



WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

N. 18.TQ.IT.022-YESS-WPQR-005

Manufacturer **Yess Yakma ve Enerji Sistemleri Sanayi ve Ticaret LTD.ŞTİ.**
WPQR No. **YES-WPQR-005** Dated **05/06/2018**
Manufacturer's welding procedure (WPS) No. **YESS-WPS-05** Dated **04/06/2018**

RANGE OF APPROVAL

Welding process **141 + 111** Type **Manual**
Joint type **BW**
Single/Multiple pass **Multiple ssnb 141 + Multiple ssmb111**
Parent material group(s) **1.1** **ISO/TR 15608**
Parent material thickness (mm) Butt Joint = **10,97** Fillet Joint $t_1 = \text{N/A}$ $t_2 = \text{N/A}$
Throat thickness (mm) **N/A**
Weld deposit thickness (mm) **N/A**
Outside diameter (mm) **168,3**
Filler metal type **TS EN ISO 636-A:09 ,W3Si1 + EN ISO 2560-A: E 46 5 B 32 H5**
Shielding gas (ISO 14175) **I1** *Backing gas* **None**
(ISO 14175)
Type of welding current **DCEN 141 DCEP 111** Heat input Kj/cm **See table on page 2**
Welding position **HL-045**
Preheat min. (°C) **10** Interpass temp. Max. (°C) **Less than 350**
Post weld heat treatment / Ageing **No**
Other information **None**

Welders name **Bülent DÜNDAR** Stamp No. **W01**
Welding test conducted by **Ethem GUNGOR**
Mechanical test conducted by **Borusan Mannesmann A.S.** Laboratory test No. **N/A**
At presence of RINA Surveyor **Yes**

We certify that statements in this certificate are correct and that the test welds were prepared, welded and tested in accordance with the requirements of **UNI EN ISO 15614-1: 2017** Standard. Certified that all required activities were carried out above mentioned standards and codes

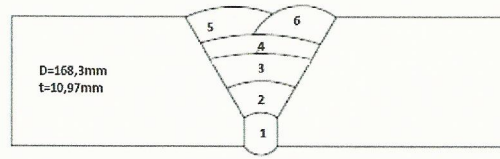
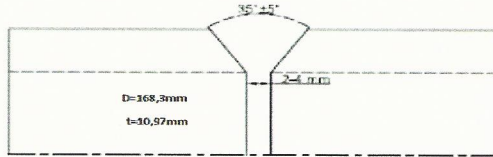
Issued at: **ISTANBUL - TURKEY**

on **05/06/2018**



RINA · REGISTRO ITALIANO NAVALE

JOINT DETAILS AND WELDING SEQUENCES								
Pass No.	Process	Filler metal diam. (mm)	Filler metal classification	Amps	Volt	Travel speed (cm/min)	Heat input (kJ/mm)	Other
1	141	Φ 2,40	W3Si1	135-145	11-13	6-8	14,9-14,1	DCEN
2	141	Φ 2,40	W3Si1	165-175	12-14	6-8	19,8-18,4	DCEN
3	111	Φ 3,20	E 46 5 B 32 H5	100-110	24-26	10-12	14,4-14,3	DCEP
4	111	Φ 3,20	E 46 5 B 32 H5	110-120	25-27	10-12	16,5-16,2	DCEP
5	111	Φ 3,20	E 46 5 B 32 H5	95-105	24-26	10-12	13,7-13,6	DCEP
6	111	Φ 3,20	E 46 5 B 32 H5	95-105	24-26	10-12	13,7-13,6	DCEP

**PARENT MATERIAL**Material specification **EN 10253-2**Type or grade **P265GH**Group(s)/Subgroup(s) No. (ISO/TR 15608) **1.1**Thickness (mm) **10,97**Throat thickness (mm) **N/A**Diameter (mm) **168,3**Branch connection angle **70**Other **N/A****WELDING CONSUMABLES**Process **141**Trade name(s) **GEKA SG2 TIG**Specification **TS EN ISO 636-A:09**Classification / designation **W3Si1**Size (mm) **2,40**Deposited metal thickness **-**Groove **-**Throat **-**Flux trade name **NA**Consumable insert **NA**Other **-****111****AS B-255****EN ISO 2560-A:****E 46 5 B 32 H5****3,20****-****-****-****NA****NA****-****GAS**

	Gas	Mixture	Flow rate (l/min.)
Shielding	Argon	%99,99	10-12
Trailing	NA	NA	NA
Backing	NA	NA	NA

POSITIONWelding position **HL-045**Other **N/A**

PREHEAT		POSTWELD HEAT TREATMENT	
Preheat temperature	10	Temperature	NA
Interpass temperature	Less than 350	Time	NA
Other	-	Other	-

ELECTRICAL CHARACTERISTICS			
Current	DCEN (141) + DCEP (111)		
Ampere (range)	See table on page 2	Volts (Range)	See table on page 2
Mode of metal transfer	Globular		
Tungsten electrode size and type	N/A		
Other	N/A		

TECHNIQUE			
Travel speed (range)	See table	--	
String or weave bead	String & Weave		
Oscillation (*)	--		
Method of groove/edge preparation	Grinding		
Interpass cleaning	Grinding/Brushing		
Method of back gouging	N/A		
Orifice or gas cup size	--		
Stand off distance (*)	--		
Multiple or single pass	Multiple Pass		
Multiple or single electrodes	Single		
Torch angle (*)	--		
Other	(*) for fully mechanized/robotic only		

TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	A (%)	Total load (N)	R _m (N/mm ²)	Fracture location
1	-	-	-	-	-	-
2	-	-	-	-	-	-

ALL-WELD METAL TENSILE TEST							
Spec. (No.)	Diameter (mm)	Area (mm)	L ₀ (mm)	Yield strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Note
1	168,3	10,64	25,1	-	438	12	Broked from Material
2	168,3	10,66	24,9	-	448	19	Broked from Material



Certificate No. 18.TQ.IT.022-YESS-WPQR-005

BEND TEST		
Type	No.	Result
FACE TRANSVERSE	1-2	Satisfactory
ROOT TRANSVERSE	1-2	Satisfactory
SIDE TRANSVERSE	-	-

IMPACT TEST				
Spec No.	Notch location	Notch type	Test Temp. (°C)	Impact values (J)
1	WELD	V (10 x 2,5)	+ 20	121-120-131
2	HAZ	V (10 x 2,5)	+ 20	118-129-123

HARDNESS TEST		
Location	Avarage value	Maximum value
Parent metal(s)	179	190
H.A.Z.(s)	187,5	199
Weld metal	210	224

OTHER TEST

MACROGRAPHIC EXAMINATION

Acceptable

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION

Acceptable

RADIOGRAPHIC EXAMINATION

Acceptable

PENETRANT TEST

Acceptable

MAGNETIC PARTICLE

Not required

ULTRASONIC TEST

Not required

Issued at: ISTANBUL - TURKEY

on 05/06/2018



RINA
RINA Turkey
RINA • REGISTRO ITALIANO NAVALE