

DOCUMENTATION COVER PAGE

VENDOR:	EXION ASIA PTE LTD
CUSTOMER:	JACOBS ENGINEERING SINGAPORE PTE LTD
OWNER / END USER:	HUNTSMAN (SINGAPORE) PTE LTD
PROJECT NO.:	1726
PROJECT TITLE:	APEX: RUSHMORE DEBOTTLENECK
PO NO.:	47221726-OO111082
PACKAGE:	DIAPHRAGM METERING PUMP
TAG NUMBER(S):	P-A-2A
VENDOR DOCUMENT NO.	440200419-028
JES CATEGORY CODE	M04
DOCUMENT TITLE:	B+L STANDARD WELD PROCEDURE SPECIFICATIONS

REV. NO.	DATE	BY
0	22 JUL 2015	JOLENE

JACOBS ENGINEERING SINGAPORE PTE LTD
VENDOR DOCUMENT STATUS DECAL

Document No: 47221726-OO111082A-M04-00001 Rev: 0

Tag No: _____ Route Sheet No: 0481

A
☐
Approved with comments, revise and resubmit; work may proceed subject to incorporation of comments

B
☐
Comments as Indicated, revised and resubmit; work may not proceed

C
☐
Review not required; work may proceed (for information only)

D
☒
Approved without comments

F
☐
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By: **REVIEWED**
By RJayager at 1:06 pm, Aug 20, 2015

Date: _____

Coversheet

Welding Procedure Specification (WPS)

Customer Huntsman (Singapore) PTE LTD

Customers P.O.

Project Name

Equipment Tag / Item no. P-A-2A

Manufacturer SPX Flow Technology Norderstedt GmbH
(Deutschland)

Brand BRAN+LUEBBE

Manufacturers Job no. 2018779.10

Manufacturers Serial no. 20000063

Equipment name NOVAPLEX N-080I-3D

00	for Information	UA	14.07.2015	UA	14.07.2015		
Rev	Description	Prepared	Date	Checked	Date	Approved	Date

WELDING-PROCEDURE

Materialgroup 10.1

**1.4462; X2CrNiMoN22-5-3
SA 790, UNS S31803**

RANGE DIAMETER: **>= 25 mm**

RANGE WALLTHICKNESS: **3 mm - 10 mm**

Issue Date : 2015 / REV.00

INHALTSVERZEICHNIS
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WELDING-PROCEDURE

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WELDING-DOCUMENTATION
WELDING PROCEDURE SPECIFICATION
WPS

WPS NO.: 003 ASME 1.4462 / Rev.01

MATERIAL: Materialgroup 10.1
1.4462; X2CrNiMoN22-5-3
SA 790, UNS S31803

RANGE DIAMETER: ≥ 25 mm

RANGE WALLTHICKNESS: 3 mm - 10 mm

SCHWEIßVERFAHRENSVORSCHRIFT WPS
WELDING PROCEDURE SPECIFICATION WPS

Company Name SPX Flow Technology Norderstedt GmbH	Specification / Rules ASME CODE SEC.IX, QW-200 EN ISO 15614-1 / PED 97/23/EC / AD 2000-HP 2/1
WPS- No.: 003 ASME 1.4462 / Rev.01	PQR No. (QW483): 8633Z058360-14609-04

Welding Process / Type: manual GTAW / 141	WPQR No. (EN ISO 15614-1): Z0583-VP003
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BASE METALS (QW-403)

Brand Name: EN 10086 1.4462 to 1.4462	Spec., type and grade SA-790 to SA-790	P-No. 10 H-1 to 10 H-1 10 to 10	Group No. similar to UNS 31803 1
Thickness of Testcoupon 5.0 mm	Diameter of Test Coupon Ø 48.3 mm		

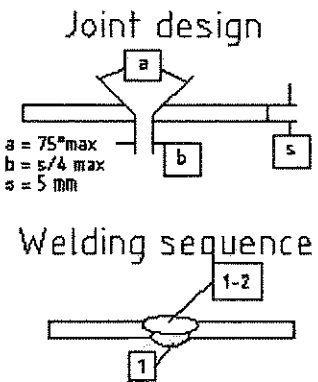
FILLERMETALS (QW 404)

Brand Name / Diameter Böhler CN 22/9 N-IG Ø2,0 mm ISO 14343-A -W 22 9 3 NL VdTÜV-Kennblatt 04484.04	AWS-No. (Class) ER 2209	Spec. No. (SFA) 5.9	F - No. 6	A - No. 8
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GAS (QW-408)

Brand Name Shielding: GA 260 / Argon 99.9 Backing: GA 236 / Fo Ga 90/10	Percent Composition Gases 99.99%, ISO 14175-I1-Ar 90%N ₂ /10%H ₂ ISO14175-N5-NH-10	Flow Rate (l/min.) 8-12 8-10
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WELDING CONDITIONS

Joint design 	Position (QW-405) 2G (PC); 5G (PH) Technique (QW-410) <table border="1"> <tr><td>Single pass</td><td><input type="checkbox"/></td></tr> <tr><td>Both sides in one pass</td><td><input type="checkbox"/></td></tr> <tr><td>Multipass</td><td><input checked="" type="checkbox"/></td></tr> <tr><td>String bead</td><td><input type="checkbox"/></td></tr> <tr><td>Backing</td><td><input type="checkbox"/></td></tr> <tr><td>permanent backing strip</td><td><input type="checkbox"/></td></tr> <tr><td>removable backing strip</td><td><input type="checkbox"/></td></tr> </table>	Single pass	<input type="checkbox"/>	Both sides in one pass	<input type="checkbox"/>	Multipass	<input checked="" type="checkbox"/>	String bead	<input type="checkbox"/>	Backing	<input type="checkbox"/>	permanent backing strip	<input type="checkbox"/>	removable backing strip	<input type="checkbox"/>
Single pass	<input type="checkbox"/>														
Both sides in one pass	<input type="checkbox"/>														
Multipass	<input checked="" type="checkbox"/>														
String bead	<input type="checkbox"/>														
Backing	<input type="checkbox"/>														
permanent backing strip	<input type="checkbox"/>														
removable backing strip	<input type="checkbox"/>														
	Initial and interpass cleaning (free of oil, rust and scale etc.) grinding and brushing														
	Notes None														

ELECTRICAL CHARACTERISTICS (QW-409)

Current Polarity DC negative	Weld Sequence Layer (s)	GTAW / 141 1. (Root)	GTAW / 141 2.	GTAW / 141 3.	Preheating (QW-406) N / A
Tungsten Electrode Type 2% thoriated Ø 2.4 mm	Amperage Range	98 - 105 A	116 - 154 A	N / A	Interpass Temp. ≤ 120
Notes None	Voltage Range	11 - 12 V	12 - 13 V	N / A	PHT (QW-407) N / A
	Travel Speed	0,7 - 0,85 mm/s	0,9 - 1,0 mm/s	N / A	Cooling Conditions N / A
	Electrode Wire Speed	N / A	N / A	N / A	Notes None
	Heat Input	0,8 - 1,1 kJ/mm	1,0 - 1,3 kJ/mm	N / A	

Date: 04.02.2014 TUV NORD Systems GmbH & Co. KG Enclosure No. 1 to Certificate	Sign SPX Flow Technology Norderstedt GmbH Werkstraße 4 D - 22844 Norderstedt Welding Coordinator	Sign Third party Steuck 28.02.2014 TUV NORD 0045 TUV NORD SYSTEMS
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07 202 1201 20 SEP 2/14/V/003

WELDING-DOCUMENTATION
PROCEDURE QUALIFICATION RECORD
PQR / WPQR

PQR NO.:	3037ST09630 - 30
WPQR NO.:	Z0583-VP003
MATERIAL:	Materialgroup 10.1 1.4462; X2CrNiMoN22-5-3 SA 790, UNS S31803
RANGE DIAMETER:	≥ 25 mm
RANGE WALLTHICKNESS:	3 mm - 10 mm



QW-483 PROCEDURE QUALIFICATION RECORD (PQR)
(See QW-201.2, Section IX, ASME Boiler and Pressure Vessel Code)
Record Actual Conditions Used to Weld Test Coupon

Company Name: Bran + Luebbe GmbH, 22844 Norderstedt

Procedure Qualification Record No.: 3037ST09630-30

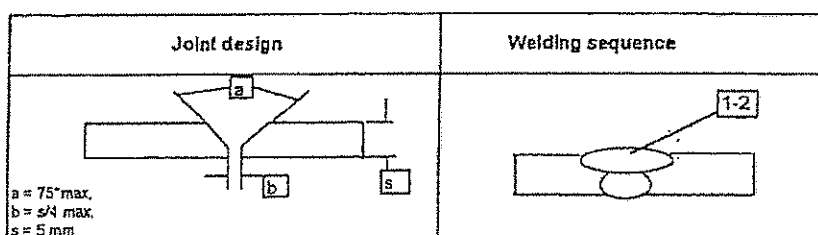
Date: 2003-08-12

WPS No: 003ASME (0162ST14300-3)

Welding Process: GTAW

Types (Manual, Automatic, Semi-Auto.): Manual

JOINTS (QW-402)



Groove Design of Test Coupon

(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used.)

BASE METAL (QW-403) Material Spec.: SA-790(1.4462) Type of Grade: similar to UNS S31803 P-No.: 10H-1 Thickness of Test Coupon: 5,0 mm Diameter of Test Coupon: 48,3 mm Other: N/A		POSTWELD HEAT TREATMENT (QW-407) Temperature: N/A Time: N/A Other: N/A	
FILLER METALS (QW-404) SFA Specification: 5.9 AWS Specification: ER2209 Filler Metal F-No.: 8 Weld Metal Analysis A-No.: 8 Size of Filler Metal: 2,0 mm Other: N/A Deposited Weld Metal: N/A		GAS (QS-408) <div> Gas Percent Composition (Mixture) Flow Rate </div> Shielding: Argon 99,99% 9,2 l/min. Trailing: N/A Backing: N ₂ 90 %/ H ₂ 10 % 9,0 l/min.	
POSITION (QW-405) Position of Groove: 2G(PC); 5G(PF) Weld Progression (Uphill, Downhill): N/A Uphill Other: N/A N/A		ELECTRICAL CHARACTERISTICS (QW-409) Current: DC Polarity: negative Amps.: 60-70A Tungsten Electrode Size: 2,4mm, 2 % thoriated Other: N/A	
PREHEAT (QW-406) Preheat Temp.: N/A Interpass Temp.: 100 – 120 °C Other: N/A		TECHNIQUE (QW-410) Travel Speed: Manual String or Weave Bead: string Oscillation: N/A Multipass or Single Pass (per Side): Single Pass Single or Multiple Electrodes: Single Other: N/A	

sl0963030

WPS-01-E-3.03



QW-483 (Back)

Page: 2 of 2

Tensile Test (QW-150)

PQR No.: 3037ST09630-30

Specimen No.:	Width	Thickness	Area	Ultimate Total Load lb	Ultimate Unit Stress PSI	Type of Failure & Location
AP9/Z1	0,472 in	0,173 in	0,082 in ²	9507,8	115949	HAZ
AP10/Z2	0,476 in	0,169 in	0,080 in ²	9281,9	116024	HAZ

Guided-Bend Tests (QW-160)

Type and Figure No.	Results
AP9 FFB/B1 face bend	180° no defects satisfactory
AP10 FFB/B2 face bend	180° no defects satisfactory
AP9 RBB/B3 root bend	180° no defects satisfactory
AP10 RBB/B4 root bend	180° no defects satisfactory

Toughness Tests (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp.	Impact Values	Lateral Exp.		Drop Weight	
					% Shear	Mils	Break	No Break

Fillet-Weld Test (QW-180)

Result - Satisfactory:
Macro - Results:Yes: ☐No: ☐

Penetration into Parent Metals:

Yes: ☐No: ☐

Other Tests

Type of Test: Macro examination
Deposit Analysis: NA
Other: a) Radiographic Test
b) Liquid Penetrant TestResult: without remarks
Result: without remarks
Result: without remarksWelder's Name: Reinhard Weißert
Test conducted by: TÜV Nord e.V.Clock No.: RW Stamp No.: RW
Laboratory Test No.: 3037ST09630-C

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Date: 12 August 2003

s10963030a

Organisation: TÜV Nord e.V., 22525 Hamburg
W. SchöningSachverständigen
des Technischen Überwachungs-
Vereins Nord e.V.

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code.)



QW-483 (Back)

Page: 2 of 2

Tensile Test (QW-150)

PQR No.: 3037ST09630-30

Specimen No.:	Width	Thickness	Area	Ultimate Total Load	Ultimate Unit Stress	Type of Failure & Location
AP9/Z1	12,0 mm	4,4 mm	52,8 mm ²	42,293 KN	801 N/mm ²	HAZ
AP10/Z2	12,1 mm	4,3 mm	52,0 mm ²	41,288 KN	794 N/mm ²	HAZ

Guided-Bend Tests (QW-160)

Type and Figure No.	Results
AP9 FFB/B1 face bend	180° no defects satisfactory
AP10 FFB/B2 face bend	180° no defects satisfactory
AP9 RBB/B3 root bend	180° no defects satisfactory
AP10 RBB/B4 root bend	180° no defects satisfactory

Toughness Tests (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp.	Impact Values	Lateral Exp.		Drop Weight	
					% Shear	Mlis	Break	No Break

Fillet-Weld Test (QW-180)

Result - Satisfactory: Yes: ☐ No: ☐ Penetration into Parent Metals: Yes: ☐ No: ☐
Macro - Results:

Other Tests

Type of Test: Macro examination Result: without remarks
Deposit Analysis: NA
Other: a) Radiographic Test Result: without remarks
b) Liquid Penetrant Test Result: without remarks

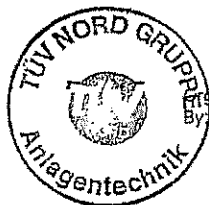
Welder's Name: Reinhard Weißert
Test conducted by: TÜV Nord e.V.

Clock No.: RW Stamp No.: RW
Laboratory Test No.: 3037ST09630-C

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Date: 12 August 2003

st0963030a



Organisation: TÜV Nord e.V., 22525 Hamburg
By: W. Schöning

Technischer Leiter
des Technischen Überwachungs-
Verbands Nord e.V.

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code.)

QUALIFICATION OF A WELDING PROCEDURE (WPQR) **CERTIFICATE 07 202 1201Z0045/15/V003**

Insp. Authority: TÜV NORD Systems GmbH & Co. KG

WPS No.: 003 ASME 1.4571 / Rev.01

File No.: 1201Z058315-003

Manufacturer: SPX Flow Technology
Norderstedt GmbH

WPQR-No.: Z0583-V003

Revision: 0

Address: Werkstraße 4, D-22844 Norderstedt

Requirements: PED 97/23/EC / AD 2000 - HP 2/1 / DIN EN ISO 15614-1

RANGE OF APPROVAL	DIN EN ISO 15614-1	AD 2000 – HP 2/1
Welding Process:	EN ISO 4063 – 141 (GTAW)	EN ISO 4063 – 141 (GTAW)
Weld type/execution*:	P, T, BW, ss, nb, and FW (sl)	P, T, BW, ss, nb, and FW (sl)
Groove shape:	Type of joint, acc. to DIN EN ISO 9692-1	Type of joint, acc. to DIN EN ISO 9692-1
Parent Material / Group	X2CrNiMoN22-5-3 (1.4462), CR ISO/TR 15608, group 10.1	X2CrNiMoN22-5-3 (1.4462), AD 2000-W2, AD 2000-HP0, group 8
Parent Material Thickness:	(5,0 mm) t = 3,0 to 10 mm	t = 3,0 to 10 mm
Pipe Outside Diameter:	(48,3 mm) D ≥ 25,0 mm	D ≥ 25,0 mm
Filler Material Type/ Designation:	ISO 14343-A-W 22 9 3 NL	Suitability tested according to VdTÜV 1153
Gas/ flux	ISO 14175-I1-Ar / -N5-NH-10	ISO 14175-I1-Ar / -N5-NH-10
Type of Welding Current:	DC/-	DC/-
Heat Input:	(see WPS)	(see WPS)
Welding Positions:	PA, PB, PC, PD, PE, PF, PH and H-L045	PF, PH and PC
Preheat Temperature:	(acc. to the respective WPS)	(acc. to the respective WPS)
Interpass Temperature:	≤ 120°C, (acc. to the respective WPS)	≤ 120°C, (acc. to the respective WPS)
Post-Weld Heat-Treatment:	without	without
REMARKS:	This certification (WPQR) is based on: 1. WPQR acc. to TÜV-File-No. 1201Z058314-003, dated 2014-03-20 2. Las production test acc. to TÜV-No. 1201Z058315-002, dated 2015-04-24	
TEMPERATURE LIMITATION:	Impact test has not been conducted. Temperature restrictions according to the used parent and filler metal (see AD 2000 Mbl. W and VdTÜV-datasheet of welding consumables) have to be considered, but maximal +250°C	
SCOPE EXTENSION/ LIMITATION:	Parent and filler material has to be in accordance to European Standards - filler material acc. to EN 13479, if so AD 2000 and acc. VdTÜV Mbl. 1153	
SPECIAL ADVICE FOR MANUFACTURING	See instructions of EN 1011 „Recommendations for welding of metallic materials“, Part 1 “General guidance for arc welding” and Part 3 “Arc welding of stainless steels”	
EVIDENCE FOR QUALITY ASSURANCE	For low temperature applications, testing of toughness has to be conducted additional by procedure qualification test and / or production test.	
Note: Supplementary testing and repetition of procedure test are specified in AD 2000-Merkblatt HP 2/1 chapter 8. If the specified conditions are altered to any appreciable extent, a supplementary test is required. The supplementary test can be performed as a production test. In the event of the production of pressure vessels or pressure vessel components being discontinued for a period of excess of one year, procedure testing shall be repeated. It is temporal limited until: March 2016		

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

Hamburg, 24.04.2015



J. Nuß

Enclosure: 1. WPS No. 002 ASME 1.4571 / Rev.01

Notified body for Pressure Vessels
of TÜV NORD Systems GmbH & Co. KG
Identification No. 0045

*Abbreviations see back page

Deutsch

- 1 QUALIFIZIERUNG EINES SCHWEISSVERFAHRENS
- 2 Zertifikat-Nr.
- 3 Hersteller - Schweißanweisung: Prüfstelle
- 4 WPS-Nr.: WPQR-Nr.: Revision:
- 5 Hersteller: Akte-Nr.:
- 6 Anschrift:
- 7 Vorschrift/ Prüfnorm:
- 8 GELTUNGSBEREICH:
- 9 Schweißprozess:
- 10 Nahtart / Ausführung:
- 11 Fugenform:
- 12 Werkstoff / Gruppe:
- 13 Grundwerkstoffdicke:
- 14 Rohraußendurchmesser:
- 15 Zusatzwerkstoff:
- 16 Schutzgas / Pulver:
- 17 Stromart:
- 18 Wärmeeinbringung:
- 19 Schweißpositionen:
- 20 Vorwärmtemperatur:
- 21 Zwischenlagentemperatur:
- 22 Wärmenachbehandlung:
- 23 ERWEITERUNG / ABGRENZUNG:
- 24 Temperaturbegrenzung:
- 25 BESONDERE HINWEISE FÜR DIE FERTIGUNG
- 26 NACHWEISE ZUR QUALITÄTSSICHERUNG
- 27 Hinweis:
- 28 Hiermit wird bestätigt, dass die Prüfungsschweißungen in Übereinstimmung mit den Anforderungen der vorbezeichneten Vorschriften bzw. Prüfnormen zufriedenstellend vorbereitet, geschweißt und geprüft wurden.
- 29 Ort
- Datum der Ausstellung
- Name und Unterschrift
- 30 Prüfstelle
- 31 Anlagen
- 32 Abkürzungen:
T: Rohr
P: Blech
BW: Stumpfnah
FW: Kehlnah
T/P: Stutzennah
ss: einseitig
bs: beidseitig
nb: ohne Badsicherung
mb: mit Badsicherung
gg: Ausfugen oder Ausschleifen
ng: ohne Ausfugen oder Ausschleifen
sl: einlagig
ml: mehrlagig

English

- 1 QUALIFICATION OF A WELDING PROCEDURE
- 2 Certificate No.:
- 3 Manufacturer's Welding Procedure Inspecting Authority
- 4 WPS No.: WPAR No.: Revision:
- 5 Manufacturer: File No.:
- 6 Address:
- 7 Code / Testing Standard:
- 8 RANGE OF APPROVAL
- 9 Welding Process:
- 10 Weld type / execution of weld
- 11 Groove shape
- 12 Parent metal / group
- 13 Parent Metal thickness:
- 14 Pipe Outside Diameter:
- 15 Filler Metal Type Designation:
- 16 Gas/ flux
- 17 Type of Welding Current:
- 18 Heat input:
- 19 Welding Positions:
- 20 Preheat temperature:
- 21 Interpass temperature:
- 22 Post Weld Heat Treatment:
- 23 SCOPE EXTENSION / LIMITATION:
- 24 Temperature limitation:
- 25 SPECIAL ADVICE FOR MANUFACTURING
- 26 EVIDENCE FOR QUALITY ASSURANCE
- 27 Note:
- 28 Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code / testing standard indicated above.
- 29 Location
- Date of Issue
- Name and Signature
- 30 Inspecting Authority
- 31 Enclosure
- 32 Abbreviations:
T: Pipe
P: Plate
BW: Butt weld
FW: Fillet weld
T/P: Nozzle weld
ss: single side
bs: both side
nb: without backing
mb: with backing
gg: gauging or grinding
ng: without gauging or grinding
sl: single layer
ml: multi layer

Français

- 1 QUALIFICATION DE UN MODE OPERATOIRE DE SOUDAGE
- 2 Certificat no.
- 3 Descriptif d' un mode operatoire de soudage Organisme de controle
- 4 DOMS N° PV QMOS N° Révision :
- 5 Fabricateur: Dossier N°
- 6 Adresse:
- 7 Code / Norme d' essai:
- 8 DOMAINE DE VALIDITE
- 9 Procédé de soudage
- 10 Type de joint / exécution:
- 11 Face:
- 12 Matériel / groupe:
- 13 Épaisseur du matériel:
- 14 Diamètre extérieur:
- 15 Caractéristiques du métal d'apport:
- 16 Gaz / Flux:
- 17 Nature de courant de soudage:
- 18 Apport de chaleur
- 19 Positions de soudage:
- 20 Préchauffage température:
- 21 Température entre passes:
- 22 Traitement thermique après soudage:
- 23 EXTENSION / LIMITATION
- 24 Température limitation:
- 25 INDICATION POUR FABRICATION
- 26 PREUVE DE QUALTEE ASSURANCE
- 27 Note:
- 28 Nous certifions que les essais de soudage ont été préparés, soudés et contrôlés avec succès, conformément aux exigences du code ou de la norme d'essai ci. dessus mentionné (e).
- 29 Lieu
- Date d'émission
- Nom et signature
- 30 Organisme de Contrôle
- 31 Annexes
- 32 Abréviation:
T: Tuyau
P: Tôle
BW: Soudure bout a bout
FW: Soudure d' angle
T/P: Soudure de raccord
ss: seul cote
bs: Double cote
nb: sans support
mb: avec support
gg: avec affiler
ng: sans affiler
sl: soudage monopasse
ml: soudage multilayer

DOCUMENTATION COVER PAGE

VENDOR:	EXION ASIA PTE LTD
CUSTOMER:	JACOBS ENGINEERING SINGAPORE PTE LTD
OWNER / END USER:	HUNTSMAN (SINGAPORE) PTE LTD
PROJECT NO.:	1726
PROJECT TITLE:	APEX: RUSHMORE DEBOTTLENECK
PO NO.:	47221726-OO111082
PACKAGE:	DIAPHRAGM METERING PUMP
TAG NUMBER(S):	P-A-2A
VENDOR DOCUMENT NO.	440200419-040
JES CATEGORY CODE	Q09
DOCUMENT TITLE:	WELDERS QUALIFICATION

REV. NO.	DATE	BY
0	22 JUL 2015	JOLENE

Coversheet

Welder Qualification (WQ)

Customer Huntsman (Singapore) PTE LTD

Customers P.O.

Project Name

Equipment Tag / Item no. P-A-2A

Manufacturer SPX Flow Technology Norderstedt GmbH
(Deutschland)

Brand BRAN+LUEBBE

Manufacturers Job no. 2018779.10

Manufacturers Serial no. 20000063

Equipment name NOVAPLEX N-080I-3D

00	for Information	UA	14.07.2015	UA	14.07.2015		
Rev	Description	Prepared	Date	Checked	Date	Approved	Date

WELDER QUALIFICATION**Materialgroup 10**

RANGE DIAMETER: $\geq 25 \text{ mm}$

RANGE WALLTHICKNESS: $3 \text{ mm} - 10 \text{ mm}$

CERTIFICATE 07 202 1201Z0045/15/S/003



Designation **Welder qualification ISO 9606-1 141 T BW FM5 S s5,0 D48,3 PH/PC ss nb**

Examining body : Prüflaboratorium für Druckgeräte
TÜV NORD Systems GmbH & Co. KG

Reference No. : 1201Z058315-S003

WPS-Reference : 003 ASME 1.4462 / Rev.01

Welder's Name: : Weißert., Reinhard (RW)

Identification : 0437093417

Method of Identification : Identity Card

Date and place of birth : 19.03.1954, Neuenkirchen

Employer : SPX Flow Technology Norderstedt GmbH

Code/testing standard : 97/93/EG, AD 2000-HP3 / DIN EN ISO 9606-1

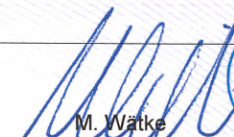

Remarks : Die Schweißerprüfung wurde im Rahmen einer Arbeitsprüfung mit dem Aktenzeichen 1201Z058315-A002 geschweißt

Job knowledge : bestanden

	Weld test details	Range of qualification
Welding process	141	141, 142, 143, 145
Transfer mode		
Product type (Plate or pipe)	T	P, T
Joint type	BW	BW
Parent material group(s)	8.1	1 - 11
Filler material group(s)	FM5	FM5
Filler material	(W 22 9 3 N L)	S, M
Gas / flux	ISO 14175 -I1-Ar	-----
Auxiliaries	ISO 14175 -N5-NH-10	-----
Type of current and polarity	DC (-)	-----
Material thickness		
Deposited thickness	5	3 - 10
Outside pipe diameter (mm)	48,3	>= 25
Welding position(s)	PH/PC	PA, PC, PE, PF, H-L045
Weld details	ss nb	ss nb, ss mb, bs, ss gb, ss fb
Single layer/multi layer		

Additional information: keine

Type of test	Performed and accepted	Not tested
Visual testing	X	
Radiography testing	X	
Fracture test		X
Bend test	X	
Notched specimen		X
Macroscopic examination		X
Additional tests*		X


M. Wätke


Die Zertifizierungsstelle für Druckgeräte
der TÜV NORD SYSTEMS GmbH & Co. KG
notifiziert unter 0045

Place, Date: Norderstedt, 04.02.2015

Revalidation acc.: Date of welding: 04.02.2015

Validity of approval 03.02.2018

9.3a

Revalidation for qualification by examiner or examining body for the following 2 years (refer to 9.3.b)

Confirmation of the validity by welding coordinator for the following 6 month (refer to 9.2)

Date	Signature	Position or title

Date	Signature	Position or title

QW-484 Record of Welder or Welding Operator Qualification Tests (See QW-301)

Welder's Name: Reinhard Weißert Clock Number: Stamp No.: RW
Welding process used: GTAW Type: Manual
Identification of WPS followed by welder during welding of test coupon: 003 ASME
Base Material welded: SA-790 Thickness: 5,0

Manual or Semiautomatic Variables for Each Process (QW-350)

	Actual Values	Range Qualified
Backing (metal, weld metal, welded from both sides, flux, etc.)(QW-402)	without	with an without
ASME P-No.: 10H-1 to ASME P-No. 10H-1 (QW-403)	10H-1	10H-1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe (enter diameter, if pipe)	48,3 mm	≥ 25,4 mm
Filler metal specification (SFA): 5.9 Classification (QW-404)	5.9	5.9
Filler metal F-No.: 6	6	6
Consumable insert for GTWA or PAW:	N/A	N/A
Weld deposit thickness for each welding process:	5,0 mm	≤ 10,0 mm
Welding position (1G, 5G, etc.) (QW-405)	2G / 5G	F,H / F,V,O
Progression (uphill/downhill):	N/A	N/A
Backing gas for GTAW, PAW or GMAW; fuel gas for OFW (QW-408):	90%N ₂ / 10%H ₂	with
GMAW transfer mode (QW-409):	N/A	N/A
GTAW welding current type/polarity: DC/-	DC/-	DC/-

Machine Welding Variables for the Process Used (QW-360)

	Actual Values	Range Qualified
Direct/remote visual control:	---	---
Automatic voltage control (GTAW):	---	---
Automatic joint tracking:	---	---
Welding position (1G, 5G, etc.):	---	---
Consumable insert:	---	---
Backing (metal, weld metal, welded from both sides, flux, etc.):	---	---

Guided Band Test Results

Guided Band Test Type	QW-462.2 (Side) Results	QW-462.3(a) (Trans. R & F) Type	QW-462.3(b) (Long. R & F) Results

Radiographic test results (QW-304 and QW-305) satisfactory

(For alternative qualification of groove welds by radiography) (see record no. 8633Z058360, enclosure AP9-12, dated 2006-01-27)

Fillet Weld Fracture Test satisfactory N/A Length and percent of defects without in.

Marco test fusion N/A Fillet leg size in. x in. Concavity in.

Welding test conducted by TÜV NORD Systems GmbH & Co. KG Name: A. Sülau

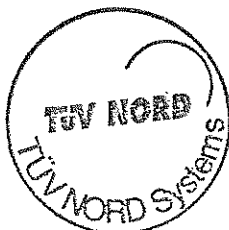
Mechanical test conducted by TÜV NORD Systems GmbH & Co. KG Laboratory test no. 8633Z058360 / AP9-12

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Date: 2006-02-14

Organisation: TÜV NORD Systems GmbH & Co. KG

by: Reinhard Steuck



R. Steuck

CERTIFICATE 07 202 1201Z0583/14/S/003



Designation **Welder qualification EN 287-1 141 T BW 10.1 S t5 D48,3 PC/PH ss nb**

Examining : Prüflaboratorium für Druckgeräte
TÜV NORD Systems GmbH & Co. KG

WPS-Reference : 003 ASME 1.4462 / Rev.01 Reference No. : 1201Z058314-S003

Welder's Name : **Kaven, Dennis (DK)**

Identification : 121840231

Method of Identification : Identity Card

Date and place of birth : 19.05.1966, Itzehoe

Employer : Bran + Luebbe GmbH, 22844 - Norderstedt

Code / Testing Standard : 97/23/EG, AD 2000-HP 3, EN 287-1

Remarks : Welded as a mock up, see test-report-No. 140222.

Job knowledge : acceptable

	Weld test details	Range of qualification
Welding process	141	141, 142, 143, 145
Product type (Plate or pipe)	T	T, P
Joint type	BW	BW
Material group(s)	1.4462 (10.1) (X2CrNiMoN22-5-3)	8, 9.2, 9.3, 10
Welding consumable(s)	S	root: S; rest: S, M, nm
Gas / flux	ISO 14175 -I1-Ar	-----
Auxiliaries	ISO 14175 -N5-NH-10	-----
Material thickness (mm)	5	3 - 10
Outside pipe diameter (mm)	48,3	>= 25
Welding positions	PC/PH	PA, PC, PE, PF, PH
Weld details	ss nb	ss nb, ss mb, bs

Additional information: According to AD 2000-HP3 in Clause 3.1.2(2): The Groups 9.2 and 9.3 are included only, if welding fillers of the Groups 8 or 10 are used.

Type of test	Performed and accepted	Not required
Visual testing	X	
Radiography testing	X	
Macroscopic examination	X	
Fracture test		X
Bend test	X	
Notched specimen		X

Date of issue : 04.02.2014

Place : Hamburg

Validity of approval until : 03.02.2016

M. Wälke



Die Zertifizierungsstelle für Druckgeräte
der TÜV NORD SYSTEMS GmbH & Co. KG
Kennnummer 0045

PROLONGATION OF QUALIFICATION FOR THE FOLLOWING 2 YEARS
BY TÜV CERTIFICATION BODY (refer 9.3)

PROLONGATION FOR APPROVAL BY EMPLOYER/COORDINATOR
FOR THE FOLLOWING 6 MONTHS (refer 9.2)

Date	Signature	Position or title	Date of	Signature	Position or title
			4.8.2014	<i>[Signature]</i>	Insp. Supervisor
			5.2.2015	<i>[Signature]</i>	- " -

RIFF Weld4TNS Version 12.0.8.7

NS 90 135 00 E rev 4_B

Übersetzung des vorgedruckten
Formblatt-Textes auf der Rückseite

Translation of printed text
on the reverse side

Traduction des rubriques imprimées
au verso

QW-484 Record of Welder or Welding Operator Qualification Tests (See QW-301)

Welder's Name: Dennis Kaven Clock Number: Stamp No.: DK
Welding process used: GTAW Type: Manual
Identification of WPS followed by welder during welding of test coupon: 003 ASME
Base Material welded: SA-790 Thickness: 5,0

Manual or Semiautomatic Variables for Each Process (QW-350)	Actual Values	Range Qualified
Backing (metal, weld metal, welded from both sides, flux, etc.)(QW-402)	without	with an without
ASME P-No.: 10H-1 to ASME P-No. 10H-1 (QW-403)	10H-1	10H-1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe (enter diameter, if pipe)	48,3 mm	≥ 25,4 mm
Filler metal specification (SFA): 5.9 Classification (QW-404)	5.9	5.9
Filler metal F-No.: 6	6	6
Consumable insert for GTWA or PAW:	N/A	N/A
Weld deposit thickness for each welding process:	5,0 mm	≤ 10,0 mm
Welding position (1G, 5G, etc.) (QW-405)	2G / 5G	F,H / F,V,O
Progression (uphill/downhill):	N/A	N/A
Backing gas for GTAW, PAW or GMAW; fuel gas for OFW (QW-408):	90%N ₂ / 10%H ₂	with
GMAW transfer mode (QW-409):	N/A	N/A
GTAW welding current type/polarity: DC/-	DC/-	DC/-

Machine Welding Variables for the Process Used (QW-360)	Actual Values	Range Qualified
Direct/remote visual control:	---	---
Automatic voltage control (GTAW):	---	---
Automatic joint tracking:	---	---
Welding position (1G, 5G, etc.):	---	---
Consumable insert:	---	---
Backing (metal, weld metal, welded from both sides, flux, etc.):	---	---

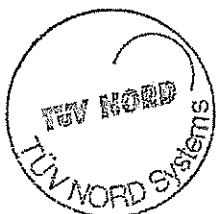
Guided Band Test Results

Guided Band Test Type	QW-462.2 (Side) Results	QW-462.3(a) (Trans. R & F) Type	QW-462.3(b) (Long. R & F) Results

Radiographic test results (QW-304 and QW-305) satisfactory
(For alternative qualification of groove welds by radiography) (see record no. 1201Z058380-16735-03, dated 2008-03-04)
Fillet Weld Fracture Test satisfactory N/A Length and percent of defects without in.
Marco test fusion N/A Fillet leg size in. x in. Concavity in.
Welding test conducted by TÜV NORD Systems GmbH & Co. KG Name: A. Sülau
Mechanical test conducted by TÜV NORD Systems GmbH & Co. KG Laboratory test no. 1201Z058380-16735-03

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Date: 2008-03-11 Organisation: TÜV NORD Systems GmbH & Co. KG
by: Reinhard Steuck




D	DK	F	FIN
1 SCHWEISER-PRÜFUNGS-BESCHEINIGUNG	1 SYVJSEERCERTIFIKAT	1 CERTIFICAT DE QUALIFICATION DE SOUDEUR	1 HITSAAJAN PÄTEVYYSTODISTUS
2 Bezeichnung	2 Besegnelse	2 Désignation	2 Kokeen merkintä
3 Prüfstelle	3 Inspektionsfirma	3 Organisme de contrôle	3 Tarkastuslaitos
4 Hersteller-Schweißanweisung	4 Fremdstillerens Svejsesprocedure	4 Mode opératoire de soudage du constructeur	4 Valmistajan hitsausohje
5 Beleg-Nr. (falls verfügbar)	5 Journal nr. (om muligt)	5 No. de référence (si applicable)	5 Viite no. (tarvittaessa)
6 Name des Schweisers	6 Svejserens navn	6 Nom du soudeur	6 Hitsajan nimi
7 Legitimation / Fotografie	7 Legitimation / Foto	7 Identification / Photographie	7 Tunnistamistapa
8 Art der Legitimation	8 Legitimationens art	8 Méthode d'identification	8 Syntymäaika ja -paikka / (tarvittaessa)
9 Geburtsdatum und -ort (falls nötig)	9 Fødselsdato og -sted / om nødvendigt	9 Date et lieu de naissance / (si demandé)	10 Työntähtä
10 Beschäftigt bei	10 Beskæftiget hos	10 Employeur	11 Säännös / Testausstandardi
11 Vorschritt / Prüfnorm	11 Standard / norm	11 Code / Norm d'essai	12 Huomautus
12 Bemerkung	12 Bemærkning	12 Remarque	13 Tietopuolinen koe
13 Fachkundeprüfung	13 Jørkundskab	13 Vérification des connaissances	14 Hiltäuskokeen yksityiskohdat / Pätevyyssalve
14 Prüfdaten-Angaben / Geltungsbereich	14 Variable anvendt ved prøven / Godkendelsesområde	14 Éléments d'essai / Domaine de validité	15 Hiltäusprosessi (t)
15 Schweißprozess(e)	15 Svejsemetode(r)	15 Procédé(s) de soudage	16 Levy tai putki
16 Blech oder Rohr	16 Plade eller rør	16 Tôle ou tube	17 Liitosmuoto
17 Nahtart	17 Semitype	17 Type de joint	18 Perusaineryhmä (t)
18 Werkstoffgruppe(n)	18 Grundmateriale(r) (Materialegruppe)	18 Groupe du métal de base	19 Lisäaine / Tunniste
19 Zusatz / Bezeichnung	19 Tilførselsmateriale / klassifikation	19 Type du métal d'apport	20 Suojakaasu / Jauhe
20 Schutzgas / Pulver	20 Beskyttelsesgas / Pulver	20 Gaz de protection / Poudre de soudage	21 Apuainest
21 Hilfsstoffe	21 Andet (Hjælpe)midler	21 Auxiliaires de soudage	22 Alueenpaksuus (mm)
22 Werkstoffdicke (mm)	22 Godstykkelte (mm)	22 Epaisseur du matériau (mm)	23 Pulten ulkonalkausia (mm)
23 Rohraußendurchmesser (mm)	22 Rørets udvendige diameter (mm)	22 Diamètre extérieur du tube (mm)	24 Hitsausasento (-asennot)
24 Schweißposition(en)	24 Svejsestilling(er)	24 Position(s) de soudage	25 Juuren avaus / Juurtulvi
25 Ausfügen / Badsicherung	25 Opflugning / Bocking	25 Gougeage / Peprise envers	26 Lisäohjeet hitsausohjeesta nro
26 Zusätzliche Hinweise siehe Schweißanweisung Nr.	26 Yderligere oplysninger i WPS Nr.	26 Des informations supplémentaires sont données sur la spécification de soudage No.	27 Tähty / Päivämäärä
27 Ausgibt / Tag der Ausgabe	27 Udgift / År / dato	27 Délivrance / Dats d'émission	28 Testausmenetelmä / ja / ei / paikka
28 Art der Prüfung / und / nicht / Ort	28 Prøvnings metode / og / ikke / sted	28 Type d'essai / et / Non / Lieu	29 Hyväksyty / vaadittu / Hyväksynnän voimassaoloaika
29 bestanden / verlangt / Gültigkeit der Prüfung	29 Bestået / krævet / Gyldigt til (dato)	29 acceptable / requis / Certificat valable jusqu'au	30 Simmääräinen tarkastus
30 Sichtprüfung	30 Visuel kontrol	30 Visuel	31 Radiografia
31 Durchstrahlungsprüfung	31 Radiografisk prøvning	31 Radiographie	32 Pintasarjätarkastus
32 Oberflächenprüfung	32 Magnetpulver / penetrant prøvning	32 Contrôle non-destructif des fissures de surface	33 Mikro- / Mikrobie
33 Makro- / Mikroschliff	33 Makro- / Mikrosnit	33 Macro- / Microscopie	34 Murtokoe
34 Bruchprüfung	34 Brudprøve	34 Texture	35 Toivutusko / TÜV Nord GmbH
35 Biegeprüfung / Sachverständiger des Zusatzprüfungen / TÜV Nord GmbH	35 Bøjeprove / Eksaminator	35 Pliage / commissaire-expert de	36 Lisäkoee / Tarkastaja
36 falls notwendig, Angaben auf Zusatzblatt	36 Andre prøver / TÜV Nord GmbH	36 Aides / TÜV Nord GmbH	37 Tarvittaessa badi lisäohjeella
38 Bestätigung des regelmäßigen Einsatzes durch	37 *) om nødvendig, yderligere oplysninger se bilag	38 Attestation de travail régulier	38 Työntähtajan / -valvojan entäman
39 Arbeitgeber oder Aufsichtsperson	38 Bekræftelse af svejserens kontinuerede arbejde indenfor certifikatets gyldighedsområde	39 par l'employeur ou agent de surveillance	39 Voimassaolon jatkaminen
40 Datum / Unterschrift / Dienststellung oder Titel	39 Arbejdsgeber eller Svejseinsyn	40 Date / Signature / Position ou titre	40 Päiväys / Aikakirjoitus / Asema tai arvo
41 Verlängerung der Gültigkeitsdauer	40 Dato / Underskrift / Stilling eller titel	41 Prolongation de validité	41 Tarkastuslaitoksen antaman
42 der Bescheinigung durch Prüfstelle	41 Fortlængelse af certifikatets gyldighed	42 par l'organisme de contrôle	42 Voimassaolon jatkaminen
43 Datum / Unterschrift / Dienststellung oder Titel	42 af eksaminator eller Inspektionsfirma	43 Date / Signature / Position ou titre	43 Päiväys / Aikakirjoitus / Asema tai arvo
43	43 Dato / Underskrift / Stilling eller titel		

GB	PL	RUS	S
1 WELDER APPROVAL TEST CERTIFICATE	1 świadectwo spawacza	1 Удостоверение сварщика	1 INTYG ÖVER SVETSARPRÖVNING
2 Designation	2 Nazwa	2 Обозначение	2 Beteckning
3 Inspecting Authority	3 Jednostka nadzorująca	3 Инспекционный лаборатория	3 Granskare eller provningsorganisation
4 Manufacturer's Welding Procedure Specification (WPS)	4 Znak spawacza / Numer kontrolny	4 Инструкцию по сварке сварочного	4 Tillverkarens sveitsatablad (WPS)
5 Reference No.	5 Numer poświadczania (jeżeli istnieje)	5 Инструкцию сварочного аппарата	5 Referensnummer (om tillämpligt)
6 Welder's Name	6 Nazwisko spawacza	6 Ф.И.О. сварщика	6 Svetsarens namn
7 Identification / Photograph	7 świadectwo spawacza / Fotografia	7 Удостоверение сварщика / фотография	7 Identifiering / Fotografi
8 Method of identification	8 Rodzaj świadectwa / (jeżeli wymagane)	8 Вид удостоверения сварщика	8 Metod för identifiering
9 Date and place of birth (if required)	9 Data i miejsce urodzenia	9 Дата и место рождения	9 Födelsedatum och -ort / (om så begärs)
10 Employer	10 Zatrudniłony w	10 Место работы	10 Arbetsgivare
11 Code / Testing standard	11 Przepisy / Normy / jeżeli wymagane	11 Метод / стандарт испытания	11 Produktstandard / Provningstandard
12 Remark	12 Uwagi	12 Замечания	12 Anmärkning
13 Job knowledge	13 Eggrinn kvalifikacyjn	13 Знание сварочного	13 Arbetskunnighet
14 Weld test details / Range of approval	14 Dane / Zakres ważności	14 Данные испытаний / область применения	14 Detaljer om sveitsprov / Giltighetsområde
15 Welding process(es)	15 Proces(e) spawania	15 Вид сварки	15 Sveitsmetod(er)
16 Plate or Pipe	16 Blacha czy rura	16 Структура стали или трубы	16 Plåt eller rör
17 Joint type	17 Rodzaj złącza	17 Вид шва	17 Svetsstyp
18 Parent metal group	18 Materiał rodzimy (grupa)	18 Группы сталей	18 Grundmaterialgrupp(er)
19 Filler metal / Designation	19 Oznakowanie dodatków	19 Маркировка присадки и обозначение /	19 Typ av fyllsmaterial / Beteckning
20 Gas / Flux	20 Gaz och okuchny / podtopnik	20 Защитный газ / присадка /	20 Skyddsgaser / Sveitspulver
21 Auxiliaries	21 Materiał dodatkowy	21 Дополнительные материалы	21 Hjälpmaterial
22 Material thickness (mm)	22 Grubość materiału (mm)	22 Толщина материала (мм)	22 Materialtjocklek (mm)
23 Pipe outside diameter (mm)	23 Średnica zewnętrzna rury (mm)	23 Наружный диаметр трубы (мм)	23 Ytterdiameter på rör (mm)
24 Welding positions	24 Pozycje spawania	24 Положения сварочного шва	24 Sveitslägen
25 Gouging / Beeking	25 Fugowanie / Podkadt	25 Разогрев шва / упрочка на разогрев /	25 Mejsling / roistöd
26 Additional information is available on attached WPS No.	26 Dodatkowe uwagi w instrukcji spawalnictwa Nr.	26 Дополнительная информация сварки указана на прилагаемом листе инструкции по сварке Ш	26 Ytterligare information lämnas på bifogat sveitsatablad (WPS) nr.
27 Performed / Date of issue	27 Przeprowadzono / Wydano w dniu	27 Выполнено / выдано в день	27 Utfört / Dag för utförande
28 Type of test / and / not / Location	28 Rodzaj kontroli / -- / nie / Miejsce	28 Вид испытания / и / не / Место	28 Typ av provning / och / ej / Plats
29 acceptable / required / Validity of approval until	29 pozytywnie / wymagane / Data ważności egzaminu	29 Сдано / требуется / действительна, испытание	29 godkänt / fördrad provning / Giltig t o m
30 Visual	30 Ogledziny zewnętrzne	30 Внешний контроль	30 Syning
31 Radiography	31 Badania radiologiczne	31 Радиологический контроль	31 Radiografiering
32 Surface crack test	32 Badania magnetyczne / penetracyjne	32 Проверка на поверхностные трещины	32 Olöslörande ysprickprovning
33 Makro- / Micro	33 Makro- / Mikro zgady	33 Макро- / микроиспыт	33 Makro- / Mikroundersökning
34 Fracture	34 Badania lamiące	34 Испытание на разрыв	34 Brytprovning
35 Bend / authorized inspector of	35 Badania zginające / Rzeczoznawca	35 Испытание на изгиб / эксперт по /	35 Bockprovning / Inspektör av
36 Additional tests / TÜV Nord GmbH	36 Badania dodatkowe *)	36 Дополнительные испытания / TÜV Nord	36 Annan provning / TÜV Nord GmbH
37 if necessary, informations on attached sheet	37 *) wymagane dane dodatkowe w załączniku	37 При необходимости сведения на прилагаемом листе	37 På bifogat blad om så erfordras
38 Confirmation of permanent welding activities by	38 Potwierdzenie regularności pracy spawacza przez	38 Подтверждение постоянной работы сварщика	38 Arbetsgivarens eller sveitsansvalgs bekräftelse
39 Employer or supervisor (coordinator)	39 pracodawca lub osoba nadzorująca	39 Работодатель или надзорный орган	39 all kontinuerligt sveitsarbete utföras
40 Date / Signature / Position or title	40 Data / Podpis / stopień naukowy	40 Дата / подпись / степень научная	40 Datum / Underskrift / Ställning eller titel
41 Prolongation of validity	41 Przedłużenie ważności	41 Пролонгация действительности	41 Förlängd godkännande
42 of approval by inspecting authority	42 świadectwa przez jednostkę nadzorującą	42 Удостоверения инспекционной лабораторией	42 av granskare eller provningsorganisation
43 Date / Signature / Position or title	43 Data / Podpis / stopień naukowy	43 Дата / подпись / степень научная	43 Datum / Underskrift / Ställning eller titel

Translation of a typical certificate

[Some of the actual details will vary according to the Welder and to which Procedure he is qualified]

1	Welder Approval Test Certificate		
2	Designation	EN 287-1 141 T BW W11 ... t02 D021 PF/PC ss nb 141 T BW W11 ... t02 D021 PF/PC ss nb	
3	Inspecting Authority	Test house TÜV Nord e.V.	
4	Manufacturers Welding Procedure Designation (WPS)	Test No. 3037ST07120-.....	
5	Reference No.	001 and 002	
6	Welders Name	
7	Identification / Photograph	
8	Method of Identification	personally known	
9	Date and Place of Birth	
10	Employer	Bran+Luebbe GmbH, 22844 Norderstedt	
11	Code / Testing Standard	EN 287-1 and AD-HP 3	
12	Remarks	Issued as a result of participation of the welder in a Works Test	
13	Job Knowledge	Acceptable	
14		Weld Test Details	Range of Approval
15	Welding Process/es	141 Tungsten Inert Gas (TIG)	141
16	Plate or Pipe	Tee & pipe	Pipe and Plate
17	Joint Type	Full seam butt weld	Butt weld, Fillet weld
18	Parent Metal Group	316Ti	Stainless steels
19	Filler metal designation	With Filler	Filler metal of the same type
20	Gas / Flux	EN 439-II	Gas of the same type
21	Auxiliaries	Root gas EN 439-R1	Auxiliaries of the same type
22	Material Thickness (mm)	2.0 - 7.5	2.0 - 15
23	Pipe Outside Diameter (mm)	21.3 - 80	21 - 160
24	Welding Positions	Vertical / Horizontal	All positions
25	Gouging / Backing	Single sided on one side without backing	Single sided with / without backing Double sided with back gouging / grinding
26	Additional Information is available on attached WPS		
27			Date of Test Place of Test Valid until
27		Performed	
28	Type of Test	and	Not
29		Acceptable	Required
30	Visual	x	
31	Radiography	x	
32	Surface crack Test		x
33	Macro / Micro	x	
34	Fracture		x
35	Bending test	x	
36	Approval Test *	x	
37	* Necessary Information on attached sheet		
38		TUV Nord e.V.	
39		Confirmation of permanent welding activities by	
40		Employer or Supervisor (co-ordinator)	
41	Extension of validity	Date / Signature / Position or Title	
42	or approval by Test Laboratory		
43	Date / Signature / Position or Title		