP			
ESZKÖZ LEÍRÁSA:		ESZKÖZ MŰSZAKI JELLEMZŐI	
Megnevezés:		Hálózati tápfeszültség (V):	
Típus:		Max. teljesítmény (kVA):	
Gyártó/Ország/Cég:		Üresjárási feszültség (V):	
Gyártás éve:		Max. hegesztési feszültség (V):	
Gyártási szám:		Védettségi fokozat: IP...	
Üzemi (tényleges) leltári szám:		Hegesztőáram (A)	
ÜZEMELTETŐ ÜZEM, MŰHELY:		Bi: 100%,	
Dátum: -tól - ig:	ÜZEM, MŰHELY, CSOPORT:	Bi: 60%:	
		Méretek (mm): (hossz x szélesség x magasság):	
		Tömeg (kg):	
		TARTOZÉKOK:	
		MEGNEVEZÉS	Darabszám:

Handling of welding tools SAMPLE II

welding tools

HEGESZTŐSZERSZÁM – ESZKÖZ ELLENŐRZÉSI és JAVÍTÁSI LAP					
Megnevezés:			Nyilvántartási – azonosító – szám:		
Géptípus:	Jellemzők:	Munkaszám:	Tárolási/alkalmazási üzemi hely:		
Ellenőrzés - Javítás			Ellenőrzés - Javítás		
Dátum	Munka megnevezése	Aláírás	Dátum	Munka megnevezése	Aláírás

CU-3

Evaluating an inquiring
Welding inspector course 2.

Pre - welding, during and after welding supervision

- **supervision of welding preparation :**

One of the most important activities is because the flawlessness of the seam is min. It depends 60% on its quality!

- handling, storage, processing of the required welding consumables and raw materials,
- supervision of seam preparation, chamfering and fitting, supervision, etc.
- workplace design, compliance with safety regulations, knitting preparation,
- supervising the selection of the required workpieces,

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Pre - welding, during and after welding supervision

supervision of welding preparation

- validation and condition of welding equipment, condition and
- existence of inspection and production / assembly welding
- equipment and calibrators, their use
- Application of WPS and welding plan,
- validity of welding certification,
- evaluation of test results,
- participation in the acceptance procedure

Pre - welding, during and after welding supervision

supervision during welding:

- prescribed scar. compliance with parameters,
- regular and professional use of the required work and safety space, equipment,
- the validity of the qualification of welders and the corresponding work,
- Supervised compliance with WPS,
- supervision of the validity and completion of the list following the workpiece,
- monitoring the existence of the required in-service controls,
- monitoring the observance of the welding sequence and the handling of the welding tool

Pre - welding, during and after welding supervision

- **supervision during welding: - continued**

- preheating and control, control,
- cleaning and measuring temperature (s) between seams,
- root carving,
- appearance and shape of welding consumables,
- distortion,
- seam surface (porosity, crack, etc.), size,
- spraying, arcing points,
- seam fusion, monitoring of welding parameters,
- monitoring compliance with welding sequencing and handling of welding equipment.

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Pre - welding, during and after welding supervision

- **post-welding inspection:**
 - welded joint:
 - seam size, shape (appearance),
 - distortion,
 - spraying, arcing points
 - marking and repair of surface interruptions,
 - fusion test,
 - supervision of the issue of measuring sheets,
 - monitoring the implementation of the required corrections,

Pre - welding, during and after welding supervision

- **post-welding inspection: continued**
 - monitoring the existence of measuring instruments certifying the required tests and their conformity
 - supervising and / or participating in the required inspections and
 - handover / acceptance / official control,
 - supervision of prescribed heat treatment,
 - supervision of prescribed surface treatment,
 - overseeing the completeness of the required documentation of the attestation of conformity, etc.
 - overseeing the archiving of required documents