



# Welding Procedure Qualification Certificate (EN ISO 15614-1)

Energy - Downstream, Power and Manufacturing



Manufacturer's Welding Procedure Qualification  
Record No.:

**pWPS No. Prototyp 1 Rev. A**

Examining body  
Reference No:

**LR EMEA Prague / PRA1300148**

Manufacturer: **C.V. PROTOTYP s.r.o.**  
Address: **U reky 694, 720 00 Ostrava-Hrabova, Czech Republic**  
Welders Name: **Mr. Augustin**  
Code/Testing Standard: **EN ISO 15614-1:2004+A1:2008+A2:2012**  
Date of Welding: **24 April 2013**

č. WPQR - PQR 1

č. certifikátu - PRA1300148/1

## Range of Qualification

The qualification is valid also for projects subject to LR's LAME Certification only (not for Classification projects).

Welding Process(es): **138 acc. to EN ISO 4063:2010**  
Type of joint and weld: **BW ss nb ml, ss mb ml, bs ml, FW ml**  
Parent material group(s) and sub-group(s): **3.1 + 3.1 acc. to CEN ISO/TR 15608:2005 (\*)**  
Parent Material Thickness (mm): **BW = 8 - 16, FW = 4 - 16**  
Weld Metal Thickness (mm): **BW = 8 - 16**  
Throat Thickness (mm): **No restriction**  
Single Run/Multi Run: **Multi Run**  
Outside Pipe Diameter (mm): **D >500 mm or D >150 mm welded in PC rotated position**  
Filler Material Designation: **STEIN-MEGAFIL 710 M/T46 6 MM1H5 (root) & STEIN-MEGAFIL 742 M/T69 4Mn2NiCrMo MM1H5 (fill)**  
Filler Material Make: **DRAHTZUG STEIN, wire & welding GmbH & Co KG, Altleiningen, Germany**  
Filler Material Size: **1,0 (root) & 1,2 (fill) (\*\*)**  
Designation of Shielding Gas/Flux: **ISO 14175 - M24 (\*\*\*)**  
Designation of Backing Gas: **n/a**  
Type of Welding Current and Polarity: **DC Positive**  
Mode of Metal Transfer: **ISO 4063-138-G/S**  
Heat Input: **acc. to Details of Test Weld +/- 25%**  
Welding Positions: **PC**  
Preheat Temperature: **min. 20°C**  
Interpass Temperature: **max. 118°C**  
Post-Heating: **n/a**  
Post-Weld Heat Treatment and/or Ageing: **n/a**

## Other Information

- (\*) Other materials acc. to EN ISO 15614-1, Art. 8.3.1.1, Tab. 3;
- (\*\*) Change of the filler material size is permitted acc. to EN ISO 15614-1, Art. 8.4.6;
- (\*\*\*) Change of the shielding gas is permitted acc. to EN ISO 15614-1, Art. 8.5.2.1;

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

Location: **Prague**

Date of Issue: **12 February 2014**

Surveyor

Lloyd's Register EMEA  
Prague Office  
Bohus Dvorak



BOHUS DVORAK

Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited

Examining Body **Lloyd's Register EMEA Prague**

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

**Details of Test Weld**

Manufacturer's provisional Welding Procedure Specification Reference No.

**pWPS No. Prototyp 1 Rev. A**

Examining Body:  
Reference No:

**LR EMEA Prague/PRA1300148**

Manufacturer's Welding Procedure Qualification Record No.:

**pWPS No. Prototyp 1 Rev. A**

Manufacturer: **C.V. PROTOTYP s.r.o.**

Date of Welding: **24 April 2013**

Location: **U reky 694, 720 00 Ostrava-Hrabova, Czech Republic**

Welder's Name: **Mr. Augustin**

Method of Preparation and Cleaning: **Flame cutting, Grinding, Brushing**

Mode of Metal Transfer: **ISO 4063-138-G/S**

Parent Material Specification: (attach material certificates)\* **S690QL (EN10025-6), Heat No. 22123**

Joint Type and Weld: **BW ss nb ml**

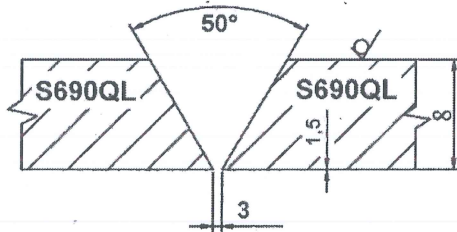
Parent Material Thickness (mm): **8**

Test Piece/Welding Position: **PC**

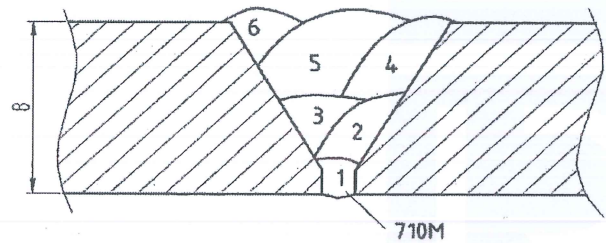
Outside Pipe Diameter (mm): **-**

**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 mm/min	Heat Input kJ/mm	Metal Transfer
1	138	1,0 mm	130	19,0	DC/+	-	134	1,11	-
2	138	1,2 mm	173	19,5	DC/+	-	298	0,68	-
3	138	1,2 mm	212	20,0	DC/+	-	326	0,78	-
4	138	1,2 mm	176	19,5	DC/+	-	288	0,71	-
5	138	1,2 mm	180	19,0	DC/+	-	382	0,54	-
6	138	1,2 mm	186	20,0	DC/+	-	414	0,54	-

Filler Material: **Metal cored wire without slag for Ar-CO2 mix.**

Type, Designation, Trade Name: **STEIN-MEGAFIL 710 M (root) & STEIN-MEGAFIL 742 M (fill), Trade name: Drahtzug Stein (\*\*)**

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

Other Information\*:

Gas/Flux: Shielding **ISO 14175 - M24 (\*\*\*)**

**(\*) Next - see Welding Procedure Qualification Record**

Backing **n/a**

**(\*\*) Lot no. of the filler metal: 051540 & 115214**

Gas Flow Rate : Shielding **16 - 18 litre/min**

**(\*\*\*) EN ISO 14175:2008;**

Backing **n/a**

Post-Weld Heat Treatment and/or Ageing -

Tungsten Electrode - Type/Size: **n/a**

Time, Temperature, Method: -

Details of Back Gouging/Backing: **n/a**

Heating and Cooling Rates\* : -

Preheat Temperature: **min. 20°C**

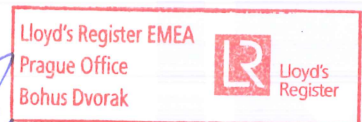
Interpass Temperature: **max. 118°C**

Post-Heating: **n/a**

Manufacturer's Name **C.V. PROTOTYP s.r.o.**

Surveyor

Manufacturer's Signature **Zdenek SERBOUSEK**



**BOHUS DVORAK**  
Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited  
**Lloyd's Register EMEA Prague**

Date: **12 February 2014**

Examining Body

\* As required



**Test Results**

Manufacturer's Welding Procedure Qualification Record No.:	<b>pWPS No. Prototyp 1 Rev. A</b>	Examining Body: Reference No:	<b>LR EMEA Prague / PRA1300148</b>
Visual Examination:	<b>acceptable</b>	Radiography*:	<b>n/a</b>
Penetrant/Magnetic Particle Test *:	<b>acceptable (report no. VTC.40/13/1746)</b>	Ultrasonic Examination*:	<b>acceptable (report no. VTC.40/13/1751)</b>
Coloration Assessment **:	<b>n/a</b>	Temperature:	<b>RT</b>

**Tensile Tests\***

Type/No	Re N/mm <sup>2</sup>	Rm N/mm <sup>2</sup>	A% on	Z%	Fracture Location	Remarks
Requirement	-	<b>min. 770</b>	-	-	-	-
Results	-	-	-	-	-	-
<b>Transverse / T1</b>	-	<b>845</b>	-	-	<b>HAZ</b>	<b>acceptable</b>
<b>Transverse / T2</b>	-	<b>820</b>	-	-	<b>HAZ</b>	<b>acceptable</b>

**Bend Tests\***

Type/No	Bend Angle	Former Diameter	Elongation*	Result
<b>Face / BT1</b>	<b>180°</b>	<b>49 mm</b>	<b>n/a</b>	<b>acceptable</b>
<b>Face / BT2</b>	<b>180°</b>	<b>49 mm</b>	<b>n/a</b>	<b>acceptable</b>
<b>Root / BT3</b>	<b>180°</b>	<b>49 mm</b>	<b>n/a</b>	<b>acceptable</b>
<b>Root / BT4</b>	<b>180°</b>	<b>49 mm</b>	<b>n/a</b>	<b>acceptable</b>

Macroscopic Examination: **acceptable (Test report no. P/2083-1c/13)**  
Microscopic Examination: -

Impact Tests* Type:	Charpy V-notch test specimens	Size:	5 x 10 x 55 mm (2mm V-notch)			Requirement:	min. 30 J (transverse full size specimen)
			Values (J)				
Notch Location/Direction	Temp °C	1	2	3	Average (J)	Remarks	
<b>VWT 0/2 / Weld metal</b>	<b>-20°C</b>	<b>32</b>	<b>31</b>	<b>37</b>	<b>33</b>	<b>acceptable</b>	
<b>VHT 0/2 / Transverse</b>	<b>-20°C</b>	<b>25</b>	<b>25</b>	<b>30</b>	<b>27</b>	<b>acceptable</b>	
<b>VHT 2/2 / Transverse</b>	<b>-20°C</b>	<b>52</b>	<b>56</b>	<b>65</b>	<b>58</b>	<b>acceptable</b>	
<b>VHT 5/2 / Transverse</b>	<b>-20°C</b>	<b>94</b>	<b>101</b>	<b>101</b>	<b>99</b>	<b>acceptable</b>	

**Hardness Tests\***

Type/Load:	<b>acceptable (max. 420 HV10)</b>	Other Tests:	<b>* see Test record no. 7096P13</b>
Values - Parent Metal:	<b>max. 279</b>	Remarks	
- H.A.Z.:	<b>max. 351</b>	<b>Results of mechanical tests conform to requirements of LR's LAME.</b>	
- Weld Metal:	<b>max. 314</b>		

Location of Measurements (Sketch)<sup>1\*</sup> see attached

Tests carried out in accordance with the requirements of:

**EN ISO 15614-1:2004+A1:2008+A2:2012;**

Laboratory Report Reference No:

**Test report no. 7096P13 (3 pages) & Test record no. P/2083-1c/13 (4 pages);**

Test Results were **acceptable**

Test carried out in the presence of:

**BOHUS DVORAK**

Surveyor



BOHUS DVORAK  
Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited

Examining Body **Lloyd's Register EMEA Prague**

\* As required  
\*\* 15614-5 only