



Pre task assignment

WELDING

## 1. Summary

Contestants will have to perform 3 different welding tasks.

It is required to assemble and weld the following:

- ✓ 3 carbon steel welding specimens
- ✓ 1 structure made of aluminum alloy
- ✓ 1 pipe made of stainless steel

## 2. Allocated time: 6 hours 00 minutes

The contest duration is 6 hours 00 minutes.

## 3. Requirements

The task assignment consists of three modules:

- ✓ Module 1. Three carbon steel welding specimens
- ✓ Module 2. One structure made of aluminum alloy
- ✓ Module 3. One pipe made of stainless steel

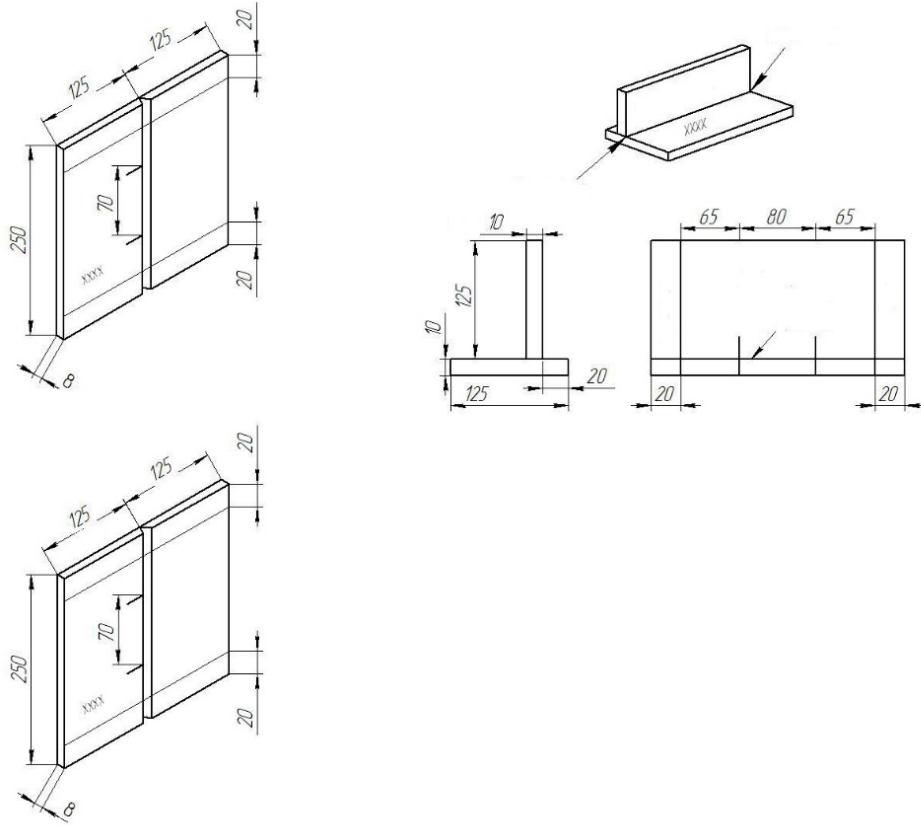
### **Module 1: Three carbon steel welding specimens**

**Allocated time:** 2 hours 30 minutes.

Contestants will assemble and weld three welding tests according to the drawings.

1. Welding sample of butt joint of two plates, 8 mm thick of carbon steel (Stal 3) in horizontal position (PC), the welding is carried out in horizontal position.
2. Welding sample of butt joint of two plates, 8 mm thick of carbon steel (Stal 3) in vertical position B1(PF), the welding is carried out from the bottom to the top. Bevel of each of two edges is  $25\pm 2^\circ$ , gap 0 - 3 mm, nose  $1.5\pm 0.5$  mm.
3. Welding sample of T-joint of two plates, 10 mm thick of carbon steel (Stal 3) bottomhand H2(PB), without bevel, gap max. 2 mm, leg length is 10.5 - 14.5 mm, welding is carried out in 2-3 runs.

Welding types are determined by lot (MMA, TIG, MAG).



## **Module 2. One structure made of aluminum alloy**

**Allocated time:** 2 hours 30 minutes.

Contestants will assemble a structure made of aluminum alloy AMg 2.5 using stick welding with coated electrode welding method (TIG) as per drawings. Compliance with plans provided.

### Special instructions:

- ✓ Welding of all vertical seams is carried out from the bottom to the top.
- ✓ All fillets are made in one run with filling wire.

### Task assignment evaluation:

- ✓ Visual and dimensional test.

Structure – bracket.

Blanks without bevels, plates 3 mm thick, the structure fully fits in a cube of 250 mm. All types of spatial positions except for overhead one.

Compliance with welding positions. The part must remain on its base during welding.

Task performance sequence:

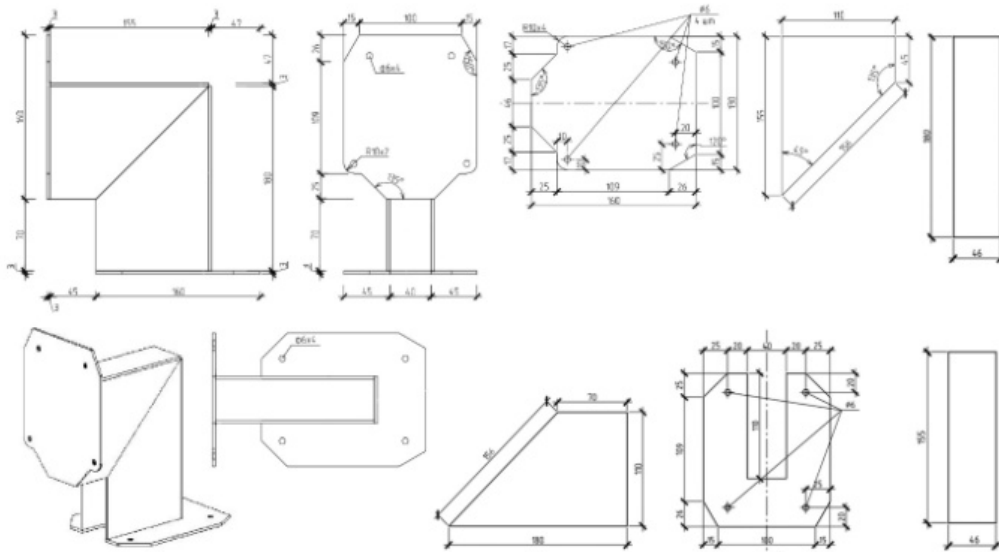
- ✓ Prepare metal for welding (clean and degrease).
- ✓ Assemble the structure with tick weld.
- ✓ Carry out the welding.

Task assignment evaluation:

- ✓ Visual and dimensional test.

Types of welding in Module 2:

- ✓ 141



**Module 3. One pipe made of stainless steel**

**Allocated time:** 1 hour.

Contestants will weld two pipe cut-offs made of stainless steel (12X18H10T), in a certain spatial position (the pipe axis is horizontal, 45 degrees, 90 degrees) using TIG method as per drawings. Sizes: sample total size Ø 114x110x4 mm, PC.

Task assignment evaluation:

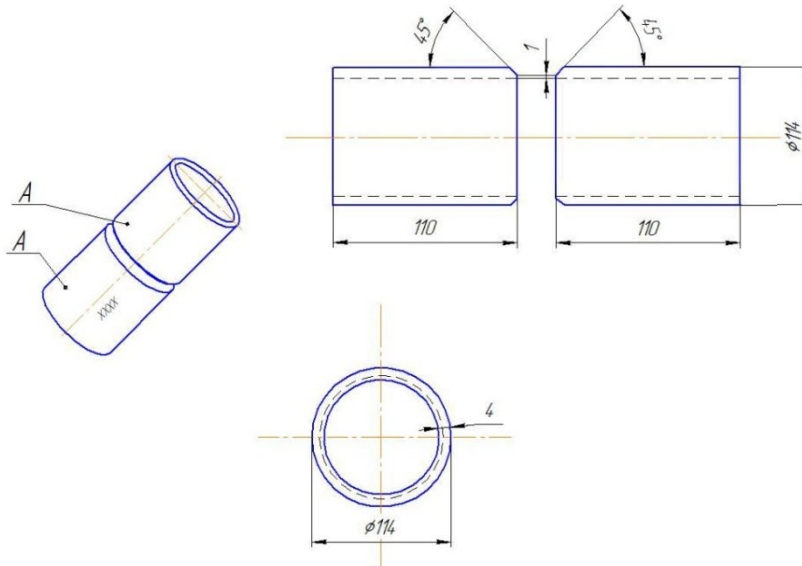
- ✓ Visual and dimensional test.

Task performance sequence:

- ✓ Prepare blanks for welding (clean and degrease).
- ✓ Assemble the check sample with tick weld.
- ✓ Carry out the welding.

Types of welding in Module 3:

- ✓ 141 (argon arc welding with non-consumable electrode).



- ✓ Safety rules must be respected.
- ✓ Contestants are not allowed to lend or to borrow any tool or material during the tasks.
- ✓ Any contestant caught cheating, talking to someone from the public or using a communication device will suffer a penalty of 5 points for the first transgression. A second transgression will lead to an exclusion from the contest.

#### 4. Procedure

**Day -1 (March 24<sup>th</sup>):** On the day before the competition, contestants will be welcomed on the stand by the members of the jury. A briefing about the organization of the competition and the safety rules will be arranged. Contestants will draw lots to be assigned to a work station, where they may drop off their tools.

**Day 1 (March 25<sup>th</sup>):** Contestants will have 2 hours 30 minutes to perform the module 1.

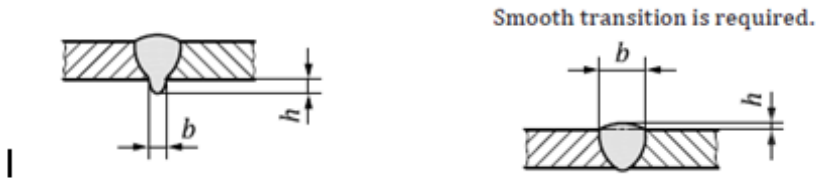
**Day 2 (March 26<sup>th</sup>):** Contestants will have 3 hours 30 minutes to perform modules 2 and 3.

## 5. Scoring criteria

N°	Items to be Evaluated	ISO 5817: 2014	Scoring scale
<b>1- TOLE BW PF</b>			<b>22</b>
01	Regularity of welded bead		2
02	Continuous undercut and/or intermittent undercut - $\leq 0,5\text{mm}$ 1 defect: 1 pt. - 2 defects: 0 pt.		2
03	Free from stray arc strikes - 1 defect: 0 pt.		1
04	Absence of smoke and/or projection		1
05	Is the weld metal free of porosity?		1
06	Incompletely filled groove not allowed		2
07	Excess weld metal - $h \leq 1\text{mm} + 0,1 b$ but max 5mm		2
08	Incomplete root penetration not allowed		2
09	Excess penetration - $h \leq 1\text{mm} + 0,1 b$		2
10	Absence solid inclusion		1
11	Front folding - defect $\geq 3\text{mm}$ not allowed 1 defect: 2 pts - 2 defects: 1 pt.- 3 defects: 0 pt.		3
12	Back folding - defect $\geq 3\text{mm}$ not allowed 1 defect: 2 pts - 2 defaults:1 pt. - 3 defects: 0 pt.		3
<b>2 - TOLE BW PC</b>			<b>22</b>
13	Regularity of welded bead		2
14	Continuous undercut and/or intermittent undercut - $\leq 0,5\text{mm}$ 1 defect: 1 pt .- 2 defects: 0 pt.		2
15	Free from stray arc strikes		1
16	Absence of smoke and/or projection		1
17	Is the weld metal free of porosity?		1
18	Incompletely filled groove not allowed		2
19	Excess weld metal - $h \leq 1\text{mm} + 0,1 b$ but max 5mm		2
20	Incomplete root penetration not allowed		2
21	Excess penetration - $h \leq 1\text{mm} + 0,1 b$		2
22	Is the weld metal free of short, solid imperfections?		1
23	Front folding - defect $\geq 3\text{mm}$ not allowed 1 defect: 2 pts - 2 defects:1 pt. - 3 defects: 0 pt.		3
24	Back folding - defect $\geq 3\text{mm}$ not allowed 1 defect: 2 pts - 2 defects: 1 pts - 3 defects: 0 pt.		3
<b>3 - TOLE FW PB</b>			<b>15</b>
25	Respect throat thickness of $8\text{mm} \pm 1\text{mm}$ 1 defect: 0 pt.		2
26	Regularity of welded bead		2
27	Free from stray arc strikes		1





28	Absence of smoke and/or projection	2
29	Continuous undercut and/or intermittent undercut - $\leq 0,5\text{mm}$ 1 defect: 1 pt. - 2 defects: 0 pt.	2
30	Incorrect weld toe $\geq 110^\circ$	2
31	2 macroscopies - defect $\geq 3\text{mm}$ not allowed 1 defect: 2 pts - 2 defects: 1 pt. - 3 defects: 0 pt.	4
<b>4 - STRUCTURE ALUMINIUM</b>		<b>22</b>
32	Regularity of welded bead butt weld	1
33	Regularity of welded bead fillet weld	1
34	Continuous undercut and/or intermittent undercut - $\leq 0,5\text{mm}$ 1 defect: 1 pt. - 2 defects: 0 pt.	2
35	Loopback and/or recovery not allowed in corners	3
36	Free from stray arc strikes 1 defect: 1 pt. - 2 defects: 0 pt.	2
37	Porosity and/or inclusion	1
38	Incompletely filled groove not allowed	2
39	Respect the throat thickness or $3\text{mm} + 1$	2
40	100% welded weld joint	1
41	Respect of welding positions	2
42	Structure drawing respected	1
43	Penetration of butt weld - 90%: 4 pts - 50%: 2 pts - 20%: 0 pt.	4
<b>5 - TUBE BW PC</b>		<b>16</b>
44	Regularity of welded bead	2
45	Incompletely filled groove not allowed	2
46	Continuous undercut and/or intermittent undercut - $\leq 0,5\text{mm}$ 1 defect: 1 pt. - 2 defects: 0 pt.	2
47	Free from stray arc strikes - 1 defect: 0 pt.	1
48	End crater pipe not allowed - 1 defect: 0 pt.	2
49	Incomplete root penetration not allowed	1
50	Excess weld metal - $h \leq 1\text{mm} + 0,1 b$	3
51	Excess penetration - Max 2 mm	3
<b>6 - SECURITE</b>		<b>3</b>
52	Respect the equipment at disposal	1
53	Relevant PPE (personal protective equipment) used (glasses, ear plugs, gloves, safety shoes, long sleeves clothes)	1
54	Work zone clean and tidy	1
<b>TOTAL</b>		<b>100</b>








Standard:


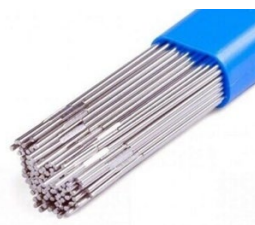









## 6. List of equipment








*Non-exhaustive list.*






LIST OF THE PROVIDED EQUIPMENT						
N°	Equipment	Picture	Specifications	Qty per person	Qty for all	Notes
01	TIG AC/DC welding machine + AEEE			1		
02	MAG welding machine			1		
03	Welding torch MAG			1		
04	Welding torch TIG			1		

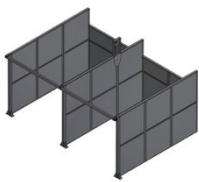

05	Argon gas		bottle	2		
06	Argon gas CO <sup>2</sup> (15% CO <sup>2</sup> )		bottle	1		
07	Quick connect for gas/bottle			3		
08	Gas Hose Flexible				10m	
09	Press brake manual		10mm thick by 40mm wide pieces		1	
10	Pressure gauge (mano) for gas bottle		If not included with gas bottles	3		
11	Band saw				1	


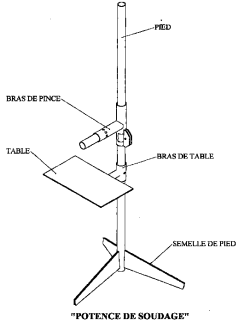





EXPENDABLE MATERIALS						
10	Welding Basic double- coated electrode		ø 3,2		150	Pack
11	Welding Basic double- coated electrode		ø 2,5		150	Pack
12	MAG steel welding wire spool		ø1	1		
13	TIG Stainless steel rod		ø1,6 / 2		2	Pack
14	TIG Aluminum rod		ø2 / 2,4		3	Pack
15	TIG Steel rod		ø1,6 / 2		4	Pack





16	TIG welding consumables torch			1		Set
17	MAG welding consumables torch			1		Set
19	Abrasive (cutoff disc 1,6, disc 3,2, grinding disc)					15 of each
20	Sharpener for tungsten				1	
21	Tungsten electrodes Gold color		ø2 / 2,4	1		Pack
22	Tungsten electrodes Green color		ø 2,4 / 3	1		Pack
23	Protective glasses		transparent	1		








LIST OF TOOLS TO BE BROUGHT FOR EACH CONTESTANT					
N°	Tool	Picture	Specifications	Qty	Notes
<b>PERSONAL PROTECTION EQUIPMENT</b>					
01	Safety shoes			1 pair	
02	Working clothes		Cotton	1	
03	Welding helmet			1	
04	Welder's gloves		Leather	1	
05	Protective glasses Warrior Spec Smoked			1	
<b>TOOLBOX</b>					
05	Flat files			1 set	
06	Hammer			1	

07	Set square			1	
08	Ruler			1	
09	Measuring tape			1	
10	Clamps			1	
11	Angle grinder		Complete with disks	1	
12	Other tools				

LIST OF FACILITIES INSTALLED AT THE CONTEST SITE					
N°	Equipment	Picture	Specifications	Qty	Note
01	Workstation		Welding cabin	1	Per contestant
02	Protective curtain			1	Per box

03	Workbench			1	Per box
04	Welding bracket			1	Per box
05	Vacuuming			1	Per box
06	Spotlight			1	Per box
07	Galvanized bucket			1	Per box
08	Welder's Stool			1	Per box
09	Power strips		220V	1	Per box
10	Socket 380 V		Sockets shall be available in each cabin	2	Per box

11	Trash bin			2	For all
12	Broom			1	Per box
13	Metal dust pan			1	Per box
14	Hydraulic pallet jack			1	For all

CONTESTANTS' ROOM (if required)					
No	Item	Photo	Technical specifications of equipment	Unit	Qty
01	Office desk		1,400 x 600 x 750	pcs.	5
02	Visitor office chair		Dimensions: 55 x 80	pcs.	10
03	Locker			pcs.	5
EQUIPMENT PER JUDGE (if required)					
No	Item	Photo	Technical specifications of equipment	Unit	Qty
01	Office desk		1,400 x 600 x 750	pcs.	3
02	Visitor office chair		Dimensions: 55 x 80	pcs.	3
03	Tablet			pcs.	5
04	Workbench			pcs.	2
05	Veleda board			Pce.	1
06	Veleda felts			Set	1
EXPENDABLE MATERIALS PER JUDGE (if required)					
No	Item	Photo	Technical specifications of equipment	Unit	Qty

<b>01</b>	Paper A4			pack	5
<b>02</b>	Pen			pcs.	20