



Welding Procedure Qualification Certificate (EN ISO 15614-1)



Energy - Downstream, Power and Manufacturing

Manufacturer's Welding Procedure Qualification Record No.: 051009/04

Examining body Reference No:

Lloyd's Register Nederland BV / RET222273

Manufacturer: RVI Mosman BV
Address: Marssteden 32, 7547 TC Enschede
Welders Name: M.M.J. Tijans

Code/Testing Standard: EN15614-1
Date of Welding: 22 October 2009

Range of Qualification

Welding Process(es): 141/135
Type of joint and weld: BW,FW
Parent material group(s) and sub-group(s): 8.2 - 8
Parent Material Thickness (mm): 7,5 u/t 30,0
Weld Metal Thickness (mm): -
Throat Thickness (mm): no restriction
Single Run/Multi Run: Multi-run
Outside Pipe Diameter (mm): >150
Filler Material Designation: G 20 25 5 Cu L
Filler Material Make: -
Filler Material Size: 2,0/1,2
Designation of Shielding Gas/Flux: I1/M21
Designation of Backing Gas: F2
Type of Welding Current and Polarity: DC-/DC+
Mode of Metal Transfer: -
Heat Input: 1,0
Welding Positions: PA
Preheat Temperature: 10°C
Interpass Temperature: 150°C
Post-Heating: Allowed
Post-Weld Heat Treatment and/or Ageing: None

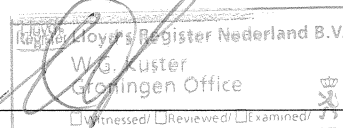
Other Information

Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code/testing standard indicated above.

Location: Haren/Groningen

Date of Issue: 13 November 2009

Surveyor



W.G. Kuster

Surveyor to Lloyd's Register Nederland B.V.

A member of the Lloyd's Register Group

Examining Body Lloyd's Register Nederland BV

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Details of Test Weld

Manufacturer's provisional Welding Procedure Specification Reference No. **051009/04**

Examining Body: **Lloyd's Register Nederland BV/RET222273**
Reference No:

Manufacturer's Welding Procedure Qualification Record No.: **051009/04**

Manufacturer: **RVI Mosman BV**

Date of Welding: **21 October 2009**

Location: **Marssteden 32, 7547 TC Enschede**

Welder's Name: **M.M.J. Tijans**

Method of Preparation and Cleaning: **Grinding / brushing**

Mode of Metal Transfer: **Manual/Puls**

Parent Material Specification: (attach material certificates)* **X1NiCrMoCu25-20-5**

Joint Type and Weld: **BW**

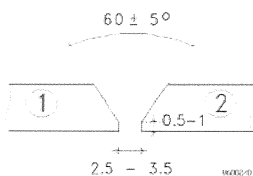
Parent Material Thickness (mm): **15,0**

Test Piece/Welding Position: **PA**

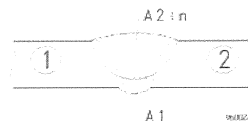
Outside Pipe Diameter (mm): **-**

Weld Preparation Details (Sketch)

Joint Design



Welding Sequences



Welding Details

Run	Process	Size of Filler Metal	Current A	Voltage V	Type current Polarity	Wire Feed m/min	Travel Speed cm/min	Heat Input kj/cm	Metal Transfer
1-2	141	2,0	75-85	14-16	DC-	-	0.8	1,0	
3-n	135	1,2	180-200	25-28	DC+	-	6.8	0.6	

Filler Material: **G 20 25 5 Cu L**

Type, Designation, Trade Name: **904L Avesta**

Any Special Baking or Drying: **n.a.**

Gas/Flux: Shielding **I1/M21**

Backing **F2**

Gas Flow Rate : Shielding **10l/min**

Backing **8l/min**

Tungsten Electrode – Type/Size: **2% Lantaan, 2,4 mm**

Details of Back Gouging/Backing: **Grinding**

Preheat Temperature: **10°C**

Interpass Temperature: **150°C**

Post-Heating: **none**

Manufacturer's Name **RVI Mosman BV**

Manufacturer's Signature

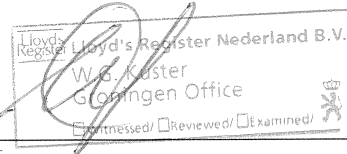
Other Information*:

Post-Weld Heat Treatment and/or Ageing **none**

Time, Temperature, Method: **-**

Heating and Cooling Rates* : **-**

Surveyor



W.G. Kuster
Surveyor to Lloyd's Register Nederland B.V.

A member of the Lloyd's Register Group
Lloyd's Register Nederland BV

Date: **13 November 2009**

Examining Body

* As required

Test Results

Manufacturer's Welding Procedure Qualification Record No.: **051009/04** Examining Body: **Lloyd's Register Nederland BV / RET22273**
 Reference No:
 Visual Examination: **acceptable** Radiography*: **acceptabel**
 Penetrant/Magnetic Particle Test*: **acceptable** Ultrasonic Examination*: **n.a.**
 Temperature: **ambient**
 Coloration Assessment **:

Tensile Tests*

Type/No	Re N/mm ²	Rm N/mm ²	A% on	Z%	Fracture Location	Remarks
Requirement		>520				
Results		675			Weld	Ductile
		672			Weld	Ductile

Bend Tests*

Type/No	Bend Angle	Former Diameter	Elongation*	Result
Side	180	4xt		acc
Side	180	4xt		acc
Side	180	4xt		acc
Side	180	4xt		acc

Macroscopic Examination: **One cross section examined and found free of unacceptable defects**
 Microscopic Examination: **n.a.**

Impact Tests* Type: **ISO-V** Size: **10x10** Requirement: **>60J**

Notch Location/Direction	Temp °C	Values (J)			Average (J)	Remarks
		1	2	3		
Weld	RT	192	172	184		
HAZ	RT	257	295	295		

Hardness Tests*

Type/Load:

Values - Parent Metal:
 - H.A.Z.:
 - Weld Metal:

Other Tests:

Remarks

Location of Measurements (Sketch)* see attached

Tests carried out in accordance with the requirements of:

EN15614-1

Laboratory Report Reference No:

Stork FDO MOO09-05441EN

Test Results were **acceptable**

Test carried out in the presence of:

Lloyd's Register Nederland BV



W.G. Kuster
 Surveyor to Lloyd's Register Nederland B.V.

A member of the Lloyd's Register Group

Examining Body **Lloyd's Register Nederland BV**

* As required
 ** 15614-5 only