

**WELDING PROCEDURE QUALIFICATION RECORD (WPQR)
LEVEL 2
N. 20VE00912PW5/A**

Manufacturer **EROS TOGNI METALCOSTRUZIONI SA - Cresciano (SVIZZERA)**
 WPQR No. **05R-20** Dated **01/12/2020**
 Manufacturer's welding procedure (WPS) No. **05-20** Dated **16/09/2020**

RANGE OF QUALIFICATION

Welding process(es) **141** Type **Manual**
 Joint type **P/T/branch with angle over 60° and build-up BW ssnb-ssmb-bs/FW**
 Single/Multiple pass **Multiple** (Impact properties applied)
 Parent material group(s) **8-8 (Subgroup 8.1 only)** ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174
 Parent material thickness (mm) **Butt Joint = 3 to 16** Fillet Joint **t₁ = 3 to 16** **t₂ = 3 to 16**
 Throat thickness (mm) **No restriction**
 Weld deposit thickness (mm) **Max. 16**
 Outside pipe diameter (mm) **Over 150 (rotated position); over 500 (fixed axis)**
 Filler metal make **N.A.** Nr. of wires for process 12: **N.A.**
 Flux make **N.A.** Flux Designation: **N.A.**
 Filler metal designation **Solid rod EN ISO 14343-A - W 19 12 3 LSi**
 Shielding gas **99,99%Ar** (ISO 14175 - **II**) Backing gas (ISO 14175) **I, N and R**
 Type of welding current **DCEN** Heat Input kJ/cm **Max. 10,8**
 Welding position **PA** Transfer Mode **N.A.**
 Preheat min. (°C) **None** (if ISO/TR 17671-2 requirements are fulfilled) Interpass temp. Max. (°C) **150**
 Postheat min. (°C) **N.A.** Time (minutes) **N.A.**
 Post weld heat treatment/Ageing **None** Time (minutes) **N.A.**
 Other information **-**

Welder's/Operator's name **AGUSTONI PASCAL** Stamp No. **AP**
 Welding test conducted by **EROS TOGNI METALCOSTRUZIONI SA**
 Mechanical test conducted by **SSM S.R.L.** Laboratory test No. **1401/C Rev.00 20, 1402/C Rev.00 20 dated 01/12/2020; 3589/TR Rev.00 20, 3589/RE Rev.00 20, 3589/PI Rev.00 20 dated 01/12/2020; 236L-20-MA Rev.0 dated 01/12/2020;**

At presence of RINA Surveyor **Domenico Zema**

We confirm that statements in this record are correct and that the test welds were prepared, welded and tested and have fulfilled the requirements in accordance with **UNI EN ISO 15614-1: 2019** Standard

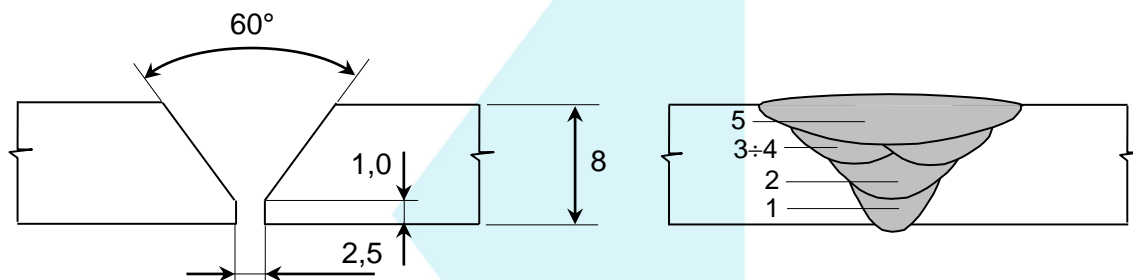
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RECORD OF WELD TEST

JOINT DETAILS AND WELDING SEQUENCES									
SINGLE-V BUTT JOINT; ONE SIDE WELDING WITH GAS BACKING									
Pass No.	Process	Filler metal diam. (mm)	Amps	Volt	Type of Current/Polarity	Travel speed (cm/min)	Heat input (kJ/cm)	Metal Transfer mode	Other
1	141	2,4	97	10,0	DCEN	6,5	5,4	N.A.	-
2	141	2,4	110	11,0	DCEN	7,0	6,2	N.A.	-
3 to 4	141	2,4	110	11,0	DCEN	8,0	5,9	N.A.	-
5	141	2,4	110	11,0	DCEN	5,5	8,6	N.A.	-



PARENT MATERIAL	
Material specification	N 10088-2
Type or grade	1.4404
Group(s)/Subgroup(s) No. (ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174)	8.1
Thickness (mm)	8,0
Throat thickness (mm)	N.A.
Diameter (mm)	N.A.
Branch connection angle	N.A.
Other	-

WELDING CONSUMABLES	
Process	141
Trade name(s)	LUBROTEK WELDTEK 1.4430
Specification	EN ISO 14343-A
Classification / designation	W 19 12 3 LSi
Size (mm)	2,4
Deposited metal thickness	
Groove	8,0 mm
Throat	N.A.
Flux trade name	N.A.
Consumable insert	None
Other	-

GAS			
	Gas	Mixture	Flow rate (l/min.)
Shielding	Argon	-	12
Trailing	N.A.	-	-
Backing	N.A.	-	-

POSITION	
Welding position	PA
Other	-

PREHEAT		POSTWELD HEAT TREATMENT		
Preheat temperature	15°C	Temperature	None	Time N.A.
Interpass temperature	150°C	Method	N.A.	
Postheat temperature	None	Time	N.A.	Other
				-

ELECTRICAL CHARACTERISTICS			
Current	DC EN		
Ampere (range)	See table	Volts (Range)	See table
Mode of metal transfer	N.A.		
Tungsten electrode size and type	2,4 mm; ISO 6848: WTh 20		
Pulse welding details	N.A.		
Plasmawelding details	N.A.		
Waveform controlled welding machine	N.A.	Waveform control mode	N.A.
Power source	N.A.	Welding mode	Pulse <input type="checkbox"/> Non pulse <input checked="" type="checkbox"/>
Other	-		

TECHNIQUE	
Travel speed (range)	See table
String or weave bead	String and weave
Oscillation (*)	N.A.
Method of groove/edge preparation	Machining/Grinding
Interpass cleaning	Grinding/Brushing
Method of back gouging	N.A.
Orifice or gas cup size	10 mm
Distance contact tube/workpiece (*)	N.A.
Multiple or single pass	Multiple
Multiple or single electrodes	Single
Torch angle (*)	N.A.
Other (*) for fully mechanized/robotic only	-

TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	Area (mm ²)	Total load (N)	R _m . (N/mm ²)	Fracture location
TT1	24,94	7,50	187,05	112230	600	Weld
TT2	25,00	7,80	195,00	117390	602	Weld

BEND TEST			
Type	No.	Bend Angle	Result
FACE TRANSVERSE	2 OFF	180°	Acceptable
ROOT TRANSVERSE	2 OFF	180°	Acceptable

IMPACT TEST					
Reduced size specimens 5 x 10 x 55 mm					
Spec No.	Notch location	Notch type	Test Temp. (°C)	Impact values (J)	Average (J)
VWT _{0/1,5}	WELD	ISO-V	-196	53 - 44 - 55	50,7
VHT _{1,5/1,5}	H.A.Z.	ISO-V	-196	81 - 91 - 84	85,3

OTHER TEST

MACROGRAPHIC EXAMINATION **Acceptable**
 MICROGRAPHIC EXAMINATION **Not required**

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION **Acceptable**
 RADIOGRAPHIC EXAMINATION **Acceptable**
 PENETRANT TEST **Acceptable**
 MAGNETIC PARTICLE **Not required**
 ULTRASONIC TEST **Not required**

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