



**BUREAU
VERITAS**

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WELDING PROCEDURE QUALIFICATION RECORD

N° WPQR BVAMF 4.14.0385-01 rev.00





Manufacturer : **Staalmeesters BV**
Place of welding : **Geijsterseweg 12, Wanssum**
Date of welding : **09-04-2014**
pWPS No : **2**
Reference standard : **EN 15614-1 Edition 2005 + A1 / 2008**
Supplemented by :
Test performed in the presence of : **H.Verschuren**

Stamp No HVE

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Certifies that test pieces were prepared, welded and tested satisfactorily in accordance with the requirements of the documents indicated above.

Record issued on : **16-05-2014**

Examining body	Manufacturer
Authorized representative : H.Verschuren Signature :   Stamp of the examining body	Represented by : RFG SWERTZ Signature :  Stamp of the manufacturer (optional) 

Other identification (as necessary) :

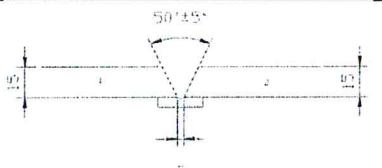
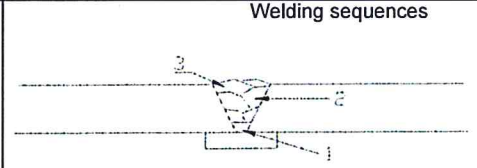
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Welding Procedure Qualification Record (WPQR)

EN 15614-1

Test Piece No : 7		Base material	①	②
Joint type		Grade	S355 J2 + N	S355 J2 + N
<input checked="" type="checkbox"/> Butt <input type="checkbox"/> Tubes <input checked="" type="checkbox"/> Plates <input type="checkbox"/> Tee <input type="checkbox"/> Branch <input checked="" type="checkbox"/> Full penetration <input type="checkbox"/> Fillet		Standard or specification	EN-10025-2	EN-10025-2
<input checked="" type="checkbox"/> Backing strip Permanent <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Nature Type : <input type="checkbox"/> Back gouging or chipping		Heat no	388188	388188
		Group / Subgroup	1.2	1.2
		Thickness mm	15	15
		Outside diameter mm	plate	plate

Joint Design  <p>Indicate grades ① ②</p>	Welding sequences  <p>Indicate deposited thickness per process</p>
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pass number		1 (Root)	2 (Filler)	Filler	3 (Cap)
Position		PA		PA	PA
Process		135	M	135	M
Transfer mode		Short circuit		Spray	Spray
Welder's name		Marcin Polok		Marcin Polok	Marcin Polok
Filler material	Manufacturer	Bohler		Bohler	Bohler
	Trade mark				
	Std. designation	SG3H		SG3H	SG3H
	Diameter (mm)	1.2		1,2	1,2
Flux	Manufacturer	NA		NA	NA
	Trade mark	NA		NA	NA
	Std. designation	NA		NA	NA
Shielding gas	Type	Air Liquide Arca15		Air Liquide Arca15	Air Liquide Arca15
	Std. designation	82-18		82-18	82-18
	Flow rate (l/min)	14-16		14-16	14-16
	Type	NA		NA	NA
	Std. designation	NA		NA	NA
	Flow rate (l/min)	NA		NA	NA
Plasma gas	Type	NA		NA	NA
	Std. designation	NA		NA	NA
	Flow rate (l/min)	NA		NA	NA
Type of current (~, =, pulse)		DC+		DC+	DC+
Tungsten electrode (type & Ø)		NA		NA	NA
Electrode polarity		+		+	+
Current (A)		160 – 180		220 - 240	195 – 225
Voltage (V)		18 – 20		22 - 24	19 – 21
Welding speed (cm/min)		12 – 14		16 - 20	16 - 20
Heat input {k.U.I.10⁻³ / v} (kJ/mm)		1,0 – 1,4		1,2 – 1,7	0,9 – 1,4
Interpass temperature (°C)		200		200	200
Welding equipment					
Preheat : <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Temperature : 10 °C					
Postheat : <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Temperature : °C Holding time :					
PWHT : <input checked="" type="checkbox"/> Non / No <input type="checkbox"/> Oui / Yes Holding temp. :					
Heat. rate : °C/h Hold time : Cooling rate : °C/hr Å °C					
Other informations :					

: M = Manual , A = Auto, TM = Fully mechanized , PM = Partly mechanized



Welding Procedure Qualification Record (WPQR) EN 15614-1

1. Non destructive tests

Examination performed	Carried out by	Result	N° de rapport / Report No
Visual Test	MME / Bureau Veritas	Acceptable	14MT003
Liquid Penetrant	NA	NA	NA
Magnetic Particle	MME	Acceptable	14MT003
Radiographic Test	NA	NA	NA
Ultrasonic Test	MME	Acceptable	14UT002

2. Tensile tests

Report No : 1504 / 1.....

Mark	Test specimen		Temperature (°C)	Rm (N/mm ²)	Re (N/mm ²)	A (%)	Z (%)	Localisation Fracture location	Results and remarks
	Transverse	Cylindrical WM		Required values (* for cylindrical specimen only)					
	25 x 14,2		RT	567				Base material	Acceptable
	25 x 14,2		RT	563				Base Material	Acceptable

3. Bend tests

Report no : 1504 / 1

Mark	Test specimen		(mm) Former diameter	Direction of bending and sizes of section			Results and remarks
	Transverse	Longitudinal		Face	Root	Side	
1	x		D = 4t			180°	Acceptable
2	x		D = 4t			180°	Acceptable
3	x		D = 4t			180°	Acceptable
4	x		D = 4t			180°	Acceptable

4. Impact tests

Report n° : 1504 / 1.....

Specimen	Test temp. (°C)	Specim. (P) (M) (R)	KCV (J/cm ²) Notch location						Results and remarks
			(VWT) Weld metal		Heat Affected Zone (VHT)				
			Individ.	average	Nuance / Grade ①		Nuance / Grade ②		
02	-20	M	77	92	96	93		Acceptable	
02			100		105				
02			99		78				

KCV(J/cm ²) Requirements	Grade①	Grade②	M F
Individual	24	24	24
Average	27	27	27


MF : weld metal

HAZ: heat affected zone

(P)= face, (M) = middle thickness (R) = root

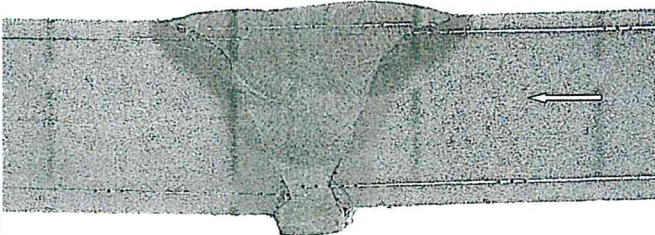
5. Hardness (HV 10)

Report No : 1504 / 1

Sketch	Surveys	Results	Results and remarks
	Basemat	Face 175, 181, 175; Root 186, 193, 189	Acceptable
	HAZ	Face 276, 287, 311, 268, 259; Root 195, 201, 210, 200, 214	Acceptable
	Weld	Face 237, 244, 222; Root 186, 189, ---	Acceptable
	HAZ	Face 267, 246, 288, 291, 278; Root 192, 193, 205, 189, 195	Acceptable
	Basemat	Face 189, 174, 175; Root 195, 194, 188	Acceptable

6. Macroscopic examination

Report No : 1504 / 1

Mark :	Mark :
	
Remarks :	Remarks :
Result : Acceptable	Result :

7. Other examinations and tests :

References	