CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	Welding Procedure Specification (WPS) and Qualification (PQR) Records, Welding Operator List and Welder Qualifications Records (WPQ) and Welding Map	Sheet 1 of 132 Date: 16/01/2025 Rev: 03

Base Load Power Hub (BLPH)

Welding Procedure Specification (WPS) and Qualification (PQR) Records, Welding Operator List and Welder Qualifications Records (WPQ) and Welding Map

Document Number: 1724000163-WEL-LIS-00011

Document Class: 2

03	16/01/2025	Accepted for Construction (AFC)	M. Antolini	C. Cervellati	M. Antolini
02	20/12/2024	Issue for Review (IFR)	M. Antolini	C. Cervellati	M. Antolini
01	04/09/2024	Issue for Review (IFR)	M. Antolini	C. Cervellati	M. Antolini
00	08/05/2024	Issue for Review (IFR)	M. Antolini	C. Cervellati	M. Antolini
Rev.	Date	Description	Prepared	Reviewed	Approved

C.A.M.P.I. Srl

Ferrara - Italy

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C.A.M.P.I. Srl Ferrara - Italy	**PLANT:** HOLLANDE KUST NOORD WIND PARK – Netherlands	
	CLIENT: Rosetti Marino S.p.A. for Crosswind	
	P.O. No: 1724000163	
	Commessa / *Job:* 24003	**Documento. n° / *Document n°:*** 24003-WD-01

Oggetto: Welding Book according to ASME IX - QUADERNO DI SALDATURA
Subject

HYDROGEN VENT TO K.O. DRUM
SERIAL No: 24-003
ITEM No: V-43001
DRAWINGS No: 24003-VE-10 – GA Drawing

RISERVATO AL CLIENTE / A.I.
Customer reserved / A.I.

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3	16-Jannuary-2025	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dig[illegible]ria, 15 I 44100 FERRARA Michele Antolini	Up dated as per comment's / Aggiornato come da commenti
2	20-December-2024	Michele Antolini	Up dated as per comment's / Aggiornato come da commenti
1	04-September-2024	Michele Antolini	Up dated as per comment's / Aggiornato come da commenti
0	08-May-2024	Michele Antolini	Issue for Review / Emesso per Verifica
Rev.	Data / *Date*	Approvazione */ Approval*	Descrizione / *Description*

C.A.M.P.I. Srl Ferrara - Italy	**Welding Document for HYDROGEN VENT TO K.O. DRUM SERIAL No: 24-003 ITEM No: V-43001**	**Doc. No:** 24003-WD-01 Rev. 3 On 16-Jannuary-2025

SUMMARY - RIEPILOGO

Section. Sezione	**Documents**	Pag./*Page* di/*of*
1	List of WPS & PQR / Riepilogo WPS & WPQR	
2	WKF & Weld Map / Mappa delle saldature	
3	WPS: Welding procedure specification / Specifiche di saldatura 24003-01 rev.1❶ 24003-02 rev.1❶ 24003-03 rev.0 24003-04 rev.0 24003-05 rev.0 24003-06 rev.0 24003-07 rev.0 24003-08 rev.0	
4	WPQR: Welding Procedure Qualification Record / Qualifiche Procedimenti di saldatura WPQR No: P415-AS WPQR No: P423-AS WPQR No: P425-AS	
5	Welder & welding operator qualification / qualifiche saldatori e operatori	
6	Repair procedure IO-GP410 rev.4	

SECTION 1

List of WPS & PQR / Riepilogo WPS & PQR

C.A.M.P.I. Srl Ferrara - Italy	**Welding Document** **for** **HYDROGEN VENT TO K.O. DRUM** **SERIAL No: 24-003** **ITEM No: V-43001**	**Doc. No:** 24003-WD-01 Rev. 3 On 16-Jannuary-2025

Joint detail Dettaglio saldatura	**WPS:** Welding procedure specification	❷WPS Range thk. / d. mm	**PQR:** Procedure Qualification Record Qualifiche Procedimenti di saldatura	PN with PN Gruppo con Gruppo
W8	24003-01	5÷12 / ≥150	P425-AS+P415-AS	**Group 1 to Group 1**
W11	24003-02	5÷12 / ≥150	P425-AS+P415-AS	**Group 1 to Group 1**
W12	24003-03	5÷25 / ≥60,3	P425-AS	**Group 1 to Group 1**
W18	24003-04	5÷25 / ≥60,3	P425-AS	**Group 1 to Group 1**
W18a	24003-05	5÷25,4 / ≥33,4	P423-AS	**Group 1 to Group 1**
W21	24003-06	5÷25 / ≥60,3	P425-AS	**Group 1 to Group 1**
W59	24003-07	5÷21 / ≥150	P425-AS	**Group 1 to Group 1**
W61	24003-08	5÷21 / ≥150	P425-AS	**Group 1 to Group 1**

❷ **Comment:** Please assign a unique progressive weld number without gaps

Reply: The number cannot be changed to progressive without gap because as for the CAMPI Quality System each welding detail number corresponds to a very specific type of coupling uniquely recognized both by the technical department and by the Production of the CAMPI company. Changing that number could be confusing

SECTION 2

WKF & Weld Map / Mappa delle saldature

C.A.M.P.I. Srl Ferrara - Italy	**PLANT:** HOLLANDE KUST NOORD WIND PARK – Netherlands	**WELDING KEY FORM N°** 24003-WD-01
	CLIENTE / *CUSTOMER*: Rosetti Marino S.p.A.	**COMMESSA N° / JOB N°** 24003
	ACQUIRENTE / *PURCHASER*: Crosswind	**P.O.No:** 1724000163

For Location of Welded Joints See Attached Sketch
Per le posizioni delle saldature vedere il disegno allegato

(1)= N°2 production test coupon (500mm X 300mm) shall be prepared and attached to the vessel during the longitudinal welds, base material of the same heat number of the shell shall be used
(1)= Devono essere preparati n°2 talloni di Produzione(500mm X 300mm) saranno attaccati al sebatoio durante la fase di saldatura della Longitudinale del mantello, il materiale deve essere della stessa colata della lamiera del mantello

❶ **(2)=** UT examination shall be performed before the PWHT on the Butt weld joint with thickness ≥10mm / Il controllo UT sarà effettuato sui giunti di testa con spessore ≥ a 10mm

This format shall be issued for each item - The Manufacturer shall show the required informations on the relevant areas - The WKF shall be approved or commented by AIA/CLIENT - In case of comments it shalle be revised by the Manufacturer and reissued for final approval.

Part.	Material with material	RT (%)	UT (%)	PT/MT (%)	KV (J)	MDMT °C	Hardness (HV)	P.W.H.T. (°C/H)	Note
W8	SA-516Gr.60/70N+ SA-516Gr.60/70N	10	❶100 **(2)**	❶100	/	-29	235 Max	Yes	
W11	SA-516Gr.60/70N+ SA-516Gr.60/70N	10	❶100 **(2)**	❶100	/	-29	235 Max	Yes	**PTC(1)**
W12	SA-333Gr.6+ SA-350LF2	10	❶100 **(2)**	❶100	/	-29	235 Max	Yes	
W18	SA-516Gr.60/70N+ SA-333Gr.6	/	/	100	/	-29	235 Max	Yes	≥ NPS2½
W18a	SA-516Gr.60/70N+ SA-350LF2	/	/	100	/	-29	235 Max	Yes	< NPS2½
W21	SA-516Gr.60/70N+ SA-333Gr.6	/	/	100	/	-29	235 Max	Yes	
W59	SA-516Gr.60/70N+ SA-516Gr.60/70N	/	/	100	/	-29	/	Yes	
W61	SA-516Gr.60/70N+ SA-516Gr.60/70N	/	/	100	/	-29	/	Yes	
❷ For the range on the WPS see Sheet 4									

APPLICABLE WPS-PQR

Part.	Jonts	WPS	PQR
W8	BUTT WELD	24003-01	P425-AS+P415-AS
W11	BUTT WELD	24003-02	P425-AS+P415-AS
W12	BUTT WELD	24003-03	P425-AS
W18	BUTT WELD	24003-04	P425-AS
W18a	BUTT WELD	24003-05	P423-AS
W21	BUTT WELD	24003-06	P425-AS
W59	FILLET WELD	24003-07	P425-AS
W61	FILLET WELD	24003-08	P425-AS

FORMING DATA

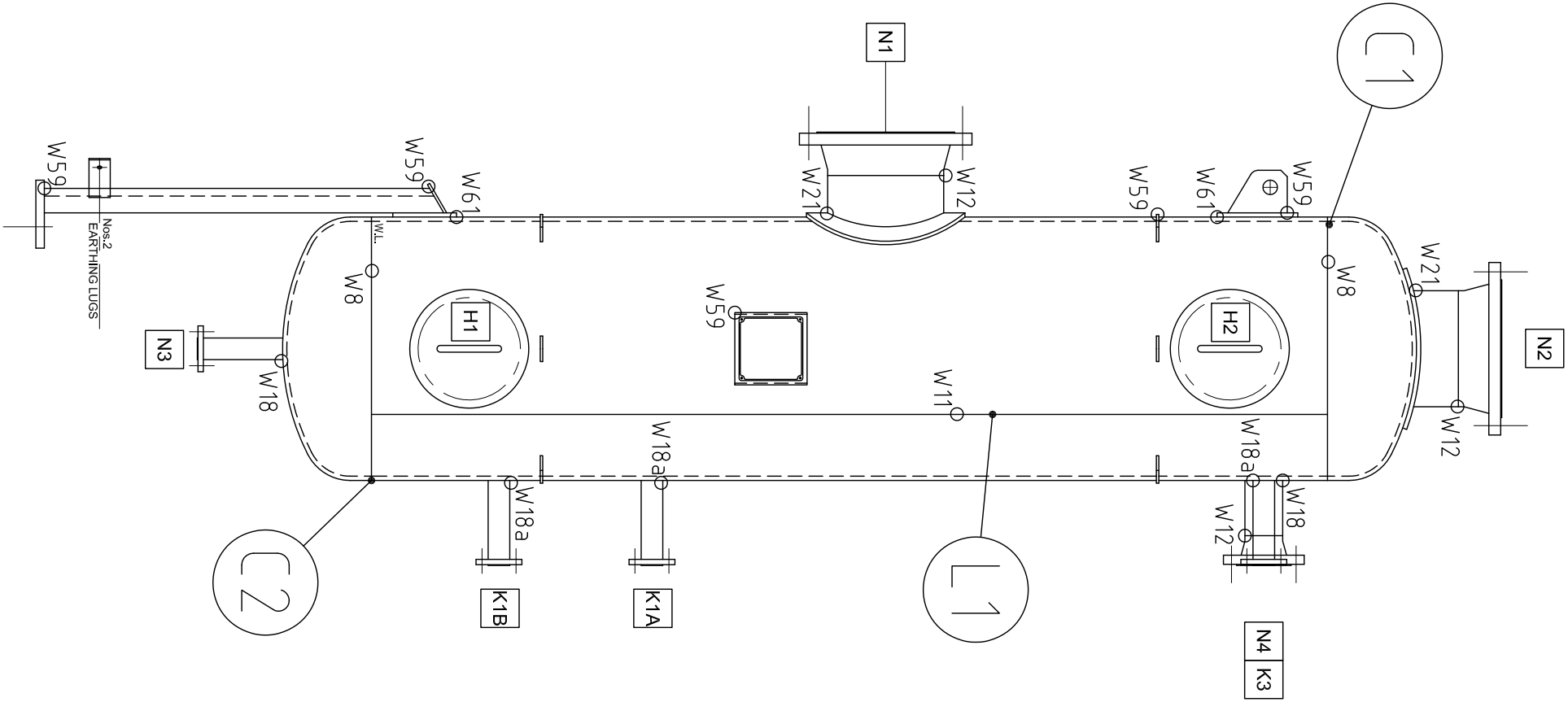
Descr.	Thk (1) A	Thk (1) F	% (2)	Type Hot	Type Cold	H.T. (3)	Coup (4)
Ellipsodail Head 2:1	10 mm	8 mm			X	N	X

1) A = Actual (thk. before forming) F = final (thk. after forming)
2) Fiber elongation (see ASME VIII div. I-UCS 85)
3) Heat treatment after forming shall be specified and shown as:
N = Normalizing; QT = Quenched and tempered
Nt = Normalized and tempered ; etc.
4) Acc. To ASMVE VIII div. I-UCS 85 coupons shall be subjected to simulated heat treatments including any intermediate and/or final heat treatment, if any.

ITEM: V-43001		2	Up dated	20-December-2024	
		1	Up dated	04-September-2024	
SN: 24-003	N° DWG: 24003-VE-10	0	For Review	08-May-2024	
		Rev	Description	Date	Appr.

C.A.M.P.I. Srl Ferrara (Italy)	**SCHEMA IDENTIFICAZIONE SALDATURE** ***Welds Identification Sketch***	Documento Nr: 24003-WD-01 fg1_2 *Document No:*

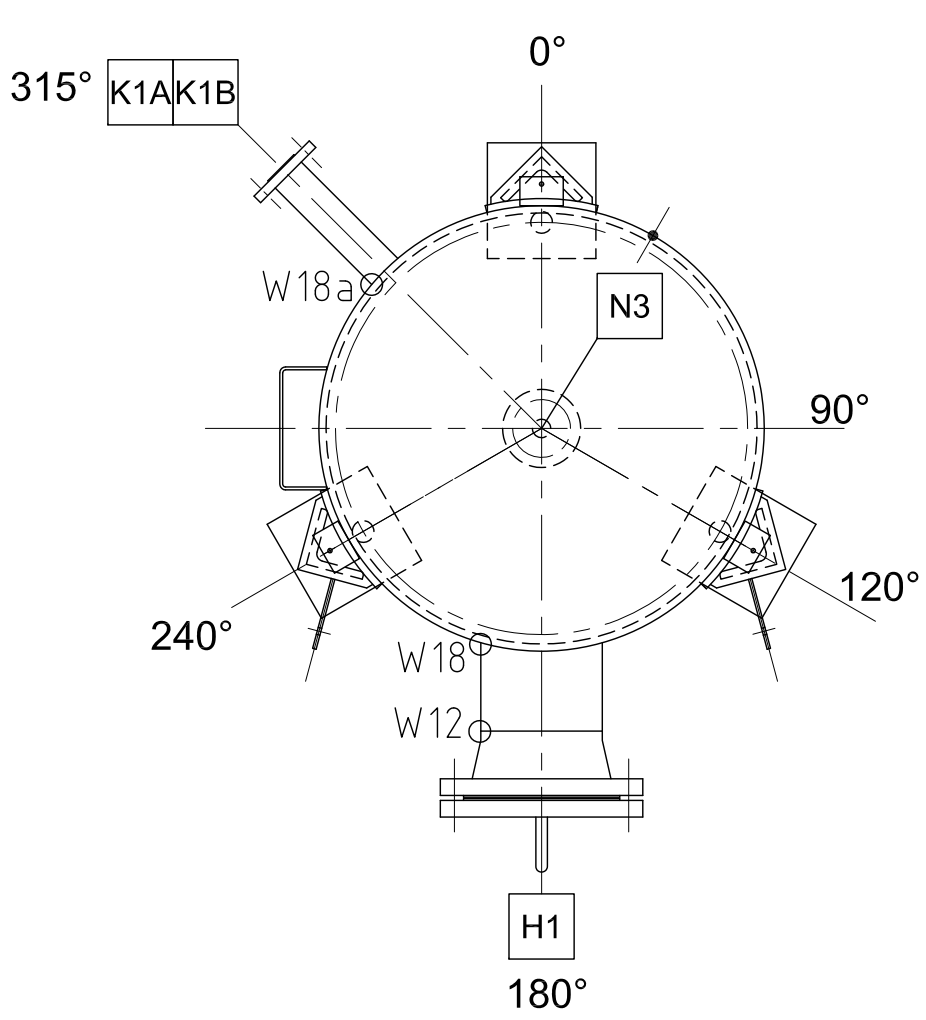
Cliente : Rossetti Marino *Client :*	Ordine : 1724000163 *Order :*	Apparecchio : Hydrogen Vent K.o. Drum *Equipment :*	
Commessa Nr : 24003 *Job No :*	Disegno Nr : 24003-VE-10 *Drawing No :*	Sigla : V-43001 *Item :*	Nr. Fabbrica : 24-003 *Serial No :*

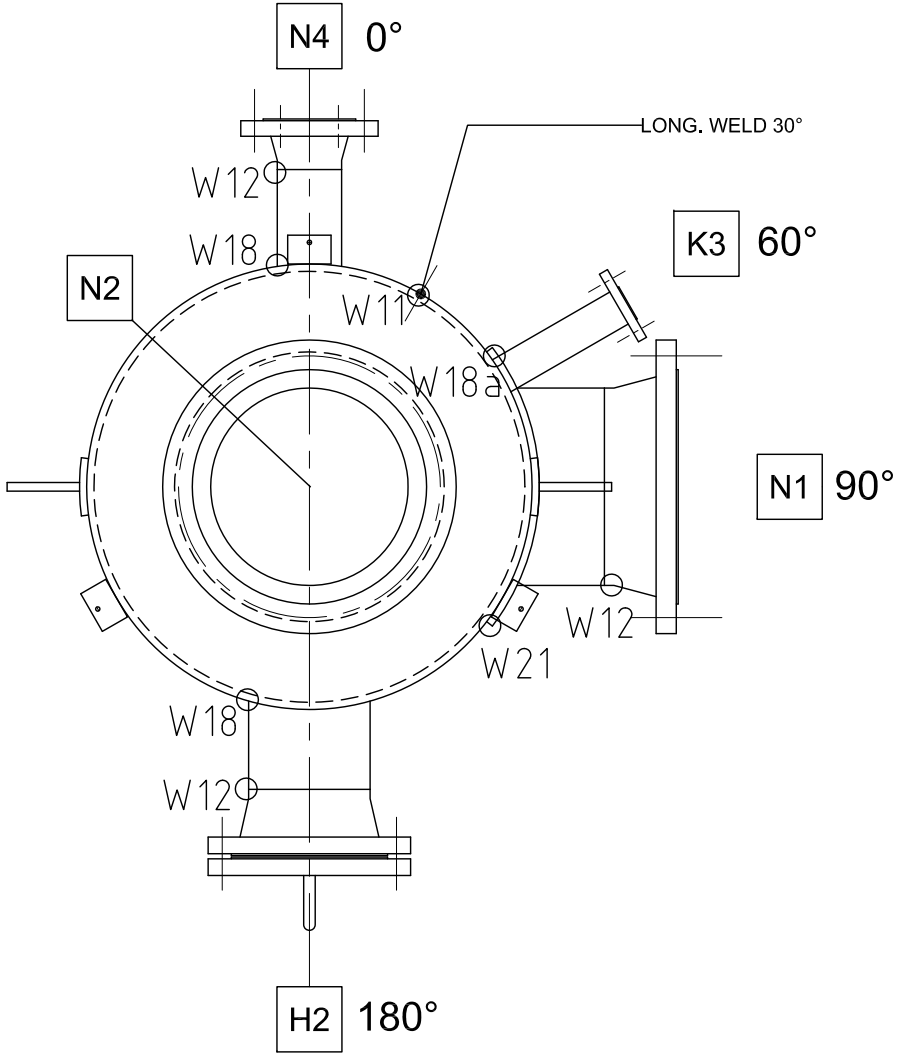


Data : 08-May-2024 *Date :*	**C.A.M.P.I. Srl** Quality Control	Ispettore Cliente Inspector Purchaser	Ispettore Autorizzato Authorized Inspector

C.A.M.P.I. Srl Ferrara (Italy)	**SCHEMA IDENTIFICAZIONE SALDATURE** ***Welds Identification Sketch***	Documento Nr: 24003-WD-01 fg2_2 *Document No:*

Cliente : Rossetti Marino *Client :*	Ordine : 1724000163 *Order :*	Apparecchio : Hydrogen Vent K.o. Drum *Equipment :*	
Commessa Nr : 24003 *Job No :*	Disegno Nr : 24003-VE-10 *Drawing No :*	Sigla : V-43001 *Item :*	Nr. Fabbrica : 24-003 *Serial No :*





Data : 08-May-2024 *Date :*	**C.A.M.P.I. Srl** Quality Control	Ispettore Cliente Inspector Purchaser	Ispettore Autorizzato Authorized Inspector

SECTION 3

WPS: Welding procedure specification
Specifiche di saldatura

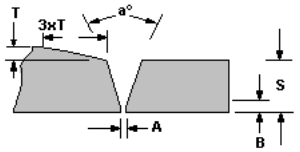
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. 24003-01 Rev. 1 Date: 04/09/2024 Supp. PQR N. P425-AS & P415-AS

Welding Process(es) a) GTAW b) GMAW c) SAW
Type(s) a) Manual b) Semiautomatic c) Machine
Joints (QW-402)

Joint design BW: V groove weld butt joint (see sketch)
Backing GTAW (No) GMAW (Yes) SAW (Yes)
Backing material (Type) WELD METAL
- Metal — Non fusing metal
- Non metallic — Other

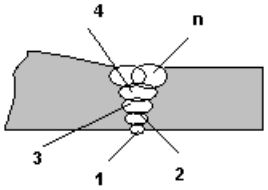
Base metal (QW-403)
P-No. 1 Gr. No. 1/2 to P-No. 1 Gr. No. 1/2
Spec. type & grade SA-516 Gr.60/70N
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop.
to Chem. Anal. & Mech. Prop.
Thickness range
Base metal (mm): Groove: 5÷12mm Fillet: All
Pipe dia.: Groove: >150mm Fillet: All
Other:

Joint Design
Disegno giunto
W8



A:3÷5mm - **B:**1,5±1mm
a°:60±5 - **S:**8/10mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.36	5.17
AWS No. (Class)	ER80S-Ni1	E71T15-M21A6-CS1-H4	EH12K
F-No.	6	6	6
A-No.	10	1	1
Size of filler metal (mm)	2,4 mm	1,2 mm	2,4
F.M. Trade Name	Carborod Ni1	Diamondspark 54 MC	L50M
Manufacturer	Lincoln	Boehler	Lincoln
Max Weld Metal Thk. Thickness Groove:	2 mm	2 mm	Max 6 mm
Fillet:	All	All	/
Flux Trade Name	/	/	P230
Manufacturer	/	/	Lincoln
Electr.-Flux (Class)	/	/	F48P5-EH12K

Other **a):** QW404.23: Solid wire – QW 404.22: No – QW404.14: With Filler Metal

GAS (QW-408)		Percent Composition		
	Gas(es)	Mixture	Flow rate	
Plasma				l/min
Shielding (a)	Ar	99,997%	9÷11	l/min
Shielding (b)	Ar+CO_2	92%+8%	14÷16	l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	a)-b)-c) DC
Polarity:	a) SP / b)-c) RP
Mode of Metal Transfer for GMAW:	Pulsed
Tungsten Electrode Type & Size	SFA 5.12 EWLa-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	11/16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	/
Frequency	/
Contact Tube to Work Distance	GMAW 15÷20mm SAW 25÷28mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	Single

POSITIONS (QW-405)
Position(s) of groove or fillet: All
Welding Progression: /
Other:

PREHEAT (QW-406)
Preheat Temp. 15°C
Interpass Temp. 300°C
Preheat maintenance

POSTWELD HEAT TREATMENT (QW-407)
Temp. Range 610±10°C
Time Range 60 minutes
Heat rate: Max 80°C/h – above 300°C
Cool rate: Max 80°C/h– above 300°C and cooled in still air

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No ; **b):** QW410.64 No

Weld pass(es) or layers	Welding process(es)	Filler metal AWS Class or Trade Name	Filler metal Size/Dia (mm)	Current Type & polarity	Current Amp. Range ±10%	Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other Max HEAT IMPUT (KJ/mm)
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	9,1	78	1,02
2	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87
3	SAW	L50M	2,4	DC-RP	340	26,8	600	0,911
4-n	SAW	L50M	2,4	DC-RP	340	26,8	600	0,911
❶ 1'	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87

❶ where accessible, a back side weld with GMAW process / dove accessibile ripresa a rovescio con GMAW

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dir[illegible], 15 [illegible] FERRARA	

C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. 24003-02 Rev. 1 Date: 04/09/2024 Supp. PQR N. P425-AS & P415-AS

Welding Process(es) a) GTAW b) GMAW c) SAW
Type(s) a) Manual b) Semiautomatic c) Machine
Joints (QW-402)

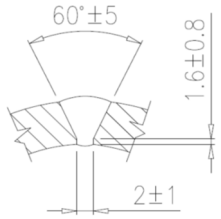
Joint design BW: V groove weld butt joint (see sketch)
Backing GTAW (No) GMAW (Yes) SAW (Yes)
Backing material (Type) WELD METAL

- Metal — Non fusing metal
- Non metallic — Other

Base metal (QW-403)

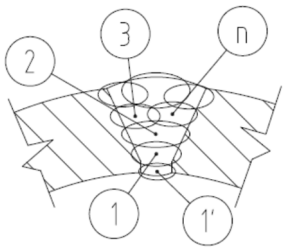
P-No. 1 Gr. No. 1/2 to P-No. 1 Gr. No. 1/2
Spec. type & grade SA-516 Gr.60/70N
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop.
to Chem. Anal. & Mech. Prop.
Thickness range
Base metal (mm): Groove: 5÷12mm Fillet: All
Pipe dia.: Groove: >150mm Fillet: All
Other:

Joint Design
Disegno giunto
W11



A:3÷5mm - **B:**1,5±1mm
a°:60±5 - **S:**10mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.36	5.17
AWS No. (Class)	ER80S-Ni1	E71T15-M21A6-CS1-H4	EH12K
F-No.	6	6	6
A-No.	10	1	1
Size of filler metal (mm)	2,4 mm	1,2 mm	2,4
F.M. Trade Name	Carborod Ni1	Diamondspark 54 MC	L50M
Manufacturer	Lincoln	Boehler	Lincoln
Max Weld Metal Thk. Thickness Groove:	2 mm	2 mm	Max 6 mm
Fillet:	All	All	/
Flux Trade Name	/	/	P230
Manufacturer	/	/	Lincoln
Electr.-Flux (Class)	/	/	F48P5-EH12K

Other **a):** QW404.23: Solid wire – QW 404.22: No – QW404.14: With Filler Metal

GAS (QW-408)		Percent Composition		
	Gas(es)	Mixture	Flow rate	
Plasma				l/min
Shielding (a)	Ar	99,997%	9÷11	l/min
Shielding (b)	Ar+CO_2	92%+8%	14÷16	l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	a)-b)-c) DC
Polarity:	a) SP / b)-c) RP
Mode of Metal Transfer for GMAW:	Pulsed
Tungsten Electrode Type & Size	SFA 5.12 EWLa-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	11/16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	/
Frequency	/
Contact Tube to Work Distance GMAW 15÷20mm SAW 25÷28mm	
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	Single

POSITIONS (QW-405)

Position(s) of groove or fillet	All
Welding Progression:	/
Other:	

PREHEAT (QW-406)

Preheat Temp.	15°C
Interpass Temp.	300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)

Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No ; **b):** QW410.64 No

Weld pass(es) or layers	Welding process(es)	Filler metal AWS Class or Trade Name	Filler metal Size/Dia (mm)	Current Type & polarity	Current Amp. Range ±10%	Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other Max HEAT IMPUT (KJ/mm)
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	9,1	78	1,02
2	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87
3	SAW	L50M	2,4	DC-RP	340	26,8	600	0,911
4-n	SAW	L50M	2,4	DC-RP	340	26,8	600	0,911
❶ 1'	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl	

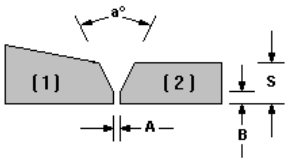
Exhibit 7-1 Rev. 0 | 1 | 2 | 3 | 4 | 5

C.A.M.P.I. srl **Ferrara (Italy)**	**WELDING PROCEDURE SPECIFICATION (WPS)** **(QW 482)**	**WPS-N.** 24003-03 **Rev.** 0 **Date:** 08/05/2024 **Supp. PQR N.** P425-AS

Welding Process(es) a) GTAW b) GMAW c) _____
Type(s) a) Manual b) Semiautomatic c) _____
Joints (QW-402)
Joint design BW: V groove weld butt joint (see sketch)
Backing GTAW (No) GMAW (Yes)
Backing material (Type) WELD METAL
- Metal Non fusing metal _____
- Non metallic Other _____

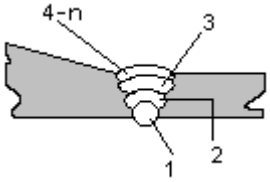
Base metal (QW-403)
P-No. _1_ Gr. No. _2_ to P-No. _1_ Gr. No. _1_
Spec. type & grade SA-350 LF2
to spec. type & grade SA-333 Gr.6
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm): Groove: 5÷25mm Fillet: All
Pipe dia.: Groove: >60,3mm Fillet: All
Other:

Joint Design
Disegno giunto
W12



A:3±1mm – **B:**1,5±1mm
a°:75±2,5 -
S:7,62÷12,7mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.36	
AWS No. (Class)	ER80S-Ni1	E71T15-M21A6-CS1-H4	
F-No.	6	6	
A-No.	10	1	
Size of filler metal (mm)	2,4 mm	1,2 mm	
F.M. Trade Name	Carborod Ni1	Diamondspark 54 MC	
Manufacturer	Lincoln	Boehler	
Max Weld Metal Thk. Thickness Groove:	2 mm	Max 11 mm	
Fillet:	All	All	
Flux Trade Name	/	/	
Manufacturer	/	/	
Electr.-Flux (Class)	/	/	

Other **a):** QW404.23: Solid wire – QW 404.22: No – QW404.14: With Filler Metal

GAS (QW-408)		Gas(es)	Mixture	Flow rate	
		Percent Composition			
Plasma					l/min
Shielding	(a)	Ar	99,997%	9÷11	l/min
Shielding	(b)	Ar+CO_2	92%+8%	14÷16	l/min
Trailing					l/min
Backing		NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	DC
Polarity:	a) SP / b) RP
Mode of Metal Transfer for GMAW:	Pulsed
Tungsten Electrode Type & Size	SFA 5.12 EWLa-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	11/16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	/
Frequency	/
Contact Tube to Work Distance GMAW	15÷20mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	Single

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No ; **b):** QW410.64 No

POSITIONS (QW-405)	
Position(s) of groove or fillet	All
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	15°C
Interpass Temp.	300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Weld pass(es) or layers	Welding process(es)	Filler metal		Current		Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other Max HEAT IMPUT (KJ/mm)
		AWS Class or Trade Name	Size/Dia (mm)	Type & polarity	Amp. Range ±10%			
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	9,1	78	1,02
2	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87
3	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91
4-n	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dis[illegible]nia, 15 [illegible] FERRARA	

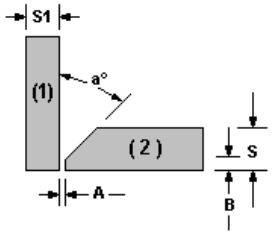
C.A.M.P.I. srl **Ferrara (Italy)**	**WELDING PROCEDURE SPECIFICATION (WPS)** **(QW 482)**	**WPS-N.** 24003-04 **Rev.** 0 **Date:** 08/05/2024 **Supp. PQR N.** P425-AS

Welding Process(es) a) GTAW b) GMAW c) _____
Type(s) a) Manual b) Semiautomatic c) _____
Joints (QW-402)

Joint design _BW: V groove weld butt joint (see sketch)
Backing GTAW (No) GMAW (Yes)
Backing material (Type) WELD METAL
- Metal Non fusing metal _____
- Non metallic Other _____

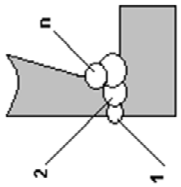
Base metal (QW-403)
P-No. _1_ Gr. No. _1/2_ to P-No. _1_ Gr. No. _1/2_
Spec. type & grade SA-350 LF2/SA-333 Gr.6
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm): Groove: 5÷25mm Fillet: All
Pipe dia.: Groove: >60,3mm Fillet: All
Other:

Joint Design
Disegno giunto
W18



A:2÷5mm – **B:**2±1mm
a°:45°±5 - **S:**8÷10 mm
S1:7,62÷12,7mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.36	
AWS No. (Class)	ER80S-Ni1	E71T15-M21A6-CS1-H4	
F-No.	6	6	
A-No.	10	1	
Size of filler metal (mm)	2,4 mm	1,2 mm	
F.M. Trade Name	Carborod Ni1	Diamondspark 54 MC	
Manufacturer	Lincoln	Boehler	
Max Weld Metal Thk. Thickness Groove:	2 mm	Mas 11 mm	
Fillet:	All	All	
Flux Trade Name	/	/	
Manufacturer	/	/	
Electr.-Flux (Class)	/	/	

Other **a):** QW404.23: Solid wire – QW 404.22: No – QW404.14: With Filler Metal

GAS (QW-408)		Percent Composition			
		Gas(es)	Mixture	Flow rate	
Plasma					l/min
Shielding	(a)	Ar	99,997%	9÷11	l/min
Shielding	(b)	Ar+CO_2	92%+8%	14÷16	l/min
Trailing					l/min
Backing		NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	DC
Polarity:	a) SP / b) RP
Mode of Metal Transfer for GMAW:	Pulsed
Tungsten Electrode Type & Size	SFA 5.12 EWLa-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	11/16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	/
Frequency	/
Contact Tube to Work Distance GMAW	15÷20mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	Single

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No ; **b):** QW410.64 No

POSITIONS (QW-405)	
Position(s) of groove or fillet	All
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	15°C
Interpass Temp.	300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Weld pass(es) or layers	Welding process(es)	Filler metal		Current		Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other Max HEAT IMPUT (KJ/mm)
		AWS Class or Trade Name	Size/Dia (mm)	Type & polarity	Amp. Range ±10%			
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	9,1	78	1,02
2	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87
3	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91
4-n	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91

1' - If accessible, a back side weld with GMAW process is admitted / se accessibile la ripresa a rovescio con metodo GMAW è ammessa

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dir[illegible]ria, 15 [44100 FERRARA	

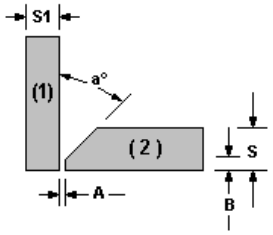
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. 24003-05 Rev. 0 Date: 08/05/2024 Supp. PQR N. P423-AS

Welding Process(es) a) GTAW b) SMAW c) _____
Type(s) a) Manual b) Manual c) _____
Joints (QW-402)

Joint design _BW: V groove weld butt joint (see sketch)_
Backing SMAW (Yes) GTAW (No) _____
Backing material (Type) WELD METAL
- Metal Non fusing metal _____
- Non metallic Other _____

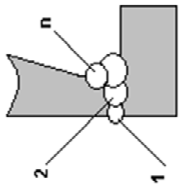
Base metal (QW-403)
P-No. _1_ Gr.No. _2_ to P-No. _1_ Gr. No. _1/2_
Spec. type & grade SA-350 LF2
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm/inches):Groove 5÷25,4mm Fillet All
Pipe dia.: Groove : ≥33,4 Fillet All
Other:

Joint Design
Disegno giunto
W18a



A:3÷5mm – **B:**2±1mm
a°:45°±5 - **S:**8÷10 mm
S1:12,7mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.1	
AWS No. (Class)	ER80S-Ni1	E7018-1 H4	
F-No.	6	4	
A-No.	10	1	
Size of filler metal	2,4 mm	3,2/4,0 mm	
F.M. Trade Name	Carborod Ni1	TENAX 35S	
Manufacturer	Lincoln	Lincoln	
Weld Metal Thickness Thickness Groove:	2 mm	Max 16 mm	
Fillet:	All	All	
Flux Trade Name	/		
Manufacturer	/		
Electr.-Flux (Class)	/		

Other **a):**QW404.23: Solid wire – QW 404.22: No –QW404.14:With Filler Metal

GAS (QW-408)	Percent Composition			
	Gas(es)	Mixture	Flow rate	
Plasma				l/min
Shielding (a)	Ar	99,997%	13÷15	l/min
Shielding (b)				l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	DC
Polarity:	RP
Mode of Metal Transfer for GMAW:	/
Tungsten Electrode Type & Size	SFA 5.12 EWTh-2
Electrode wire feed speed range	/

POSITIONS (QW-405)	
Position(s) of groove or fillet	Flat (1G)
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	>15°C
Interpass Temp.	Max 300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	
Frequency	
Contact Tube to Work Distance	/
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	N.A.

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements

a):QW410.64 N.A. and QW410.11:No – **b):** QW410.64 No

Weld pass(es) or layers	Welding process(es)	Filler metal AWS Class or Trade Name	Filler metal Size/Dia (mm)	Current Type & polarity	Current Amp. Range ±10%	Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other HEAT IMPUT KJ/mm
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	14,2	73	1,71
2	SMAW	E7018-1 H4	3,2	DC-RP	118	22,5	123	1,3
3-n	SMAW	E7018-1 H4	3,2	DC-RP	120	22,5	125	1,32
4-n	SMAW	E7018-1 H4	4,0	DC-RP	160	24,5	90	2,61

1' - If accessible, a back side weld with SMAW process is admitted / se accessibile la ripresa a rovescio con metodo SMAW è ammessa

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dig[illegible]ria, 15 I 44100 FERRARA	

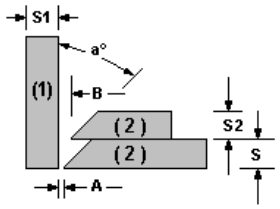
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. 24003-06 Rev. 0 Date: 08/05/2024 Supp. PQR N. P425-AS

Welding Process(es) a) GTAW b) GMAW c) _____
Type(s) a) Manual b) Semiautomatic c) _____
Joints (QW-402)

Joint design BW: V groove weld butt joint (see sketch)
Backing GTAW (No) GMAW (Yes)
Backing material (Type) WELD METAL
- Metal Non fusing metal _____
- Non metallic Other _____

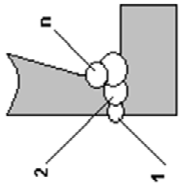
Base metal (QW-403)
P-No. 1 Gr. No. 1 to P-No. 1 Gr. No. 1/2
Spec. type & grade SA-333 Gr.6
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm): Groove: 5÷25mm Fillet: All
Pipe dia.: Groove: >60,3mm Fillet: All
Other:

Joint Design
Disegno giunto
W21



A:3÷5mm - **B:**8±3mm
a°:45±5 – **S/S2:**8÷10mm
S1:12,7mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.36	
AWS No. (Class)	ER80S-Ni1	E71T15-M21A6-CS1-H4	
F-No.	6	6	
A-No.	10	1	
Size of filler metal (mm)	2,4 mm	1,2 mm	
F.M. Trade Name	Carborod Ni1	Diamondspark 54 MC	
Manufacturer	Lincoln	Boehler	
Max Weld Metal Thk. Thickness Groove:	2 mm	Mas 11 mm	
Fillet:	All	All	
Flux Trade Name	/	/	
Manufacturer	/	/	
Electr.-Flux (Class)	/	/	

Other **a):** QW404.23: Solid wire – QW 404.22: No – QW404.14: With Filler Metal

GAS (QW-408)		Percent Composition			
		Gas(es)	Mixture	Flow rate	
Plasma					l/min
Shielding	(a)	Ar	99,997%	9÷11	l/min
Shielding	(b)	Ar+CO_2	92%+8%	14÷16	l/min
Trailing					l/min
Backing		NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	DC
Polarity:	a) SP / b) RP
Mode of Metal Transfer for GMAW:	Pulsed
Tungsten Electrode Type & Size	SFA 5.12 EWLa-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	11/16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	/
Frequency	/
Contact Tube to Work Distance GMAW	15÷20mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	Single

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No ; **b):** QW410.64 No

POSITIONS (QW-405)	
Position(s) of groove or fillet	All
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	15°C
Interpass Temp.	300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Weld pass(es) or layers	Welding process(es)	Filler metal		Current		Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other Max HEAT IMPUT (KJ/mm)
		AWS Class or Trade Name	Size/Dia (mm)	Type & polarity	Amp. Range ±10%			
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	9,1	78	1,02
2	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87
3	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91
4-n	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91

1' - If accessible, a back side weld with GMAW process is admitted / se accessibile la ripresa a rovescio con metodo GMAW è ammessa

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA [illegible] Via [illegible], 15 [illegible] FERRARA	

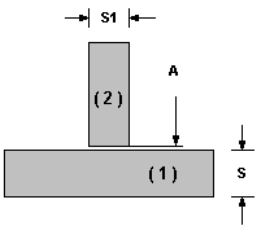
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. 24003-07 Rev. 0 Date: 08/05/2024 Supp. PQR N. P425-AS

Welding Process(es) a) GMAW b) _____ c) _____
Type(s) a) Semiautomatic b) _____ c) _____
Joints (QW-402)

Joint design FW: fillet weld (see sketch)
Backing GMAW (Yes) _____ (No) _____
Backing material (Type) BASE METAL
- Metal Non fusing metal _____
- Non metallic Other _____

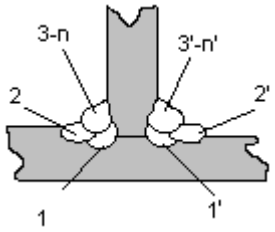
Base metal (QW-403)
P-No. 1 Gr.No. 1/2 to P-No. 1 Gr. No. 1/2
Spec. type & grade SA-516 Gr.60/70N
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm/inches):Groove 5÷21mm Fillet All
Pipe dia.: Groove >150mm Fillet All
Other:

Joint Design
Disegno giunto
W59



S:8÷10mm - **S1:**5÷20mm
A: 0÷1mm

Welding Sequences
sequenze saldatura



All fillet welds (if no different indication on the drawing) shall be continuous type with **a (tc)** 0,7 of the thinner of the plate welded together
TUTTE LE SALDATURE DOVRANNO ESSERE CONTINUE CON UN ALTEZZA DI GOLA **a (tc)** DI 0,7 DELLO SPESSORE PIU' PICCOLO DA SALDARE, SE NON DIVERSAMENTE INDICATO SUL DISEGNO

FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.36		
AWS No. (Class)	E70T15-M21A8-CS1-H4		
F-No.	6		
A-No.	1		
Size of filler metal	1,2 mm		
F.M. Trade Name	Diamondspark 54 MC		
Manufacturer	Boehler		
Weld Metal Thickness Thickness Groove:	/		
Fillet:	All		
Flux Trade Name	/		
Manufacturer	/		
Electr.-Flux (Class)	/		

Other: **a):**QW 404.23 Metal cored , QW 404.24 : NO - QW 404.27 : NO

GAS (QW-408) Percent Composition

	Gas(es)	Mixture	Flow rate	
Plasma				l/min
Shielding (a)	$Ar+CO_2$	92%+8%	13÷15	l/min
Shielding (b)				l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)

Current:	DC
Polarity:	RP
Mode of Metal Transfer for GMAW:	PULSED ARC
Tungsten Electrode Type & Size	/
Electrode wire feed speed range	/

TECHNIQUE (QW-410)

String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12-14mm
Method of Back Gouging	/
Oscillation: Amplitude	
Frequency	
Contact Tube to Work Distance	15÷20mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	N.A.

POSITIONS (QW-405)

Position(s) of groove or fillet	Flat (1G)
Welding Progression:	/
Other:	

PREHEAT (QW-406)

Preheat Temp.	>15°C
Interpass Temp.	Max 300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)

Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
Other: QW 410.64 : N.A.

Weld pass(es) or layers	Welding process(es)	Filler metal: AWS Class or Trade Name	Filler metal: Size/Dia (mm)	Current: Type & polarity	Current: Amp. Range ±10%	Volt Range ±10%	Travel: Speed Range (mm/min) ±10%	Other: HEAT IMPUT KJ/mm
1-1'	GMAW	Diamondspark 54 MC	1,2	DC-RP	140	19,5	195	0,84
2-2'	GMAW	Diamondspark 54 MC	1,2	DC-RP	200	21,5	205	1,258
3/3'-n/n'	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dalmazia, 15 [illegible] FERRARA	

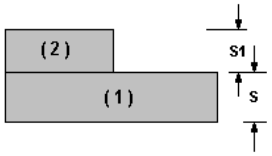
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. 24003-08 Rev. 0 Date: 08/05/2024 Supp. PQR N. P425-AS

Welding Process(es) a) GMAW b) _____ c) _____
Type(s) a) Semiautomatic b) _____ c) _____
Joints (QW-402)

Joint design FW: fillet weld (see sketch)
Backing GMAW (Yes) _____ (No) _____
Backing material (Type) BASE METAL
- Metal — Non fusing metal _____
- Non metallic — Other _____

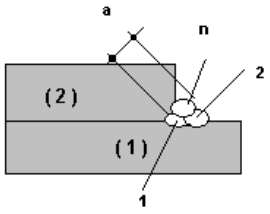
Base metal (QW-403)
P-No. _1_ Gr.No. _1/2_ to P-No. _1_ Gr. No. _1/2_
Spec. type & grade SA-516 Gr.60/70N
to spec. type & grade SA-516 Gr.60/70N
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm/inches): Groove 5÷21mm Fillet All
Pipe dia.: Groove :>150mm Fillet All
Other:

Joint Design
Disegno giunto
W61



S:5÷10mm - **S1:**5÷10mm

Welding Sequences
sequenze saldatura



All fillet welds (if no different indication on the drawing) shall be continuous type with **a (tc)** 0,7 of the thinner of the plate welded together
TUTTE LE SALDATURE DOVRANNO ESSERE CONTINUE CON UN ALTEZZA DI GOLA **a (tc)** DI 0,7 DELLO SPESSORE PIU' PICCOLO DA SALDARE, SE NON DIVERSAMENTE INDICATO SUL DISEGNO

FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.36		
AWS No. (Class)	E70T15-M21A8-CS1-H4		
F-No.	6		
A-No.	1		
Size of filler metal	1,2 mm		
F.M. Trade Name	Diamondspark 54 MC		
Manufacturer	Boehler		
Weld Metal Thickness Thickness Groove:	/		
Fillet:	All		
Flux Trade Name	/		
Manufacturer	/		
Electr.-Flux (Class)	/		

Other: **a):**QW 404.23 Metal cored , QW 404.24 : NO - QW 404.27 : NO

GAS (QW-408) Percent Composition

	Gas(es)	Mixture	Flow rate	
Plasma				l/min
Shielding (a)	Ar+CO_2	92%+8%	13÷15	l/min
Shielding (b)				l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	DC
Polarity:	RP
Mode of Metal Transfer for GMAW:	PULSED ARC
Tungsten Electrode Type & Size	/
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12-14mm
Method of Back Gouging	/
Oscillation: Amplitude	
Frequency	
Contact Tube to Work Distance	15÷20mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	N.A.

POSITIONS (QW-405)	
Position(s) of groove or fillet	Flat (1G)
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	>15°C
Interpass Temp.	Max 300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
Other: QW 410.64 : N.A.

Weld pass(es) or layers	Welding process(es)	Filler metal		Current		Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other HEAT IMPUT KJ/mm
		AWS Class or Trade Name	Size/Dia (mm)	Type & polarity	Amp. Range ±10%			
1	GMAW	Diamondspark 54 MC	1,2	DC-RP	140	19,5	195	0,84
2	GMAW	Diamondspark 54 MC	1,2	DC-RP	200	21,5	205	1,258
3-n'	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dig[illegible], 15 [44100] FERRARA	

SECTION 4

PQR: Procedure Qualification Record
Qualifiche Procedimenti di saldatura

-PQR P415-AS + Approval QP-AT-ITA-24-00164-rev.0
-PQR P423-AS + Approval QP-AT-ITA-24-00165-rev.0
-PQR P425-AS + Approval QP-AT-ITA-24-00166-rev.0

ISP N°0006

PERMANENT JOINING PROCEDURE APPROVAL CERTIFICATE

CERTIFICATO DI APPROVAZIONE DELLE GIUNZIONI PERMANENTI

N° QP-AP-ITA-24-00164-rev.0

MANUFACTURER FABBRICANTE	**C.A.M.P.I. rsl – Ferrara Italy**		
PJPQR IN APPROVAL N° NO DELLA QUALIFICA IN APPROVAZIONE	**PQR No. P415-AS Rev. 0**		
REFERENCE STANDARD OF PQR IN APPROVAL NORMA DI RIFERIMENTO QUALIFICA IN APPROVAZIONE	**ASME Sect. IX**		
THIRD PART RECOGNIZED OR BODY TERZA PARTE RICONOSCIUTA O ORGANISMO	**Bureau Veritas Italia**		
TEST IN PQR EQUIVALENT TO TEST AS PER HARMONIZED STANDARD TEST EFFETTUATI IN PQR SONO EQUIVALENTI COME PER NORMA ARMONIZZATA	**Yes /** Si **No /** No	☒ ☐	(Supplementary test required)
SUPPLEMENTED BY RIFERIMENTO DI EVENTUALI PROVE COMPLEMETARI	**N.A.**		
COMPLEMENTARY TEST(S) PERFORMED IN PRESENCE OF PROVE COMPLEMENTARI REALIZZATE IN PRESENZA DI	**N.A.**		

BUREAU VERITAS ITALIA S.P.A. NOTIFIED BODY NR 1370

BUREAU VERITAS ITALIA S.P.A. ORGANISMO NOTIFICATO N°1370

OFFICE LOCATION /AGENZIA DI :	**MILAN - ITALY**

CERTIFIES THAT THE PERMANENT JOINING PROCEDURE QUALIFICATION RECORD, POSSIBLY COMPLETED BY SUPPLEMENTARY TESTS, COMPLIES WITH THE ESSENTIAL SAFETY REQUIREMENTS STATED BY 2014/68/UE DIRECTIVE - APPENDIX 1- § 3.1.2.

CERTIFICA CHE LA QUALIFICA DI ASSEMBLAGGIO PERMANENTE, COMPLETATO DA EVENTUALI PROVE COMPLEMENTARI, SODDISFA LE ESIGENZE ESSENZIALI DI SICUREZZA DELLA DIRETTIVA 2014/68/UE DIRECTIVE - ALLEGATO1 - § 3.1.2.

Observations : **All tests are equivalent to the requirements of harmonized standard EN ISO 15614-1**
OSSERVAZIONI :

NAME / **Nome**	DATE/ **Data**	VISA / **Firma**	STAMP / **Timbro**
Gabriele Fracassi	**16/09/2024**		

OTHER IDENTIFICATION (AS NECESSARY) : **IT FILE 23.SF.7028064.138 Chrono No. P16344/24/GF/gf** PAGE 1/1
ALTRE IDENTIFICAZIONI (SE NECESSARIE)

Attachment : Approved document & Supplementary test certificate (if required)
ALLEGATO : DOCUMENTO APPROVATO & CERTIFICATO PROVE SUPPLEMENTARI (SE RICHIESTO)

C.A.M.P.I. srl Ferrara (Italy)	**PROCEDURE QUALIFICATION RECORD** (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon **PQR No. P415-AS**	**Rev.** 0 **Date:** April 20,2021

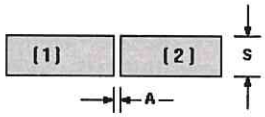
Company Name C.A.M.P.I. S.r.l. Via Diamantina,15 - 44122 Ferrara, ITALY

WPS No. P415-01AS

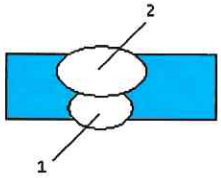
Welding Process(es) SAW (Submerged Arc Welding)

Types (Manual, Automatic, Machine) Machine

JOINTS (QW-402)



A: 2±1mm - **S:**6mm



Groove Design of Test Coupon
(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used)

BASE METALS (QW-403)
Material Spec. **(1):** SA516 **(2):** SA516
Type or Grade Gr. 60 to Gr 70
P. No. 1 Gr. 1 to P. No. 1 Gr. 2
Thickness of Test Coupon 6 mm
Diameter of Test Coupon Plate

POSTWELD HEAT TREATMENT (QW-407)
Temperature: 610±10°C
Time: 1hr/in minimum 60min.

Other: Heat and Cool rate 80°C/h above 300°C

Performed N°1 & N°3 cycles of simulated PWHT

FILLER METALS (QW-404)	**SAW**	
Weld Metal Analysis A-No.	1	
Size of Filler Metal (mm)	2,4	
Filler Metal F-No.	6	
SFA Specification	5.17	
AWS Classification	EH12K	
Deposited weld metal (mm)	6	
Flux Type	Neutral flux	
Flux Trade name	P230 LINCOLN	
Filler Metal Product Form	Solid wire	
Supplemental filler metal	NO	
Alloy elements	NO	
Filler Material trade name	L50M	
Manufacturer	LINCOLN	
QW-404.35 Flux/wire class.	F48P5-EH12K	

Others: QW-410.10: None ; QW-404.36 Recrushed slag: NO

GAS (QW-408) **Percent composition**

	Gas(es)	Mixture %	Flow rate
Shelding (1)	/	/	/
Shelding (2)	/	/	/
Trailing	None		
Backing	None		

ELECTRICAL CHARACTERISTICS (QW-409)

Current : DC	Polarity: RP	Travel Speed (mm/1')
1) Amps: 340	Volts: 26,8	600
2) Amps: 440	Volts: 29,5	600
3) Amps:	Volts:	
4) Amps:	Volts:	

Heat Input (KJ/mm): 1):0,911; 2):1,405

Others: Transfer mode: /

POSITION (QW-405)
Position of Groove 1G
Weld Progression (Uphill, Downhill) /
Other

PREHEAT (QW-406)
Preheat Temp. >15°C
Interpass Temp. Max 300°C
Other

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 20 APR. 2021

TECHNIQUE (QW-410)
String or wave bead: STRING
Oscillation: NO Frequency: N.A.
Multi pass or single pass (per side) MULTI
Single or multiple electrodes: SINGLE
Contact tube to work distance : 25÷28 mm
Orifice or Gas cap size: /
Use of Thermal process: N.A.

C.A.M.P.I. srl Ferrara (Italy)	PROCEDURE QUALIFICATION RECORD (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon PQR No. P415-AS	Rev. 0 Date: April 20,2021

Tensile Test (QW-150) with 1PWHT

Specimen No. QW 462.1(a)	Width mm	Thickness mm	Area mm^2	Ultimate Total Load N.	Tensile Strenght Rm (MPa)	Type of Failure & Location
415-1-t1	18,74	5,80	108,69	/	487	BM SA516 Gr.60
415-1-t2	18,66	5,81	109,58	/	480	BM SA516 Gr.60

Guided Bend Tests (QW-160) with 1PWHT

Type and Figure no.	Result
1-Face bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163
2-Face bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163
3-Root bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163
4-Root bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163

Toughness Tests (QW-170) with 1PWHT size 2,5mm

Specimen No.	Notch Location	Notch Type	Test. Temp.	Impact values-J.		Lateral Exp.		Drop Weight	
				Single	Average	% Shear	Mils.mm	Break	No.break
5-1	BM Gr.60	KV	-52°C	24	25,7				
5-2	BM Gr.60	KV	-52°C	25					
5-3	BM Gr.60	KV	-52°C	28					
3-1	HAZ	KV	-52°C	24	24,7				
3-2	HAZ	KV	-52°C	25					
3-3	HAZ	KV	-52°C	25					
1-1	WM	KV	-52°C	22	20,7				
1-2	WM	KV	-52°C	20					
1-3	WM	KV	-52°C	20					
2-1	HAZ	KV	-52°C	24	24				
2-2	HAZ	KV	-52°C	24					
2-3	HAZ	KV	-52°C	24					
4-1	BM Gr.70	KV	-52°C	20	23				
4-2	BM Gr.70	KV	-52°C	24					
4-3	BM Gr.70	KV	-52°C	25					

Fillet Weld Test (QW-180)

Result – Satisfactory: Yes ____/_____ No ____/___ Penetration into Parent Metal: Yes __/__ No __/__

Macro – Results

Other Tests

1) **Hardness test**: HV10 – Max 210 : SATISFACTORY Max 192HV
2) **Macrographic examination**: SATISFACTORY
3) **Deposit Analysis**: On weld metal – See certificate Studio VM Ferrara
4) **X Ray** according to ASME Sect. IX QW 191 & QW-302.2: SATISFACTORY
   See certificate RT 2021-02 on 24-March-2021
5) **Magnetic particle examination**: SATISFACTORY – see cert. MT 415-01AS on 23-March-2021
6) **Visual examination** According to ASME Sect. IX QW 194 & QW-302.4: SATISFACTORY
   See cert. VT 415-01AS on 23-March-2021

Tests conducted by: C.A.M.P.I. / Studio V.M. Laboratory Test No LAB-035-001_21 on 19-April-2021



C.A.M.P.I. srl Ferrara (Italy)	PROCEDURE QUALIFICATION RECORD (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon PQR No. P415-AS	Rev. 0 Date: April 20,2021

Tensile Test (QW-150) with 3PWHT

Specimen No. QW 462.1(a)	Width mm	Thickness mm	Area mm^2	Ultimate Total Load N.	Tensile Strenght Rm (MPa)	Type of Failure & Location
415-3-t1	18,82	5,91	111,23	/	464	BM SA516 Gr.60
415-3-t2	18,75	5,75	107,81	/	479	BM SA516 Gr.60

Guided Bend Tests (QW-160) with 3PWHT

Type and Figure no.	Result
5-Face bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163
6-Face bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163
7-Root bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163
8-Root bend QW462.3(a)	No imperfections – Acceptable criteria acc. to QW-163

Toughness Tests (QW-170) with 3PWHT size 2,5mm

Specimen No.	Notch Location	Notch Type	Test. Temp.	Impact values-J.		Lateral Exp.		Drop Weight	
				Single	Average	% Shear	Mils.mm	Break	No.break
10-1	BM Gr.60	KV	-52°C	24	22,7				
10-2	BM Gr.60	KV	-52°C	24					
10-3	BM Gr.60	KV	-52°C	20					
8-1	HAZ	KV	-52°C	22	23				
8-2	HAZ	KV	-52°C	28					
8-3	HAZ	KV	-52°C	19					
6-1	WM	KV	-52°C	23	22,3				
6-2	WM	KV	-52°C	25					
6-3	WM	KV	-52°C	19					
7-1	HAZ	KV	-52°C	28	29,3				
7-2	HAZ	KV	-52°C	30					
7-3	HAZ	KV	-52°C	30					
9-1	BM Gr.70	KV	-52°C	26	26,7				
9-2	BM Gr.70	KV	-52°C	28					
9-3	BM Gr.70	KV	-52°C	26					

Fillet Weld Test (QW-180)

Result – Satisfactory: Yes ____/_____ No ____/___ Penetration into Parent Metal: Yes __/__ No __/__
Macro – Results

Other Tests

1) **Hardness test**: HV10 – Max 210 : SATISFACTORY Max 198HV
2) **Macrographic examination**: SATISFACTORY
3) **Deposit Analysis**: On weld metal – See certificate Studio VM Ferrara
4) **X Ray** according to ASME Sect. IX QW 191 & QW-302.2: SATISFACTORY
   See certificate RT 2021-02 on 24-March-2021
5) **Magnetic particle examination**: SATISFACTORY – see cert. MT 415-01AS on 23-March-2021
6) **Visual examination** According to ASME Sect. IX QW 194 & QW-302.4: SATISFACTORY
   See cert. VT 415-01AS on 23-March-2021

Welder's Name: Perelli Cristian Clock No.: 85 Stamp No.: 8

Tests conducted by: C.A.M.P.I. / Studio V.M. Laboratory Test No LAB-035-001_21 on 19-April-2021

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 Ed.2019 of the ASME Boiler and Pressure Vessel Code.

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 20 APR. 2021

Test Supervised by _____

Signed _____

Date 20-April-2021

Manufacturer C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
I - 44122 FERRARA

By _____

Exhibit 7-2 Rev. 0 | 1 | 2 | 3 | 4 | 5

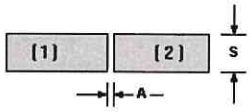
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. P415-01AS Rev. 0 Date: 23/03/2021 Supp. PQR N. P415-AS

Welding Process(es) a) SAW b) c)
Type(s) a) Machine b) c)
Joints (QW-402)

Joint design BW: V groove weld butt joint (see sketch)
Backing SAW (Yes) (No)
Backing material (Type) BASE METAL
- Metal — Non fusing metal
- Non metallic — Other

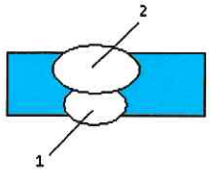
Base metal (QW-403)
P-No. 1 Gr.No. 1 to P-No. 1 Gr. No. 2
Spec. type & grade SA-516 Gr.60
to spec. type & grade SA-516 Gr.70
Chem. anal. & mech. prop.
to Chem. Anal. & Mech. Prop.
Thickness range
Base metal (mm/inches): Groove 6mm Fillet All
Pipe dia.: Groove :>2"7/8 Fillet All
Other:

Joint Design
Disegno giunto



A: 2±1mm - **S:**6mm

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.17		
AWS No. (Class)	EH12K		
F-No.	6		
A-No.	1		
Size of filler metal	2,4		
F.M. Trade Name	L50M		
Manufacturer	Lincoln		
Weld Metal Thickness Thickness Groove:	6mm		
Fillet:	/		
Flux Trade Name	P230		
Manufacturer	Lincoln		
Electr.-Flux (Class)	F48P5-EH12K		

Other:

GAS (QW-408)	Percent Composition			
	Gas(es)	Mixture	Flow rate	
Plasma	/	/	/	l/min
Shielding (a)	/	/	/	l/min
Shielding (b)	/	/	/	l/min
Trailing	/	/	/	l/min
Backing	/	/	/	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	DC
Polarity:	RP
Mode of Metal Transfer for GMAW:	/
Tungsten Electrode Type & Size	/
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING
Orifice or Gas Cup Size	/
Initial & Interpass Cleaning	GRINDING
Stick out:	/
Method of Back Gouging	GRINDING
Oscillation: Amplitude	
Frequency	
Contact Tube to Work Distance	25÷28mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	SINGLE

POSITIONS (QW-405)
Position(s) of groove or fillet: Flat (1G)
Welding Progression: /
Other:

PREHEAT (QW-406)
Preheat Temp.: >15°C
Interpass Temp.: Max 300°C
Preheat maintenance

POSTWELD HEAT TREATMENT (QW-407)
Temp. Range: 610±10°C
Time Range: 1hr/inch minimum 60min.
Heat rate: Max 80°C/h – above 300°C
Cool rate: Max 80°C/h– above 300°C and cooled in still air

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
Other:

Weld pass(es) or layers	Welding process(es)	Filler metal AWS Class or Trade Name	Filler metal Size/Dia (mm)	Current Type & polarity	Current Amp. Range ±10%	Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other HEAT INPUT KJ/mm
1	SAW	FL50M	2,4	DC-RP	340	26,8	600	0,911
grinding and PT Examination before back gouging / molatura prima della ripresa a rovescio + LP								
2	SAW	FL50M	2,4	DC-RP	440	29,5	600	1,405

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Terza parte *TP/Inspector*
	C.A.M.P.I. srl Partita IVA ... Via ... 15 44100 FERRARA	BUREAU VERITAS ITALIA WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 23 MAR. 2021

Exhibit 7-1 Rev. 0 1 2 3 4 5

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**		ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**		**Foglio N°** / Sheet No. **1 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**			**Data ricevimento 31/03/2021** **Data report 19/04/2021**
#Colata / Heat **1TAH340803B** **810493 A302**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA516 Gr.70** **SA516 Gr.60**	**Stato** / Status **Heat treated**

M-Lab Rev2

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I campioni testati sono archiviati per 30gg.
(#)= dati forniti dal cliente, per i quali il laboratorio non si assume responsabilità.
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The tested samples have been stored for 30 day.
(#) = data provided by the customer, for which the laboratory assumes no responsibility.
(*) = test not accredited by Accredia

Responsabile di prova Test responsible	**Responsabile di laboratorio** Laboratory manager	**Controllo qualità del cliente** Q.C. Client Supervisor	**Ispettore di 3^ parte** 3rd party Inspector
STUDIO V.M. srl M. Provasi Resp. Prove Meccaniche	STUDIO V.M. srl M. Bruschi Resp. Laboratorio		RINA SERVICES S.p.A. ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 19 APR. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **2 di 10**	
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**	
#Colata / Heat **1TAH340803B** **810493 A302**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA516 Gr.70** **SA516 Gr.60**	**Stato** / Status **Heat treated**

M-Lab Rev2

1) PROVA DI TRAZIONE TRASVERSALE/ Transversal tensile test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**WAW 600 D Lab-01**
Estensimetro digitale / Digital extensimeter	**-**
Metodo di prova / Standard	**ASME IX-19 QW-150**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Tipo di provetta / Test specimen	**Flat**

N.	Dimensioni Dimension (mm)	Sezione Section So (mm)	Lunghezza utile Rupture length Lo (mm)	Lunghezza finale Final length Lf (mm)	Loc. rottura Failure pos (see note)	Carico di rottura Tensile strength Rm (MPa)	Carico di snervamento Yield strength ReH (MPa)	Allungamento Elongation A %	Z %
1	18.74*5.80	108.69	-	-	BM SA516 Gr.60	487	321	-	-
2	18.86*5.81	109.58	-	-	BM SA516 Gr.60	480	327	-	-
3	18.82*5.91	111.23	-	-	BM SA516 Gr.60	464	310	-	-
4	18.75*5.75	107.81	-	-	BM SA516 Gr.60	479	310	-	-
Valore richiesto dal cliente Required value by client						-	-	-	-

N°1-2 performed after 1 cycle of PWHT
N°3-4 performed after 3 cycle of PWHT

BUREAU VERITAS
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SURVEYOR G. FRACASSI
DATE 19 APR. 2021

Note / note :
BM = metallo base / base metal **WM = saldatura** / weld metal **HAZ = zona termicamente alterata** / heat affected zone

Prova di trazione eseguita il / Tensile test performed on **19/04/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **3 di 10**	
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**	
#Colata / Heat **1TAH340803B** **810493 A302**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA516 Gr.70** **SA516 Gr.60**	**Stato** / Status **Heat treated**

M-Lab Rev2

2) *PROVA DI PIEGA / Bending test*

Apparecchiatura e codice V.M. / Equipment and V.M. code	**WAW 600 D Lab-01**
Metodo di prova / Standard	**ASTM E190-14, ASME IX-19 QW-160**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Tipo di piega / Bend type	**Face / Root**

No.	Dimensioni Dimensions (mm)	Tipo di Piega Bend type (see note)	Diametro del mandrino Diameter of spindle (mm)	Distanza rulli Rollers distance (mm)	Angolo° Bend angle°	Risultato Result
1	38*6	Face bend	24	39	180	No defect founds
2	38*6	Face bend	24	39	180	No defect founds
3	38*6	Root bend	24	39	180	No defect founds
4	38*6	Root bend	24	39	180	No defect founds
5	38*6	Face bend	24	39	180	No defect founds
6	38*6	Face bend	24	39	180	No defect founds
7	38*6	Root bend	24	39	180	No defect founds
8	38*6	Root bend	24	39	180	No defect founds

N°1-4 performed after 1 cycle of PWHT
N°5-8 performed after 3 cycle of PWHT

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

Note / note :
Face = Piega dritta / face bend **Root = Piega al rovescio** / root bend **Side = Piega laterale** / side bend

Prova di piega eseguita il / Bending test performed on **19/04/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **4 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
1TAH340803B	**-**	**SA516 Gr.70**	
810493 A302	**-**	**SA516 Gr.60**	**Heat treated**

M-Lab Rev2

3) PROVA DI RESILIENZA / Charpy impact test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**JBS 500J - KV8 Lab-01**
Metodo di prova / Standard	**ASME IX-19 QW-170**
Specifica del cliente / Client specification	**ASTM SA516 Gr.70**
Temperatura di prova / Test temperature	**-52°C**
Tipo di intaglio / Notch type	**V-NOTCH**

No.	Dimensioni Dimensions (mm)	Posizione Position	Valore Value (J)	Valore medio Average (J)	Shear fracture (%)	Lateral expansion (mm)
1-1	**2.5*10*55**	WZ 1 cycle PWHT	22	20.7	-	-
1-2	**2.5*10*55**		20		-	-
1-3	**2.5*10*55**		20		-	-
2-1	**2.5*10*55**	HAZ SA516 Gr.70 1 cycle PWHT	24	24.0	-	-
2-2	**2.5*10*55**		24		-	-
2-3	**2.5*10*55**		24		-	-
3-1	**2.5*10*55**	HAZ SA516 Gr.60 1 cycle PWHT	24	24.7	-	-
3-2	**2.5*10*55**		25		-	-
3-3	**2.5*10*55**		25		-	-
4-1	**2.5*10*55**	B.M. SA516 Gr.70 1 cycle PWHT	20	23.0	-	-
4-2	**2.5*10*55**		24		-	-
4-3	**2.5*10*55**		25		-	-
5-1	**2.5*10*55**	B.M. SA516 Gr.60 1 cycle PWHT	24	25.7	-	-
5-2	**2.5*10*55**		25		-	-
5-3	**2.5*10*55**		28		-	-
6-1	**2.5*10*55**	WZ 3 cycle PWHT	23	22.3	-	-
6-2	**2.5*10*55**		25		-	-
6-3	**2.5*10*55**		19		-	-
7-1	**2.5*10*55**	HAZ SA516 Gr.70 3 cycle PWHT	28	29.3	-	-
7-2	**2.5*10*55**		30		-	-
7-3	**2.5*10*55**		30		-	-
8-1	**2.5*10*55**	HAZ SA516 Gr.60 3 cycle PWHT	22	23.0	-	-
8-2	**2.5*10*55**		28		-	-
8-3	**2.5*10*55**		19		-	-
9-1	**2.5*10*55**	B.M. SA516 Gr.70 3 cycle PWHT	26	26.7	-	-
9-2	**2.5*10*55**		28		-	-
9-3	**2.5*10*55**		26		-	-
10-1	**2.5*10*55**	B.M. SA516 Gr.60 3 cycle PWHT	24	22.7	-	-
10-2	**2.5*10*55**		24		-	-
10-3	**2.5*10*55**		20		-	-
Valore richiesto dalla distinta Required value cutt-off sheet			**>34** **For specimen 10*10**	**>34** **For specimen 10*10**	-	-

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

Note / note :
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Prova di resilienza eseguita il / Charpy impact test performed on **19/04/2021**

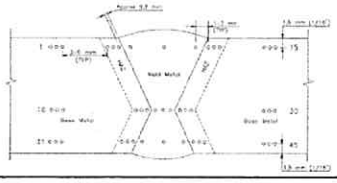
STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **5 di 10**	
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**	
#Colata / Heat **1TAH340803B** **810493 A302**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA516 Gr.70** **SA516 Gr.60**	**Stato** / Status **Heat treated**

M-Lab Rev2

4) PROVA DI DUREZZA VICKERS / Vickers hardness test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**HVS 30Z – Lab 04**
Metodo di prova / Standard	**ASTM E92-16**
Specifica del cliente / Client specification	**-**
Temperatura del controllo / Test temperature	**22°C**
Modalità di prova / Testing parameters	**In section - After 1 cycle PWHT**
Valore richiesto / Required value	**210 HV10 max**

No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10
1	B.M. SA516 Gr.60	140	16	B.M. SA516 Gr.60	136	31	B.M. SA516 Gr.60	137
2	B.M. SA516 Gr.60	145	17	B.M. SA516 Gr.60	139	32	B.M. SA516 Gr.60	138
3	B.M. SA516 Gr.60	145	18	B.M. SA516 Gr.60	137	33	B.M. SA516 Gr.60	136
4	H.A.Z.	137	19	H.A.Z.	144	34	H.A.Z.	146
5	H.A.Z.	142	20	H.A.Z.	142	35	H.A.Z.	142
6	H.A.Z.	154	21	H.A.Z.	149	36	H.A.Z.	152
7	W.Z.	165	22	W.Z.	167	37	W.Z.	167
8	W.Z.	170	23	W.Z.	171	38	W.Z.	173
9	W.Z.	185	24	W.Z.	175	39	W.Z.	182
10	H.A.Z.	187	25	H.A.Z.	192	40	H.A.Z.	172
11	H.A.Z.	165	26	H.A.Z.	185	41	H.A.Z.	155
12	H.A.Z.	156	27	H.A.Z.	162	42	H.A.Z.	150
13	B.M. SA516 Gr.70	155	28	B.M. SA516 Gr.70	153	43	B.M. SA516 Gr.70	151
14	B.M. SA516 Gr.70	155	29	B.M. SA516 Gr.70	145	44	B.M. SA516 Gr.70	154
15	B.M. SA516 Gr.70	157	30	B.M. SA516 Gr.70	149	45	B.M. SA516 Gr.70	155



BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 19 APR. 2021

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Prove di durezza eseguite il / Hardness test performed on **19/04/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **6 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**

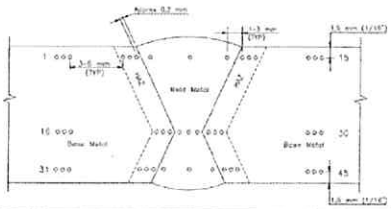
#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
1TAH340803B	**-**	**SA516 Gr.70**	
810493 A302	**-**	**SA516 Gr.60**	**Heat treated**

M-Lab Rev2

5) PROVA DI DUREZZA VICKERS / Vickers hardness test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**HVS 30Z – Lab 04**
Metodo di prova / Standard	**ASTM E92-16**
Specifica del cliente / Client specification	**-**
Temperatura del controllo / Test temperature	**22°C**
Modalità di prova / Testing parameters	**In section - After 3 cycle PWHT**
Valore richiesto / Required value	**210 HV10 max**

No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10
1	B.M. SA516 Gr.70	154	16	B.M. SA516 Gr.70	149	31	B.M. SA516 Gr.70	149
2	B.M. SA516 Gr.70	151	17	B.M. SA516 Gr.70	152	32	B.M. SA516 Gr.70	152
3	B.M. SA516 Gr.70	150	18	B.M. SA516 Gr.70	153	33	B.M. SA516 Gr.70	152
4	H.A.Z.	150	19	H.A.Z.	147	34	H.A.Z.	154
5	H.A.Z.	153	20	H.A.Z.	160	35	H.A.Z.	163
6	H.A.Z.	198	21	H.A.Z.	173	36	H.A.Z.	174
7	W.Z.	180	22	W.Z.	166	37	W.Z.	178
8	W.Z.	181	23	W.Z.	167	38	W.Z.	177
9	W.Z.	171	24	W.Z.	169	39	W.Z.	178
10	H.A.Z.	167	25	H.A.Z.	146	40	H.A.Z.	166
11	H.A.Z.	145	26	H.A.Z.	142	41	H.A.Z.	151
12	H.A.Z.	137	27	H.A.Z.	133	42	H.A.Z.	145
13	B.M. SA516 Gr.60	129	28	B.M. SA516 Gr.60	133	43	B.M. SA516 Gr.60	144
14	B.M. SA516 Gr.60	124	29	B.M. SA516 Gr.60	136	44	B.M. SA516 Gr.60	138
15	B.M. SA516 Gr.60	126	30	B.M. SA516 Gr.60	139	45	B.M. SA516 Gr.60	140



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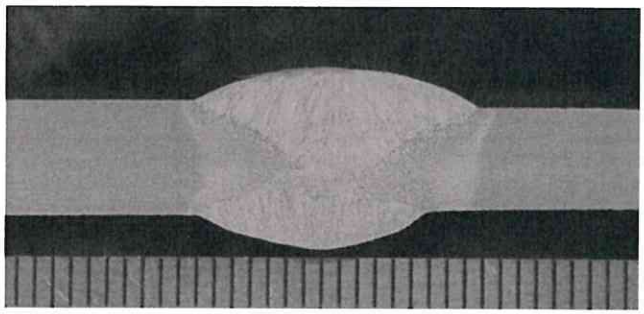
Prove di durezza eseguite il / Hardness test performed on **19/04/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**		**Foglio N°** / Sheet No. **7 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**			**Data ricevimento 31/03/2021** **Data report 19/04/2021**
#Colata / Heat **1TAH340803B** **810493 A302**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA516 Gr.70** **SA516 Gr.60**	**Stato** / Status **Heat treated**

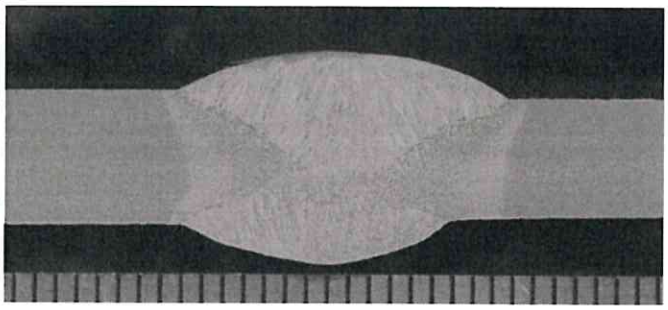
M-Lab Rev2

6) *ESAME MACROGRAFICO / Macrographic examination*

Apparecchiatura e codice V.M. / Equipment and V.M. code	**MACRO INFINITY - Lab 07**
Metodo di prova / Standard	**ASME IX-19 QW184**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Modalità di prova / Test modality	**In section**
Reattivo / Eatching	**Nital 10%**
Ingrandimento / Magnification	**3.5X**



After 1 Cycle PWHT



After 3 Cycle PWHT

Esame macrografico eseguito il / Macrographic examination performed on **19/04/2021**

BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ilac-MRA	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **8 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
1TAH340803B	**-**	**SA516 Gr.70**	
810493 A302	**-**	**SA516 Gr.60**	**Heat treated**

M-Lab Rev2

*7) ANALISI CHIMICA / Chemical analysis**

Apparecchiatura e codice V.M. / Equipment and V.M. code	**AMETEK SPEKTROMAXX**
Metodo di prova / Standard	**PO13**
Specifica del cliente / Client specification	**ASME IX-19 QW440 Table QW442**
Modalità di prova / Test modality	**Weld Metal**

No.	C %	Cr %	Mo %	Ni %	Mn %	Si %	-
1	0.131	0.032	0.007	0.025	1.36	0.701	-



Analisi chimica eseguita il /Chemical analysisperformed on **19/04/2021**

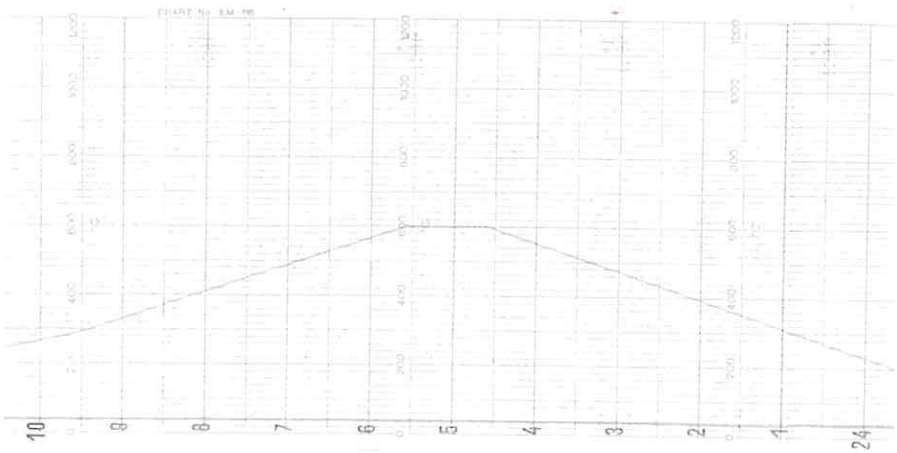
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**	**Foglio N°** / Sheet No. **9 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**		**Data ricevimento 31/03/2021** **Data report 19/04/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
1TAH340803B	**-**	**SA516 Gr.70**	
810493 A302	**-**	**SA516 Gr.60**	**Heat treated**

M-Lab Rev2

*8) TRATTAMENTO TERMICO / Heat treatment **

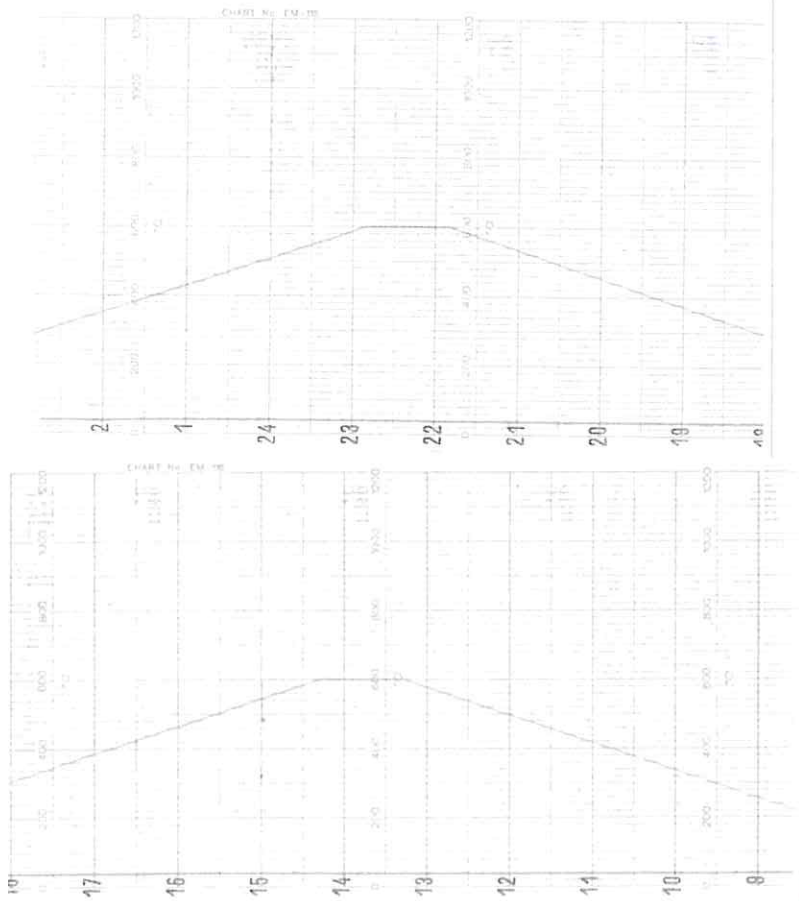
Apparecchiatura e codice V.M. / Equipment and V.M. code	**SICORTHERM ETTS/50**
Registratore / Recorder	**CHINO KL4106 Serial n° R1131C006**
Specifica del cliente / Client specification	**X3 Cycle**
Temperatura massima /Temperature	**610 °C**
Tempo di mantenimento / Holding time	**1h**
Gradiente di salita - discesa / Heating - cooling rate	**80°C/h**



BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-01_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P415**		**Foglio N°** / Sheet No. **10 di 10**
Oggetto / Subject **PQR P415 SAW Plate Thk.6mm Welder: Perelli Cristian** **Wire L50M 2.4mm Heat: F1SW200786 Flux P230 Heat: F1FX210033**			**Data ricevimento 31/03/2021** **Data report 19/04/2021**
#Colata / Heat **1TAH340803B** **810493 A302**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA516 Gr.70** **SA516 Gr.60**	**Stato** / Status **Heat treated**

M-Lab Rev2



BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

Trattamento termico eseguito il / Heat treated performed on **05/04/2021**

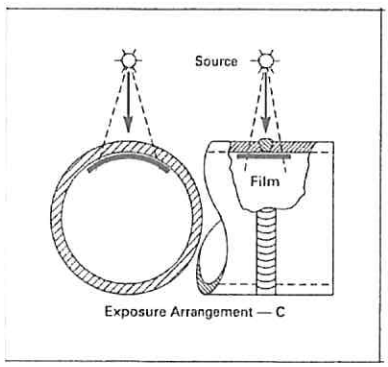
C.A.M.P.I. srl Ferrara (Italy)	CONTROLLO RADIOGRAFICO RADIOGRAPHIC EXAMINATION REPORT	RT No. 2021-02 Foglio / Sheet 1 of 2

APPARECCHIO- Equipment: Test plates P415 / P416 / P417 / P418 / P419 / P420 / P426 / P427 & P431 *Talloni di saldatura* P415 / P416 / P417 / P418 / P419 / P420 / P426 / P427 & P431	COLLAUDO *Inspection Authority*	COMMESSA / Job No. / N.F. / Item Serial No. /

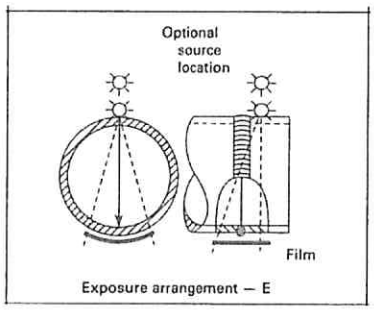
STADIO DI LAVORAZIONE : Dopo saldatura *Fabrication step : After welding*	CONDIZIONI SUPERFICIALI : come saldato *Test surface status : As welded*	
SPECIFICA DI CONTROLLO *Testing procedure:* C.A.M.P.I. IO ND101AS rev.6 / ASME Sect. V Ed.19 Art. 2	*CLASSE ACCETTABILITA' / Acceptance standard* C.A.M.P.I. IO ND101AS rev.6 / ASME VIII Div.1 Ed.19 - UW51 & App.4 / ASME IX Ed.19 QW191.1	ESTENSIONE *Extension* : 100%

TECNICA RADIOGRAFICA *Radiographic method*			1	2	3
SALDATURA *Weldjoint*	MATERIALE BASE TIPO *Base material type*		SA516Gr70	SA516Gr70 / SA312Tp304L / SA387Gr.11	SA516Gr70
	SPESSORE (nom.) mm *Thickness (nom.)*		6	10÷15	25
	RINFORZO mm *Weld reinforcement thk*		1,0+1,5	1,0+1,5	1,0+1,5
	TIPO DI SALDATURA *Welding type*		Butt Weld	Butt Weld	Butt Weld
PELLICOLA *Film*	MARCA – TIPO *Trade mark – type*		AGFA Structurix D5	AGFA Structurix D5	AGFA Structurix D5
	DOPPIA *Double film*		NO	NO	NO
	SINGOLA *Single film*		YES	YES	YES
	FORMATO *Size*		10x48	10x48	10x48
PENETRAMETRO *Penetrameter*	TIPO *Type*	ASME	ASTM 1B	ASTM 1B	ASTM 1B
		EN	-	-	-
	POSIZIONE *Location*	LATO SORG. *Source side*	■	■	■
		LATO FILM *Film side*	□	□	□
SCHERMI *Screens*	ANTERIORE *Front*	TIPO *Type*	Pb	Pb	Pb
		SPESSORE *Thickness*	0,05mm	0,05mm	0,05mm
	POSTERIORE *Back*	TIPO *Type*	Pb	Pb	Pb
		SPESSORE *Thickness*	0,10mm	0,10mm	0,10mm
SORGENTE *Source*	TIPO *Type*		Gilardoni 300/6	Gilardoni 300/6	Gilardoni 300/6
	ENERGIA *Energy*		170KV	220÷235KV	290KV
	INTENSITA' *Intensity*		3 mA	3 mA	3 mA
	F: MACCHIA FOCALE mm *F: Focal spot*		1,5X1,5	1.5X1.5	1.5X1.5
PARETI ATTRAV. *Radiation through*	Singola *Single wall*	Direzionale *Single*	■	■	■
		Panoramica *Multiple*	□	□	□
	Doppia	*Double wall*	□	□	□
D:Distance from source of radiation to weld or object being radiographed : mm *Distanza Fuoco- pezzo*			700	700	40
d:distance from surce side of weld or object being radiographated to the film : mm *Distanza pezzo- pellicola*			8	12÷17	27
TEMPO DI ESPOSIZIONE / DOSE *Exposure / Dose*			90"	90"	90"
DENSITA' PELLICOLA *Film density*			1,9 to 3,4	1,8 to 3,7	2,1 to 3,6
SENSIBILITA' RADIOGR. MINIMA *Penetrameter min. sensitivity*			2%	2%	2%

TECNICA RADIOGRAFICA 1-2-3
Radiographic method



TECNICA RADIOGRAFICA
Radiographic method



Ug : Geometric Unsharpness:
Penombra geometrica
Ug=Fd/D
D and d shall be determined at the approximate center of the area of interest.
For material thk <50mm
Ug max 0.51mm
- Result : OK

NUMERO TOTALE FILM: **9**
Number of films

DATA / *Date*	CAMPI	ISPETTORI / *Inspectors*	CLIENTE / *Purchaser*
24-March-2021	LIVELLO *Level* □ 1 ■ 2 □ 3		

C.A.M.P.I. SRL
MICHELE ANTOLINI
2 LEVEL ENT TC 1A
EN473/ISO 9712

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☑
Date 24/3/21
Signature

BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

C.A.M.P.I. srl Ferrara (Italy)	**CONTROLLO RADIOGRAFICO** **RADIOGRAPHIC EXAMINATION REPORT**	**RT No. 2021-02** Foglio / Sheet 2 of 2

N. saldatura *Weld no.*	Tratto *Section*	Diametro *Diameter*	Spessore *Thickness*	Tecnica radiografica *Radiographic method*	Difetto *Defect*	Giudizio *Evaluation*	Giudizio cliente *Customer evaluation*
P415-W1	1-2	/	6	1		A	
P416-W1	1-2	/	12	2		A	
P417-W1	1-2	/	25	3		A	
P418-W1	1-2	/	6	1		A	
P419-W1	1-2	/	12	2		A	
P420-W1	1-2	/	25	3		A	
P426-W1	1-2	/	10	2		A	
P427-W1	1-2	/	10	2		A	
P431-W1	1-2	/	15	2		A	

CLASSIFICAZIONE DIFETTI
Defects classification

100 - C Cricca / *Crack*
104 – CC Cricca di cratere / *Crater crack*
2011 - P Porosità isolate / *Gas pore*
2012 - PD Porosità distribuita uniformemente / *Uniformly distribuited porosity*
2013 – PP Nido di porosità/ *Clustered porosity*
2014 – PA Porosità alleneate / *Linear porosity*
2015 – IG Inclusioni di gas allungata / *Elonged cavity*
2016 – T Tarlo / *Worm hole*
202 – CA Cavità di ritiro / *Shrinkage cavity*
2024 –K Cavità di cratere / *Crater pipe*
301 – IS Inclusioni di scoria / *Slag inclusion*
302 – IF Inclusioni di flusso / *Flux inclusions*
303 – IO Inclusione di ossido / *Oxide inclusion*
3041 – IW Inclusione di tungsteno / *Tungsten inclusion*
401 - MF Mancanza di fusione / *Lack of fusion*
402 - MP Mancanza di penetrazione / *Lack of penetraion*

5011 – IMC Incisioni marginali continue / *Continuos undercut*
5012 – IMI Incisioni marginali intermittenza / *Intermittent undercut*
5013 – IMS Incisioni di radice / *Shrinkage groove*
504 – EP Eccesso di penetrazione / *Excess penetration*
5041- SG Sgoccilamento / *Local excessive penetration*
507 – SL Slivellamento / *Linear misalignment*
509 – SL Avvallamento / *Sagging*
511 – IN Insellamento / *Incompletely filled grove*
514 – SI Superfice irregolare / *Inter-run undercut*
515 – CR Concavità di radice / *Root concavity*
517 – RD Ripresa difettosa / *Poor restart*
601 – CD Colpo d'arco /*Arc strike stray arc*
602 – SP Spruzzi / *Spatter*
606 – EM Eccesso di molatura / *Underflusching*
BM Difetto materiale base /*Base material defect*
DF Difetto film / *Film defect*

A = ACCETTABILE (*acceptable*)
R = DA RIPARARE (*to repair*)
RRX= RIPETERE FILM (*Film repeat)*
A1 – A2 – A3 =
accettabile dopo 1^, 2^ e 3^ riparazione
(*acceptable after 1st, 2nd and 3rd repair*)

NOTES:

Date of exposure from 23-March-2021

DATA / *Date*	**CAMPI**	**ISPETTORI** / *Inspectors* / **CLIENTE** / *Purchaser*
24-March-2021	**LIVELLO** *Level* ☐ 1 ■ 2 ☐ 3 C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL UNT TC 1A EN473/ISO 9712	ITALY WITNESSED NOTED REVIEWED SURVEYOR G.FRACASSI DATE 19 APR. 2021

C.A.M.P.I. srl Ferrara (Italy)	**CERTIFICATO DI CONTROLLO VISIVO SALDATURE** *Visual Inspection Certificate Welded joints*	Certificato N. VT 415-01AS *Certificate no.* FOGLIO 1 DI 1 *Sheet of*

CLIENTE: / *Customer*	ORDINE N.: / *Order no.*	COMMESSA N.: 21004 *Job no.*
SIGLA - *Item :* / *SERVIZIO- Service :* *Test Plate Qualification*	NUM. FABBRICA: / *Serial number*	DISEGNO N.: / *Drawing n*
QCP N.: / FASE N.: / *QCP no. Stage no.*	PROCEDURA N. C.A.M.P.I. ND 105AS rev.2 *Procedure no.*	
COMPONENTE SOTTOPOSTO AL CONTROLLO *Component subject to test* DESCRIZIONE: Test Plate Qualification P415-AS 6mm Thk. *Description*		TIPO DI MATERIALE: *Type of material* SA516 Gr.70
SPECIF. APPLICAB. / *Appl. Specifications.* ASME Sect. IX Ed.2019 QW-194 / QW-302.4 ASME V Ed.2019 Art.9	CRITERI ACCETTABILITA' / *Acceptance criteria:* C.A.M.P.I. ND 105AS rev.2 / ASME Sect. IX Ed.2019 QW-194 / QW-302.4	

Designazione delle imperfezioni *Imperfections designation*	**Accettabilita'** *Acceptable*	**Note** Note
1)-Incompleto riempimento di cianfrini. Incomplete fill-up of weldgroove.	**Non Accettabile** *Unaccettable*	*None*
2)-Cricche, mancanza di fusione e penetrazione superficiale. Crack, lack of fusion or penetration.	**Non Accettabile** Unaccettable	*None*
3)-Incisioni marginali con profondità superiore a quella prevista dal Codice applicabile. Undercuts having depth greater than allowable values permitted by referencing Code section.	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
4)-Rinforzo di saldatura superiore a quanto previsto dal Codice applicabile. Weld reinforcement greater than allowable values permitted by referencing Code section	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
5)-Spigoli acuti o situazioni geometriche che possono interferire con la successiva esecuzione di esami non distruttivi. Sharp corners and weld profile that could interfere with radiographic examination or other N.D.E. methods.	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
6)-Scarsa raccordatura tra le passate, sovrapposizioni, brusche variazioni di sezione ed intagli. Coarse ripples, grooves, overlaps, abrupt ridges and valleys.	**Non Accettabile** Unaccettable	*None*
7)-Scorie di saldatura aderente, spruzzi e inneschi d'arco. Slag, spatters and arc spots.	**Non Accettabile** Unaccettable	*None*

Si certifica che il saggio sopra citato è stato sottoposto ad esame visivo delle saldature (100%) alla presenza di:
We certify that the piece has been visual examined and witnessed by:

Signor *Mr*		**Ispettore per** *Inspector for*	

RISULTATO DELL'ESAME VISIVO
VISUAL EXAMINATION RESULTS
SODDISFACENTE / Satisfactory

BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 19 APR. 2021

DATA / *Date* ***23-March-2021***	**C.A.M.P.I. Srl** **QC Dept.** C.A.M.P.I. S.R.L. - Ferrara Quality Control dept. Witnessed ☑ Reviewed ☐ Date 23/3/21 Signature	Foglio 1 di 1 *Sheet of* N. ----------

C.A.M.P.I. srl Ferrara (Italy)	**CERTIFICATO DI CONTROLLO CON LIQUIDI PENETRANTI** *LIQUID PENETRANT EXAMINATION REPORT*	**PT No.** P415-01AS Foglio / Sheet 1 of 1

CLIENTE: *Purchaser:* / ORDINE: *Purchase Order No.:* / APPARECCHIO: **Test plate coupon** Sigla: **P415** *Type of vessel :* *Item:*	**COLLAUDO** *Inspection Authority*	**COMMESSA** / Job No. / **N.F.** / Item Serial No. /

PARTE ESAMINATA : controllo effettuato su tallone di saldatura spessore 6mm *Examined part* *Test performed on test plate 6mm thickness*			
STADIO DI LAVORAZIONE *Working Step*	O *AFTER FORMING* O *AFTER MACHINING*	O *AFTER GRINDING* • *AFTER WELDING*	O *AFTER PWHT* O *AFTER HYDR.*
CONDIZIONI SUPERFICIALI *Test Surface Status*	■ COME SALD. *As welded*	□ MOLATO *Ground*	□ LAV. DI MACCHINA *Machined*
SPEC. DI CONTROLLO / *Examination procedure* C.A.M.P.I. IO ND102AS rev.4 / ASME Sect.V Art. 6 Ed 2019 & ASME IX Ed.2019 QW195		**CRITERI ACCETT.** *Acceptance criteria* C.A.M.P.I. IO ND102AS rev.4 / ASME Sect VIII Div.1 App.8 Ed. 2019 & ASME IX Ed.2019 QW195.2	

COMBINAZIONE LIQUIDI PENETRANTI / *Liquid Penetrant Grouping*

	■ LAVABILE CON ACQUA *Water washable*		□ LAVAB. CON SOLVENTE *Solvent removable*		□ POST-EMULSIFICABILE *Post-emulsified*	
	■ VISIBILE *Visible*	□ FLUOR. *Fluorescent*	□ VISIBILE *Visible*	□ FLUOR. *Fluorescent*	□ VISIBILE *Visible*	□ FLUOR. *Fluorescent*
PULITORE *Cleaner*	VELNET Batch 19/0526					
PENETRANTE *Penetrant*	RED W/W Batch 20/0074					
EMULSIFICATORE *Emulsified*	/					
RIMOZIONE PENETRANTE *Penetrant Remover*	/					
RIVELATORE *Developer*	ROTRIVEL U Batch 20/0146					
MARCA *Trade-mark*	CGM					
MEZZO DI ILLUMINAZIONE *Lighting Equipment*	■ NATURALE *Natural*	□ ARTIFICIALE *Artificial*				
LUXOMETRO S.N. *Luxmeter S.N.*	900710		DATA CALIBR. *Calibrat. Date*	02/10/2020	Lux value: 1200 lux	

PROCEDURA DI CONTROLLO / *Examination procedure*			**Refer doc. / Note**
PULITURA CON *Cleaning by*	*BRUSHING & VELNET*		WPS 415-01AS WELDING OPERATOR: PERELLI CRISTIAN STAMP No 8 MATERIALS: SA516 Gr.70 Ambient Temperature 16,4°C
APPLICAZIONE PENETRANTE CON *Penetrant application by*	SPRAY		
TEMPO MINIMO DI PENETRAZIONE Penetrant minimum time	15	MINUTI Minutes	
APPLICAZIONE EMULSIFICATORE CON *Emulsifier application by*	/		
RIMOZIONE PENETRANTE CON *Penetrant removal by*	ACQUA *WATER*		
APPLICAZIONE RIVELATORE *Developer application*	SPRAY		
ESSICCAZIONE CON *Drying process by*	NATURAL		
TEMPO MINIMO DI SVILUPPO *Developing minimum time*	10	MINUTI *Minutes*	
TEMPO MASSIMO DI LETTURA *Checking maximum time*	30	MINUTI *Minutes*	
ANALISI ACCETTAZIONE LIQUIDI *Liquid acceptance testing*	VEDI CERTIFICATO CGM *SEE CGM CERTIFICATE*		

RISULTATI DELL'ESAME *Examination Result* ■ *NO REPORTABLE INDICATIONS ACCEPTABLE* □ *SEE ATTACHED SHEETS* □ *NOT ACCEPTABLE*

DATA / *Date*	**CAMPI**	**ISPETTORI** / *Inspectors*
23-March-2021	**LIVELLO** *Level* □ 1 ■ 2 □ 3 C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL SNT TC 1A EN473/ISO 9712 C.A.M.P.I. S.R.L. - Ferrara Quality Control dept. Witnessed ☒ Reviewed ☐ Date 23/03/21 Signature	ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 19 APR. 2021

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS

Product Line	**SAW Wire**
Product	**L50M (LNS133U) (LS-3)**
Size(s) mm	**2,4**
Item No.	**FL50M-24-25VCI**
Lot/Batch	**F1SW200786**
Class	**AWS A5.17/A5.17M : EH12K** **ISO 14171-A : S3Si**

Chemical analysis (%) According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Al	Co	N
0.100	**0.30**	**1.75**	**0.007**	**0.004**	**0.03**	**0.02**	**<0.01**	**0.01**	**<0.01**	**<0.01**	**0.004**	**0.004**

Mechanical tests, all weld metal

Remarks

Additional copper coating : 0,12% max

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Via Fratelli Canepa 8
16010 Serra Riccò
Italy

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date

Printed By **Silvana Martinetto**
Function **Customer Service Center**
Date **01/MAR/2021**

Cert. No. **01349384**
ZEU_CMN , 1

OERLIKON SAF-FRO METRODE WELDING CONSUMABLES SPECIAL ALLOYS

Inspection Certificate 3.1

Product Line	**Flux**
Product	**P230**
Item No.	**FXP230-25SRB**
Lot/Batch	**F1FX210033**
Wire	**FL61-4-25VCI L61 4.00X25 STEIN BASKET +**
Class	**ISO 14174 : S A AB 1 67 AC H5***
	ISO14171-A S 38 4 AB S2Si
	AWS A5.17 F7A4-EM12K

LINCOLN ELECTRIC
THE WELDING EXPERTS

Flux Composition (%) According to EN10204 3.1

Al2O3	SiO2	TiO2	ZrO2	K2O	Na2O	MnO	CaO	MgO	CaF2
18.0	**21.0**	**2.0**	**0.2**	**1.30**	**1.90**	**5.3**	**5.8**	**17.9**	**25.2**

Al2O3+CaO+MgO
41.80

Sieve analysis (%) According to EN10204 3.1

>1,7mm	>0,85mm	>0,425mm	>0,25mm	<0,25mm
0.80	**53.80**	**34.20**	**10.30**	**0.90**

Chemical analysis (%) Batch: F1SW14O272 L61 4.00X25 STEIN BASKET + VCI 25KG According to EN10204 3.1

C	Si	Mn	P	S
0.12	**0.23**	**1.02**	**0.010**	**0.010**

Chemical analysis (%) / Weld Metal According to EN10204 2.2

C	Si	Mn	P	S	Cr	Ni	Mo
0.07	**0.33**	**1.30**	**0.016**	**0.013**	**0.03**	**0.02**	**<0.01**

Mechanical tests, all weld metal According to EN10204 2.2

Tensile testing

Cond.	Temp. °C	ReH MPa	Rm MPa	Z %
AW	**20**	**436**	**519**	**76**

Impact testing

Temp. °C	C1a J	C1b J	C1c J	KV J
-40	**109**	**100**	**128**	**112**

Remarks

* Nearest classification

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Loc. Casalmenini 3
37010 Rivoli Veronese
Italy

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☑
Date
Signature

Printed By: Silvana Martinetto
Function: Customer Service Center
Date: 04/MARCH/2021

Cert. No. **01385208**
ZEU_FLUX , 1

OERLIKON SAF-FRO METRODE WELDING CONSUMABLES SPECIAL ALLOYS

Tipo 13

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

METINVEST
METINVEST TRAMETAL SPA

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N° = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

S.I.A.T. SPA SOC. ITAL.

Via dei Cavallari 37
15077 PREDOSA 15077 IT
AL ITALIA

A02 N° Certificato / Certificate no.	C02 Data / Date
464682	27/05/2019
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
31901110	36
DDT	del / date
BOL 31909374	24/05/2019
Pratica / File no.	
del / date	

E06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/E02/F03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	SA516GR70MT/LTV
Normativa / Specification	ASME

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURA INIZIO °C	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	PERMANENZA (Q) Min HOLDING TIME	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	PERMANENZA (T) Min HOLDING TIME	RAFFREDDAMENTO COOLING
1	1TAH340801A	1537929	6.00X2500X12000	1,41	606142	BO	N	GE933																	
1	1TAH340801B	1537929	6.00X2500X12000	1,41	606142	BO	N	GE933																	
1	1TAH340802A	1537934	6.00X2500X12000	1,41	606143	BO	N	GE934																	
1	1TAH340802B	1537934	6.00X2500X12000	1,41	606143	BO	N	GE934																	
1	1TAH340803A	1537933	6.00X2500X12000	1,41	606144	BO	N	GE935																	
→ 1	1TAH340803B	1537933	6.00X2500X12000	1,41	606144	BO	N	GE935		HEAT CODE CS898															
1	1TAH340804A	1537930	6.00X2500X12000	1,41	606145	BO	N	GE936																	
1	1TAH340804B	1537930	6.00X2500X12000	1,41	606145	BO	N	GE936																	
1	1TAH340805A	1537936	6.00X2500X12000	1,41	606146	BO	N	GE937																	
1	1TAH340805B	1537936	6.00X2500X12000	1,41	606146	BO	N	GE937																	
1	1TAH340806A	1537931	6.00X2500X12000	1,41	606147	BO	N	GE938																	
1	1TAH340806B	1537931	6.00X2500X12000	1,41	606147	BO	N	GE938																	
1	1TAH340807A	1537937	6.00X2500X12000	1,41	606148	BO	N	GE939																	
1	1TAH340807B	1537937	6.00X2500X12000	1,41	606148	BO	N	GE939																	

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. GRACASSI DATE

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91
COLATA HEAT	C %	Mn %	Si %	P %	S %	Cu %	Ni %	Cr %	Mo %	Al %	V %	Nb %	Ti %	Sn %	Ca %	N %	B %	H %	Ceq1 % (D)	Ceq2 % (D)	Pcm % (D)
Ordine Min 1																					
Ordine Max 1	0,18				0,006						0,030	0,040								0,43	
SA51670LTV Min 0.00 - 12.50		0,85	0,15																		
SA51670LTV Max 0.00 - 12.50	0,27	1,20	0,40	0,035	0,035																
1TAH34	0,15	1,44	0,19	0,011	0,002	0,030	0,030	0,030	<0.005	0,036	<0.005	<0.010	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0002	0,39	0,40	0,23

			PROVA DI TRAZIONE TENSILE TEST										PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A8" ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
ORDINE Min 1													L	-46		16	20										
SA51670LTV Min 0.00 - 20.00					20		485		17,0	260																	
SA51670LTV Max 0.00 - 20.00					20		620																				
SA51670LTV Min 0.00 - 25.00													L	-46			20										
GE933	6,00	2	P	T	20		514		31,5	388	P	5,00	T	-50	P	84 69 60	71						HB	160 156 155	157		
GE933	6,00	2	P	T	300					289	C	5,00	L	-46	P	115 121 123	120										
GE933	6,00	2										5,00	T	-20	P	108 121 103	111										
GE934	6,00	2	P	T	20		511		32,3	390	P	5,00	T	-50	P	77 72 65	71						HB	155 153 158	155		
GE934	6,00	2										5,00	L	-46	P	131 131 145	136										
GE934	6,00	2										5,00	T	-20	P	110 112 115	112										
GE935	6,00	2	P	T	20		515		33,2	385	P	5,00	T	-50	P	79 70 67	72						HB	150 150 159	153		
GE935	6,00	2										5,00	L	-46	P	118 107 116	114										
GE935	6,00	2										5,00	T	-20	P	98 93 90	94										
GE936	6,00	2	P	T	20		522		30,3	382	P	5,00	T	-50	P	56 56 57	56						HB	149 153 162	154		
GE936	6,00	2										5,00	L	-46	P	113 111 124	116										
GE936	6,00	2										5,00	T	-20	P	89 97 89	92										
GE937	6,00	2	P	T	20		511		34,6	383	P	5,00	T	-50	P	63 77 70	70						HB	145 149 158	151		
GE937	6,00	2										5,00	L	-46	P	120 128 121	123										
GE937	6,00	2										5,00	T	-20	P	80 88 94	87										
GE938	6,00	2	P	T	20		512		31,2	399	P	5,00	T	-50	P	71 75 73	73						HB	161 150 159	156		
GE938	6,00	2										5,00	L	-46	P	113 116 124	118										
GE938	6,00	2										5,00	T	-20	P	122 108 109	113										
GE939	6,00	2	P	T	20		511		29,2	382	P	5,00	T	-50	P	74 67 71	71						HB	156 149 158	155		
GE939	6,00	2										5,00	L	-46	P	119 111 132	121										
GE939	6,00	2										5,00	T	-20	P	106 94 98	99										

C10

ASME SA-370 FIG. 3 AND FIG. 10 / 11 - SAMPLE TAKEN AFTER PLATE HEAT TREATMENT



D02-D50 CONTROLLO ULTRASONORO / ULTRASONIC EXAMINATION

D02	D03	D04	D05	D06	D07
APPARECCHIATURA EQUIPMENT	N° SERIE SERIAL NO	CONDIZIONI SUPERFICIALI SURFACE CONDITIONS	ACCOPPIANTE COUPLANT	MODALITÀ OPERATIVE PROCEDURE	TARATURA CALIBRATION
GILARDONI RDG450	RDG450-450-140185TC	GREZZO DI LAMINAZIONE AS ROLLED	ACQUA WATER	IN ACCORDO ALLA SPECIFICA ACCORDING TO SPECIFICATION	IN ACCORDO ALLA SPECIFICA ACCORDING TO SPECIFICATION

B07 LAMIERA PLATE	D08 SONDE PROBE	D09 DIAMETRO DIAMETER MM	D10 FREQUENZA FREQUENCE MHZ	D11 ANGOLO Angle °	D12 NORMA DI RIFERIMENTO STANDARD SPECIFICATION	D13 CLASSE DI ACCETTABILITÀ ACCEPTANCE SPECIFICATIONS	D14 ESITO RESULT	D15 INDICAZIONI INDICATIONS	D16 RETICOLO RETICLE	D17 BORDI EDGES
1TAH340801A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340801B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340802A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340802B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340803A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340803B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340804A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340804B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340805A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340805B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340806A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340806B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340807A		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50
1TAH340807B		mm 20	5 MHz	0	ASME-SA578/A		OK	NO INDICATIONS FOUND	mm 225x225	50

D18 NOTE REMARKS	D19 ENTE ISPETTIVO INSPECTOR	D20 FIRMA SIGNATURE
		METINVEST TRAMETAL S.p.a. F. Andrian III Liv. EN ISO 9712

Z01 ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
1		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

FULLY KILLED FINE GRAIN STEEL

HARDNESS IN ACC. TO NACE MR 0175 / ISO15156

HARDNESS IN ACC. TO NACE MR 0103

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASS DATE

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
PRODUCED FROM CONTINOUS CAST SLAB AND HAVE A MINIMUN REDUCTION RATIO OF 3 TO 1. ACCORDING TO ASME II PART A ED. 2017. FULLY KILLED, FINE GRAIN STEEL. Value of Mn maximun in derogation permitted up to 1.50% Plates acc. to PED 2014/68/EU	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	METINVEST TRAMETAL S.p.a. F. Andrian CQ Manager

GIOVANNI RIZZU

LIV.II ASNT TC-1A N.07DG00387PO2 - CERTIFICATO DI ABILITAZIONE RILASCIATO DAL RINA (REGISTRO ITALIANO NAVALE) A GENOVA IN DATA 27/04/2007

LIV.2 UNI EN 473 E ISO 9712 N.17MI00559P01 - CERTIFICATO DI ABILITAZIONE RILASCIATO DAL RINA (REGISTRO ITALIANO NAVALE) A GENOVA IN DATA 24/04/2017

RAPPORTO CONTROLLO ULTRASUONI

ULTRASONIC TEST REPORT

CERTIFICATO N.111-1

CLIENTE/CUSTOMER:	LOCALITA'/PLACE:	OGGETTO/DESCRIPTION:
S.I.A.T. S.P.A.	Predosa (AL)	CONTROLLO UT SU LAMIERE

DATA/DATE:03/09/2019

STRUMENTO/INSTRUMENT: GILARDONI MG 15

Scostamento Linearità:		Taratura fondo scala:		Taratura sensibilità:
Linearity:		Time base range calibration:		Sensivity calibration:
Vert. +/-0,5	Orizz. +/ 0,5	Onde long. 1 | 200	Onde trasv =	Foro/Hole
Vertical	Orizzontal	Long Wawes	Trasv Wawes	Eco di riferimento

SONDE/ Probes: GILARDONI

Onde Long. Tipo Dd 25	Onde Trasv. Tipo: =	Angolo emissione: =	Metodo di controllo
Long Wawes Type	Trasv. Wawes Type	Angle of reflection	Scanning method
Freq.: 2mhz	Freq.: =	Soglia/Damping: 0	Manuale con carrello 100%

MEZZO DI ACCOPPIAMENTO: Coupling	ACQUA/Water
AMPLIFICAZIONE DI ESPLORAZIONE: Scanning amplitude	54 DB
AMPLIFICAZIONE DI VALUTAZIONE: Evaluation amplidue	46 DB
ALTEZZA ECO DI TARATURA: Calibration pulse height	100% I ECO
NORME DI CONTROLLO: Scanning specifications	SA 578
NORME DI ACCETTABILITA': Acceptance standards specifications	SA 578 LEV. B + S1

NOTE: Remarks	QUALITA' Quality	DIMENSIONE Dimensions	COLATA Heat	PLACCA Plates
	SA 516.70	mm.19X3000X9000	ITAM52	ITAM520104A
	SA 516.70	mm.22X2500X10000	INAI50	INAI500403A
	SA 516.70	mm.20X2500X10000	INAI34	INAI340801A
	SA 516.70	mm.8X2500X12000	ITAL40	ITAL401004A
	SA 516.70	mm.6X2500X12000	ITAH34	ITAH340803B

ESITO: CONFORME A NORMA E CLASSE RICHIESTA

RESULT: IN CONFORMITY WITH THE NORM AND THE CLASS REQUESTED- NO RECORDABLE INDICATIONS FOUND

(The Operator
GIOVANNI RIZZU
LIV.II ASNT - TC-1A
CERT.N.07DG00387PO2
LIV. 2 UNI EN 473 - ISO 9712
CERT.N.17MI00559P01

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G.FRACASSO
DATE

NLMK CLABECQ
Rue de Clabecq 101
1460 ITTRE (BELGIQUE)

RECEPTION 3.1 selon EN 10204 (2004) - A2[illegible] selon ASME II Part A Ed.2013

N° 7020 — N° PAGE 3/3 — BLATT NR — PAGE No

PLAQUES-BLECHE-PLATES

SIGLE PRODUCTEUR HERSTELLERZEICHEN TRADE MARK: NQ

Selon Spec. 10042013-60

(E.L) : Etat de Livraison - (L)ieferzustand - (S.D) State of Delivery
N : Normalise

Poinçon organisme et / ou service de contrôle — Stempel des Abnahmebeauftragten — Stamp of the Inspection representative

CLIENT / DESTINATAIRE - BESTELLER / EMPFANGER - CUSTOMER / CONSIGNEE:
S.I.A.T. S.P.A.
SOCIETA'ITALIANA ACCIAI E TUBI
Via XII Ottobre 12
I-B7 GENOVA GE

N° COMMANDE COURTIER/CLIENT - MAKLER/KUNDENBESTELLNUMMER — BROKER/PURCHASER'S ORDER NUMBER: 1.176 du 15.07.13

N°Commande usine — Works Nr. — Works order No: 9097

NUANCE ET SPECIFICATIONS TECHNIQUES / PRUF-UND WERKSTOFFGRUNDLAGEN / QUALITY AND SPECIFICATIONS:
GRADE 60
ASME SA516 Ed.2013

IDENTIFICATION DU PRODUIT / ERZEUGNIS BENENNUNG – PRODUCT ID				DIMENSIONS – ABMESSUNGEN – DIMENSIONS					TRACTION – ZUGVERSUCH – TENSILE TEST						RESILIENCE – KERBSCHLAGZAHIGKEIT – IMPACT TEST							Dureté / Härte / Hardness		Norm. Glühen Norm.	Durée / Dauer / Duration		
No Référence / Referenz. Nr / Reference No	No Coulée / Schmelze Nr / Heat No	Brame / Bramme / Slab	N° Pst / Post Nr / Item Nr	Nbre de Plaques / Stückzahl / Nbr of pieces	Epaisseur / Dicke / Thickness	Largeur / Breite / Width	Longueur / Lange / Length	Masse Théorique / Theoretische Masse / Theoretical Mass	(E.L) / (L) / (S.D)	Place (2)	Sens Dir (3)	RP0,2 / YS0,2	Rm / Te	A%(1) / E%(1)			Temp °C	T.S.L (3)	Valeurs Individuelles / Einzelwerte / Individual Values				Moy / Mitw / Avrg					
					(m m)	(m m)	(m m)	(K g)				(MPa)	(MPa)						(Joules)					HB		°C	Minutes		
9031	810493	A3	1	4	6.00	2000	12000	4520	N	1	T	316	428	25.2+			-51	NL6	140	132	130	134		128		939	8		
									N								-50	VT6	62	64	60	62							
9032	810493	A4	1	3	6.00	2000	12000	3390	N	1	T	313	423	23.7+			-51	NL6	142	138	138	139		126		962	14		
									N								-50	VT6	70	68	62	67							
9033	810493	F3	1	3	6.00	2000	12000	3390	N	1	T	315	428	24.4+			-51	NL6	132	136	133	134		128		960	12		
									N								-50	VT6	82	80	80	81							
				10				11300																					
				29				58731																					

A302
A303
A304

ANALYSE COULEE - SCHMELZEANALYSE - HEAT ANALYSIS
(*) = ANALYSE PRODUIT - STÜCKANALYSE - PRODUCT ANALYSIS
(1) (*) Lo = 5,65 VS mm – (#) Lo = 50 mm – (+) Lo = 200 mm

(5)	N° COULEE / SCHMELZE Nr / HEAT No	Mn %	P%	S%	C%	Si%	Al%	Cu%	Nb%	Ni%	Cr%	V%	Mo%	Ti%	N2%	V+Nb +Ti%	Cr+Ni+ Mo+Cu%	Cr+Cu +Mo%
# CC	810493	1.090	0.014	0.003	0.097	0.158	0.037	0.020	0.002	0.009	0.018	0.003	0.001	0.002	0.0034	0.007	0.048	0.039

Controle de surface selon EN 10163-2, CL. B (S.-CL.2)
Acier totalement calme, a grains fins

N° article client – Artikel Nr des Kunden – Customer article No

BUREAU VERITAS ITALY WITNESSED / CHECKED / REVIEWED SURVEYOR DATE G. FRANCESCHI

Contrôle de marquage d'aspect et de dimensions : Satisfaisants
Kennzeichnung, Besichtigung und Ausmessung : Ohne Beanstandung
Marking, Inspection and measurement : Without objection

P275 NL2 /NH/P265GH SA516-60 HT LTV
EN 10029/2010 CL.C

ITTRE le 11/09/13
FAIENZA Savino
Editeur certificat

(3) Type : V : ISO V ; U : ISO U ; N : ASTM Charpy V
Sens : L : Long – Längs – Length T : Travers – Quer – Transverse
Localisation : 1 : Peau – Oberfläche – Rolled surface
2 : 1/2 Epaisseur – 1/2 Dicke – 1/2 Thickness
4 : 1/4 Epaisseur – 1/4 Dicke – 1/4 Thickness
6 : 5*10 mm 7 : 7,5*10 mm 8 : 8,7*10 mm

(2) Location – Probelage 1 : Tête – Kopf - Top
2 : Milieu – Mitte – Middle
3 : Pied – Fuss – Bottom
Impact test machines max. energy
EN 10045 : 460 J
ASTM/ASME A/SA 370: 358 J

(5) # : Oxygène pur – Sauerstoff – Oxygen + : EAF
CC : Coulée continue - Kontinuierliches Giessen
Continuous casting

Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande.
Wir bestätigen hiermit, dass die obengenannten Erzeugnisse den Bestellungsvorschriften entsprechen.
We certify hereby that the above mentioned products are consistent with the order prescriptions.

ISP N°0006

PERMANENT JOINING PROCEDURE APPROVAL CERTIFICATE

CERTIFICATO DI APPROVAZIONE DELLE GIUNZIONI PERMANENTI

N° QP-AP-ITA-24-00165-rev.0

MANUFACTURER FABBRICANTE	**C.A.M.P.I. rsl – Ferrara Italy**		
PJPQR IN APPROVAL N° NO DELLA QUALIFICA IN APPROVAZIONE	**PQR No. P423-AS Rev. 0**		
REFERENCE STANDARD OF PQR IN APPROVAL NORMA DI RIFERIMENTO QUALIFICA IN APPROVAZIONE	**ASME Sect. IX**		
THIRD PART RECOGNIZED OR BODY TERZA PARTE RICONOSCIUTA O ORGANISMO	**Bureau Veritas Italia**		
TEST IN PQR EQUIVALENT TO TEST AS PER HARMONIZED STANDARD TEST EFFETTUATI IN PQR SONO EQUIVALENTI COME PER NORMA ARMONIZZATA	**Yes /** Si **No /** No	☒ ☐	(Supplementary test required)
SUPPLEMENTED BY RIFERIMENTO DI EVENTUALI PROVE COMPLEMETARI	**N.A.**		
COMPLEMENTARY TEST(S) PERFORMED IN PRESENCE OF PROVE COMPLEMENTARI REALIZZATE IN PRESENZA DI	**N.A.**		

BUREAU VERITAS ITALIA S.P.A. NOTIFIED BODY NR 1370

BUREAU VERITAS ITALIA S.P.A. ORGANISMO NOTIFICATO N°1370

OFFICE LOCATION /AGENZIA DI :	**MILAN - ITALY**

CERTIFIES THAT THE PERMANENT JOINING PROCEDURE QUALIFICATION RECORD, POSSIBLY COMPLETED BY SUPPLEMENTARY TESTS, COMPLIES WITH THE ESSENTIAL SAFETY REQUIREMENTS STATED BY 2014/68/UE DIRECTIVE - APPENDIX 1- § 3.1.2.

CERTIFICA CHE LA QUALIFICA DI ASSEMBLAGGIO PERMANENTE, COMPLETATO DA EVENTUALI PROVE COMPLEMENTARI, SODDISFA LE ESIGENZE ESSENZIALI DI SICUREZZA DELLA DIRETTIVA 2014/68/UE DIRECTIVE - ALLEGATO1 - § 3.1.2.

Observations : **All tests are equivalent to the requirements of harmonized standard EN ISO 15614-1**
OSSERVAZIONI :

NAME / **Nome**	DATE/ **Data**	VISA / **Firma**	STAMP / **Timbro**
Gabriele Fracassi	**16/09/2024**		

OTHER IDENTIFICATION (AS NECESSARY) : **IT FILE 23.SF.7028064.138 Chrono No. P16345/24/GF/gf** PAGE 1/1
ALTRE IDENTIFICAZIONI (SE NECESSARIE)

Attachment : Approved document & Supplementary test certificate (if required)
ALLEGATO : DOCUMENTO APPROVATO & CERTIFICATO PROVE SUPPLEMENTARI (SE RICHIESTO)

C.A.M.P.I. srl Ferrara (Italy)	**PROCEDURE QUALIFICATION RECORD** (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon **PQR No. P423-AS**	**Rev.** 0 **Date:** May 18,2021

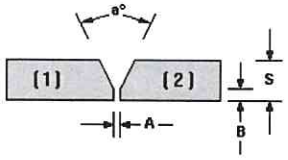
Company Name: C.A.M.P.I. S.r.l. Via Diamantina,15 - 44122 Ferrara, ITALY

WPS No.: P423-01AS

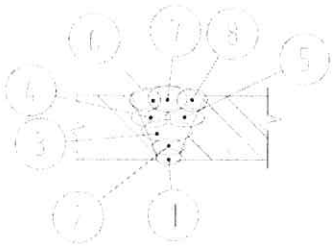
Welding Process(es): GTAW + SMAW

Types (Manual, Automatic, Machine): Manual

JOINTS (QW-402)



A:3÷5mm - **B:**1,5±1mm **a°:**75±2,5 - **S:**12,7mm
Dia. 8"



Groove Design of Test Coupon
(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used)

BASE METALS (QW-403)
Material Spec. **(1):** SA333 **(2):** SA106
Type or Grade Gr.6 to Gr.C
P. No. 1 Gr. 1 to P. No. 1 Gr. 2
Thickness of Test Coupon: 12,7 mm
Diameter of Test Coupon: 8" (219,1mm)

POSTWELD HEAT TREATMENT (QW-407)
Temperature: 610±10°C
Time: 1hr/in minimum 60min.

Other: Heat and Cool rate 80°C/h above 300°C

Performed N°1 & N°3 cycles of simulated PWHT

FILLER METALS (QW-404)	(1)GTAW	(2)SMAW
Weld Metal Analysis A-No.	10	1
Size of Filler Metal (mm)	2,4	3,2/4,0
Filler Metal F-No.	6	4
SFA Specification	5.28	5.1
AWS Classification	ER80S-Ni1	E7018-1 H4
Deposited weld metal (mm)	2	11
Flux Type	/	/
Flux Trade name	/	/
Filler Metal Product Form	Solid wire	/
Supplemental filler metal	NO	NO
Alloy elements	NO	NO
Filler Material trade name	Carborod Ni1	Tenax 35S
Manufacturer	LINCOLN	LINCOLN
QW-404.35 Flux/wire class.	/	/

Others: QW404.23: Solid wire – QW 404.22: No –QW404.14:With Filler Metal

GAS (QW-408) **Percent composition**

	Gas(es)	Mixture %	Flow rate
Shelding (1)	Ar	99,999	14 l/min
Shelding (2)	/	/	/
Trailing	None		
Backing	None		

ELECTRICAL CHARACTERISTICS (QW-409)

Current : DC	Polarity: (1)SP (2) RP	Travel Speed (mm/1')
1) Amps: 146	Volts: 14,2	73
2-3) Amps: 118	Volts: 22,5	123
4-5) Amps: 160	Volts: 24,5	90
6÷8) Amps: 160	Volts: 24,5	90

Heat Input (KJ/mm): 1):1,71; 2÷3):1,3; 4÷8):2,61

Others: Transfer mode: /

POSITION (QW-405)
Position of Groove 1G
Weld Progression (Uphill, Downhill) /
Other

PREHEAT (QW-406)
Preheat Temp. >15°C
Interpass Temp. Max 300°C
Other

TECHNIQUE (QW-410)
String or wave bead: STRING
Oscillation: NO Frequency: N.A.
Multi pass or single pass (per side) MULTI
Single or multiple electrodes: SINGLE
Contact tube to work distance : /
Orifice or Gas cap size: 16mm
Use of Thermal process: N.A.

C.A.M.P.I. srl Ferrara (Italy)	**PROCEDURE QUALIFICATION RECORD** (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon **PQR No. P423-AS**	**Rev.** 0 **Date:** May 18,2021

Tensile Test (QW-150) with 1PWHT

Specimen No. QW 462.1(a)	Width mm	Thickness mm	Area mm^2	Ultimate Total Load N.	Tensile Strenght Rm (MPa)	Type of Failure & Location
423-1-t1	18,92	13,23	250,31	/	444	BM SA333 Gr.6
423-1-t2	19,02	12,55	238,7	/	457	BM SA333 Gr.6

Guided Bend Tests (QW-160) with 1PWHT

Type and Figure no.	Result
1-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
2-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
3-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
4-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163

Toughness Tests (QW-170) with 1PWHT size 10mm

Specimen No.	Notch Location	Notch Type	Test. Temp.	Impact values-J.		Lateral Exp.		Drop Weight	
				Single	Average	% Shear	Mils.mm	Break	No.break
4-1	BM Gr.6	KV	-52°C	60	66,3				
4-2	BM Gr.6	KV	-52°C	68					
4-3	BM Gr.6	KV	-52°C	71					
2-1	HAZ	KV	-52°C	66	64				
2-2	HAZ	KV	-52°C	65					
2-3	HAZ	KV	-52°C	61					
1-1	WM	KV	-52°C	60	64,3				
1-2	WM	KV	-52°C	65					
1-3	WM	KV	-52°C	68					
3-1	HAZ	KV	-52°C	64	66,3				
3-2	HAZ	KV	-52°C	66					
3-3	HAZ	KV	-52°C	69					
5-1	BM Gr.C	KV	-52°C	70	69,3				
5-2	BM Gr.C	KV	-52°C	65					
5-3	BM Gr.C	KV	-52°C	73					

Fillet Weld Test (QW-180)

Result – Satisfactory: Yes ____/_____ No ____/___ Penetration into Parent Metal: Yes __/__ No __/__

Macro – Results

Other Tests

1) **Hardness test**: HV10 – Max 210 : SATISFACTORY Max 185HV
2) **Macrographic examination**: SATISFACTORY
3) **Deposit Analysis**: On weld metal – See certificate Studio VM Ferrara
4) **X Ray** according to ASME Sect. IX QW 191 & QW-302.2: SATISFACTORY
   See certificate RT 2021-01 on 09-March-2021
5) **Liquid Penetrant examination**: SATISFACTORY – see cert. PT 423-01AS on 05-March-2021
6) **Visual examination** According to ASME Sect. IX QW 194 & QW-302.4: SATISFACTORY
   See cert. VT 423-01AS on 05-March-2021

Tests conducted by: C.A.M.P.I. / Studio V.M. Laboratory Test No LAB-035-009_21 on 18-May-2021

C.A.M.P.I. srl Ferrara (Italy)	**PROCEDURE QUALIFICATION RECORD** (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon **PQR No. P423-AS**	**Rev.** 0 **Date:** May 18,2021

Tensile Test (QW-150) with 3PWHT

Specimen No. QW 462.1(a)	Width mm	Thickness mm	Area mm^2	Ultimate Total Load N.	Tensile Strenght Rm (MPa)	Type of Failure & Location
426-3-t1	19,0	13,01	247,19	/	450	BM SA333 Gr.6
426-3-t2	18,97	12,78	242,43	/	453	BM SA333 Gr.6

Guided Bend Tests (QW-160) with 3PWHT

Type and Figure no.	Result
5-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
6-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
7-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
8-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163

Toughness Tests (QW-170) with 3PWHT size 10mm

Specimen No.	Notch Location	Notch Type	Test. Temp.	Impact values-J.		Lateral Exp.		Drop Weight	
				Single	Average	% Shear	Mils.mm	Break	No.break
9-1	BM Gr.6	KV	-52°C	84	82				
9-2	BM Gr.6	KV	-52°C	80					
9-3	BM Gr.6	KV	-52°C	82					
7-1	HAZ	KV	-52°C	76	71,3				
7-2	HAZ	KV	-52°C	70					
7-3	HAZ	KV	-52°C	68					
6-1	WM	KV	-52°C	78	74				
6-2	WM	KV	-52°C	74					
6-3	WM	KV	-52°C	70					
8-1	HAZ	KV	-52°C	65	67,3				
8-2	HAZ	KV	-52°C	66					
8-3	HAZ	KV	-52°C	71					
10-1	BM Gr.C	KV	-52°C	78	78,3				
10-2	BM Gr.C	KV	-52°C	80					
10-3	BM Gr.C	KV	-52°C	76					

Fillet Weld Test (QW-180)

Result – Satisfactory: Yes ____/_____ No ____/___ Penetration into Parent Metal: Yes __/__ No __/__
Macro – Results

Other Tests

1) **Hardness test**: HV10 – Max 210 : SATISFACTORY Max 177HV
2) **Macrographic examination**: SATISFACTORY
3) **Deposit Analysis**: On weld metal – See certificate Studio VM Ferrara
4) **X Ray** according to ASME Sect. IX QW 191 & QW-302.2: SATISFACTORY
   See certificate RT 2021-01 on 09-March-2021
5) **Liquid Penetrant examination**: SATISFACTORY – see cert. PT 423-01AS on 05-March-2021
6) **Visual examination** According to ASME Sect. IX QW 194 & QW-302.4: SATISFACTORY
   See cert. VT 423-01AS on 05-March-2021

Welder's Name: Perelli Cristian Clock No.: 85 Stamp No.: 8

Tests conducted by: C.A.M.P.I. / Studio V.M. Laboratory Test No LAB-035-009_21 on 18-May-2021

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 Ed.2019 of the ASME Boiler and Pressure Vessel Code.

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

Test Supervised by _____

Signed _____

Date 18-May-2021

Manufacturer C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
I - 44122 FERRARA

By _____
QUALITY CONTROL
QC

Exhibit 7-2 Rev. 0 | 1 | 2 | 3 | 4 | 5

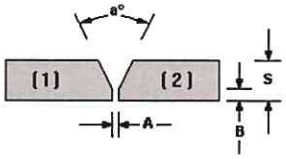
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. P423-01AS Rev. 0 Date: 04/03/2021 Supp. PQR N. P423-AS

Welding Process(es) a) GTAW b) SMAW c) _____
Type(s) a) Manual b) Manual c) _____
Joints (QW-402)

Joint design BW: V groove weld butt joint (see sketch)
Backing SMAW (Yes) GTAW (No) _____
Backing material (Type) WELD METAL
- Metal — Non fusing metal _____
- Non metallic — Other _____

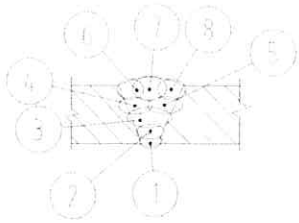
Base metal (QW-403)
P-No. 1 Gr.No. 1 to P-No. 1 Gr. No. 2
Spec. type & grade SA333 Gr.6
to spec. type & grade SA106 Gr.C
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm/inches): Groove 12,7mm Fillet All
Pipe dia.: Groove : 8" Fillet: All
Other:

Joint Design
Disegno giunto



A:3÷5mm - **B:**1,5±1mm
a°:75±2,5 - **S:**12,7mm
Dia. 8"

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.1	
AWS No. (Class)	ER80S-Ni1	E7018-1 H4	
F-No.	6	4	
A-No.	10	1	
Size of filler metal	2,4 mm	3,2/4,0 mm	
F.M. Trade Name	Carborod Ni1	TENAX 35S	
Manufacturer	Lincoln	Lincoln	
Weld Metal Thickness Thickness Groove:	2 mm	Max 11 mm	
Fillet:	All	All	
Flux Trade Name	/		
Manufacturer	/		
Electr.-Flux (Class)	/		

Other **a):**QW404.23: Solid wire – QW 404.22: No –QW404.14:With Filler Metal

GAS (QW-408)	Percent Composition			
	Gas(es)	Mixture	Flow rate	
Plasma				l/min
Shielding (a)	Ar	99,99%	14	l/min
Shielding (b)				l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min
Other:				

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	a)-b) DC
Polarity:	a)SP b)RP
Mode of Metal Transfer for GMAW:	/
Tungsten Electrode Type & Size	SFA 5.12 EWLa-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	
Frequency	
Contact Tube to Work Distance	/
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	N.A.

POSITIONS (QW-405)	
Position(s) of groove or fillet	Flat (1G)
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	>15°C
Interpass Temp.	Max 300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Other
Peening no permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No – **b):** QW410.64 No

Weld pass(es) or layers	Welding process(es)	Filler metal		Current		Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other HEAT IMPUT KJ/mm
		AWS Class or Trade Name	Size/Dia (mm)	Type & polarity	Amp. Range ±10%			
1	GTAW	ER80S-Ni1	2,4	DC-SP	146	14,2	73	1,71
2-3	SMAW	E7018-1 H4	3,2	DC-RP	118	22,5	123	1,3
4-5	SMAW	E7018-1 H4	3,2	DC-RP	160	24,5	90	2,61
6÷8	SMAW	E7018-1 H4	4,0	DC-RP	160	24,5	90	2,61

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]80389 Via Dalmazia, 15 I 44100 FERRARA	WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 04 MAR. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **1 di 10**	
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**	
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

M-Lab Rev2

Sommario / Summary

1) PROVA DI TRAZIONE TRASVERSALE/ Transversal tensile test 2
2) PROVA DI PIEGA / Bending test 3
3) PROVA DI RESILIENZA / Charpy impact test 4
4) PROVA DI DUREZZA VICKERS / Vickers hardness test 5
5) PROVA DI DUREZZA VICKERS / Vickers hardness test 6
6) ESAME MACROGRAFICO / Macrographic examination 7
7) ANALISI CHIMICA / Chemical analysis* 8
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I campioni testati sono archiviati per 30gg.
(#)= dati forniti dal cliente, per i quali il laboratorio non si assume responsabilità.
(*)= prova non accreditata da Accredia

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(#) = data provided by the customer, for which the laboratory assumes no responsibility.
(*) = test not accredited by Accredia

Responsabile di prova Test responsible	Responsabile di laboratorio Laboratory manager	Controllo qualità del cliente Q.C. Client Supervisor	Ispettore di 3^ parte 3rd party Inspector
STUDIO V.M. srl M. Provasi Resp. Prove Meccaniche	STUDIO V.M. srl M. Bruschi Resp. Laboratorio		BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **2 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679 **81463**	**-** **-**	**SA333 Gr.6** **SA106 Gr.C**	**Heat treated**

M-Lab Rev2

1) PROVA DI TRAZIONE TRASVERSALE/ Transversal tensile test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**WAW 600 D Lab-01**
Estensimetro digitale / Digital extensimeter	**-**
Metodo di prova / Standard	**ASME IX-19 QW-150**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Tipo di provetta / Test specimen	**Flat**

N.	**Dimensioni** Dimension (mm)	**Sezione** Section So (mm)	**Lunghezza utile** Rupture length Lo (mm)	**Lunghezza finale** Final length Lf (mm)	**Loc. rottura** Failure pos (see note)	**Carico di rottura** Tensile strength Rm (MPa)	**Carico di snervamento** Yield strength ReH (MPa)	**Allungamento** Elongation A %	**Z %**
1	18.92*13.23	250.31	-	-	BM **SA333 Gr.6**	444	332	-	-
2	19.02*12.55	238.70	-	-	BM **SA333 Gr.6**	457	308	-	-
3	19.00*13.01	247.19	-	-	BM **SA333 Gr.6**	450	338	-	-
4	18.97*12.78	242.43	-	-	BM **SA333 Gr.6**	453	327	-	-
Valore richiesto dal cliente Required value by client						-	-	-	-

N°1-2 performed after 1 cycle of PWHT
N°3-4 performed after 3 cycle of PWHT



Note / note :
BM = metallo base / base metal **WM = saldatura** / weld metal **HAZ = zona termicamente alterata** / heat affected zone

Prova di trazione eseguita il / Tensile test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **3 di 10**	
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**	
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

M-Lab Rev2

2) *PROVA DI PIEGA / Bending test*

Apparecchiatura e codice V.M. / Equipment and V.M. code	**WAW 600 D Lab-01**
Metodo di prova / Standard	**ASTM E190-14, ASME IX-19 QW-160**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Tipo di piega / Bend type	**Side**

No.	Dimensioni Dimensions (mm)	Tipo di Piega Bend type (see note)	Diametro del mandrino Diameter of spindle (mm)	Distanza rulli Rollers distance (mm)	Angolo° Bend angle°	Risultato Result
1	10*12.7	Side bend	40	63	180	No defect founds
2	10*12.7	Side bend	40	63	180	No defect founds
3	10*12.7	Side bend	40	63	180	No defect founds
4	10*12.7	Side bend	40	63	180	No defect founds
5	10*12.7	Side bend	40	63	180	No defect founds
6	10*12.7	Side bend	40	63	180	No defect founds
7	10*12.7	Side bend	40	63	180	No defect founds
8	10*12.7	Side bend	40	63	180	No defect founds

N°1-4 performed after 1 cycle of PWHT
N°5-8 performed after 3 cycle of PWHT

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

Note / note :
Face = Piega dritta / face bend **Root = Piega al rovescio** / root bend **Side = Piega laterale** / side bend

Prova di piega eseguita il / Bending test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **4 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

M-Lab Rev2

3) PROVA DI RESILIENZA / Charpy impact test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**JBS 500J - KV8 Lab-01**
Metodo di prova / Standard	**ASME IX-19 QW-170**
Specifica del cliente / Client specification	**ASTM SA516 Gr.70**
Temperatura di prova / Test temperature	**-52°C**
Tipo di intaglio / Notch type	**V-NOTCH**

No.	Dimensioni Dimensions (mm)	Posizione Position	Valore Value (J)	Valore medio Average (J)	Shear fracture (%)	Lateral expansion (mm)
1-1	10*10*55	WZ 1 cycle PWHT	60	64.3	-	-
1-2	10*10*55		65		-	-
1-3	10*10*55		68		-	-
2-1	10*10*55	HAZ SA333 Gr.6 1 cycle PWHT	66	64.0	-	-
2-2	10*10*55		65		-	-
2-3	10*10*55		61		-	-
3-1	10*10*55	HAZ SA106 Gr.C 1 cycle PWHT	64	66.3	-	-
3-2	10*10*55		66		-	-
3-3	10*10*55		69		-	-
4-1	10*10*55	B.M. SA333 Gr.6 1 cycle PWHT	60	66.3	-	-
4-2	10*10*55		68		-	-
4-3	10*10*55		71		-	-
5-1	10*10*55	B.M. SA106 Gr.C 1 cycle PWHT	70	69.3	-	-
5-2	10*10*55		65		-	-
5-3	10*10*55		73		-	-
6-1	10*10*55	WZ 3 cycle PWHT	78	74.0	-	-
6-2	10*10*55		74		-	-
6-3	10*10*55		70		-	-
7-1	10*10*55	HAZ SA333 Gr.6 3 cycle PWHT	76	71.3	-	-
7-2	10*10*55		70		-	-
7-3	10*10*55		68		-	-
8-1	10*10*55	HAZ SA106 Gr.C 3 cycle PWHT	65	67.3	-	-
8-2	10*10*55		66		-	-
8-3	10*10*55		71		-	-
9-1	10*10*55	B.M. SA333 Gr.6 3 cycle PWHT	84	82.0	-	-
9-2	10*10*55		80		-	-
9-3	10*10*55		82		-	-
10-1	10*10*55	B.M. SA106 Gr.C 3 cycle PWHT	78	78.3	-	-
10-2	10*10*55		80		-	-
10-3	10*10*55		76		-	-
Valore richiesto dalla distinta Required value cutt-off sheet			**>34** **For specimen 10*10**	**>34** **For specimen 10*10**	-	-

Note / note :
BM = metallo base / base metal **WM = saldatura** / weld metal **HAZ = zona termicamente alterata** / heat affected zone

Prova di resilienza eseguita il / Charpy impact test performed on **18/05/2021**

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **5 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679 **81463**	**-** **-**	**SA333 Gr.6** **SA106 Gr.C**	**Heat treated**

M-Lab Rev2

4) PROVA DI DUREZZA VICKERS / Vickers hardness test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**HVS 30Z – Lab 04**
Metodo di prova / Standard	**ASTM E92-16**
Specifica del cliente / Client specification	**-**
Temperatura del controllo / Test temperature	**22°C**
Modalità di prova / Testing parameters	**In section - After 1 cycle PWHT**
Valore richiesto / Required value	**210 HV10 max**

No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10
1	B.M. SA333 Gr.6	130	16	B.M. SA333 Gr.6	135	-	-	-
2	B.M. SA333 Gr.6	135	17	B.M. SA333 Gr.6	132	-	-	-
3	B.M. SA333 Gr.6	133	18	B.M. SA333 Gr.6	137	-	-	-
4	H.A.Z.	142	19	H.A.Z.	150	-	-	-
5	H.A.Z.	148	20	H.A.Z.	162	-	-	-
6	H.A.Z.	165	21	H.A.Z.	174	-	-	-
7	W.Z.	181	22	W.Z.	184	-	-	-
8	W.Z.	180	23	W.Z.	185	-	-	-
9	W.Z.	178	24	W.Z.	180	-	-	-
10	H.A.Z.	175	25	H.A.Z.	177	-	-	-
11	H.A.Z.	159	26	H.A.Z.	164	-	-	-
12	H.A.Z.	148	27	H.A.Z.	152	-	-	-
13	B.M. SA106 Gr.C	137	28	B.M. SA106 Gr.C	140	-	-	-
14	B.M. SA106 Gr.C	135	29	B.M. SA106 Gr.C	139	-	-	-
15	B.M. SA106 Gr.C	140	30	B.M. SA106 Gr.C	137	-	-	-



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WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

Note / note :
B.M. = **metallo base** / base metal **W.M.** = **saldatura** / weld metal **H.A.Z.** = **zona termicamente alterata** / heat affected zone

Prove di durezza eseguite il / Hardness test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ilac-MRA	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **6 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

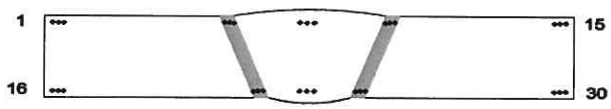
#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

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5) PROVA DI DUREZZA VICKERS / Vickers hardness test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**HVS 30Z – Lab 04**
Metodo di prova / Standard	**ASTM E92-16**
Specifica del cliente / Client specification	**-**
Temperatura del controllo / Test temperature	**22°C**
Modalità di prova / Testing parameters	**In section - After 3 cycle PWHT**
Valore richiesto / Required value	**210 HV10 max**

No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10
1	B.M. SA333 Gr.6	136	16	B.M. SA333 Gr.6	132	-	-	-
2	B.M. SA333 Gr.6	132	17	B.M. SA333 Gr.6	132	-	-	-
3	B.M. SA333 Gr.6	135	18	B.M. SA333 Gr.6	136	-	-	-
4	H.A.Z.	147	19	H.A.Z.	145	-	-	-
5	H.A.Z.	152	20	H.A.Z.	156	-	-	-
6	H.A.Z.	170	21	H.A.Z.	172	-	-	-
7	W.Z.	175	22	W.Z.	176	-	-	-
8	W.Z.	170	23	W.Z.	177	-	-	-
9	W.Z.	176	24	W.Z.	173	-	-	-
10	H.A.Z.	174	25	H.A.Z.	175	-	-	-
11	H.A.Z.	161	26	H.A.Z.	162	-	-	-
12	H.A.Z.	150	27	H.A.Z.	156	-	-	-
13	B.M. SA106 Gr.C	139	28	B.M. SA106 Gr.C	140	-	-	-
14	B.M. SA106 Gr.C	137	29	B.M. SA106 Gr.C	137	-	-	-
15	B.M. SA106 Gr.C	135	30	B.M. SA106 Gr.C	135	-	-	-



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Note / note :
B.M. = **metallo base** / base metal **W.M.** = **saldatura** / weld metal **H.A.Z.** = **zona termicamente alterata** / heat affected zone

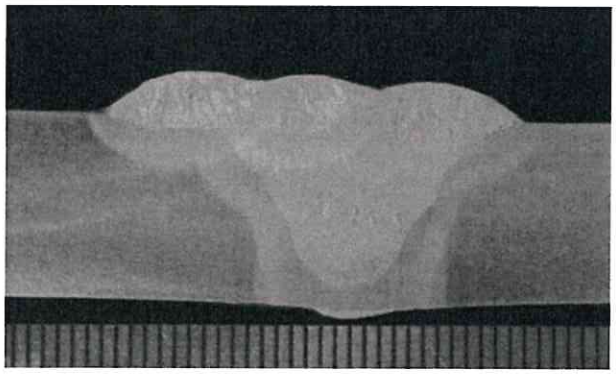
Prove di durezza eseguite il / Hardness test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**		**Foglio N°** / Sheet No. **7 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**			**Data ricevimento 31/03/2021** **Data report 18/05/2021**
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

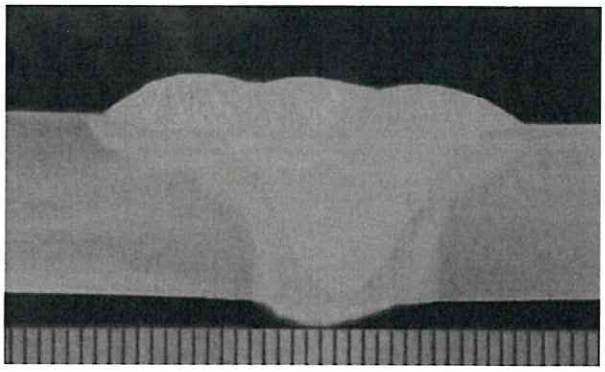
M-Lab Rev2

6) *ESAME MACROGRAFICO / Macrographic examination*

Apparecchiatura e codice V.M. / Equipment and V.M. code	**MACRO INFINITY - Lab 07**
Metodo di prova / Standard	**ASME IX-19 QW184**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Modalità di prova / Test modality	**In section**
Reattivo / Eatching	**Nital 10%**
Ingrandimento / Magnification	**3.5X**



After 1 Cycle PWHT



After 3 Cycle PWHT

Esame macrografico eseguito il / Macrographic examination performed on **18/05/2021**

BUREAU VERITAS ITALY
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SURVEYOR G. FRACASS
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STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**		**Foglio N°** / Sheet No. **8 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**			**Data ricevimento 31/03/2021** **Data report 18/05/2021**
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

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*7) ANALISI CHIMICA / Chemical analysis**

Apparecchiatura e codice V.M. / Equipment and V.M. code	**AMETEK SPEKTROMAXX**
Metodo di prova / Standard	**PO13**
Specifica del cliente / Client specification	**ASME IX-19 QW440 Table QW442**
Modalità di prova / Test modality	**Weld Metal**

No.	C %	Cr %	Mo %	Ni %	Mn %	Si %	-
1	0.138	0.062	0.008	0.260	1.30	0.576	-

BUREAU VERITAS ITALY
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SURVEYOR G. FRACASSI
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Analisi chimica eseguita il /Chemical analysisperformed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

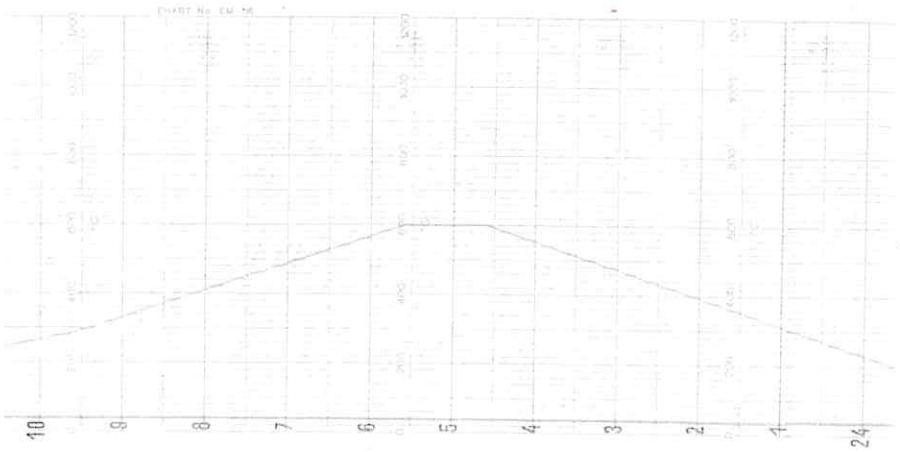
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**	**Foglio N°** / Sheet No. **9 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

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*8) TRATTAMENTO TERMICO / Heat treatment **

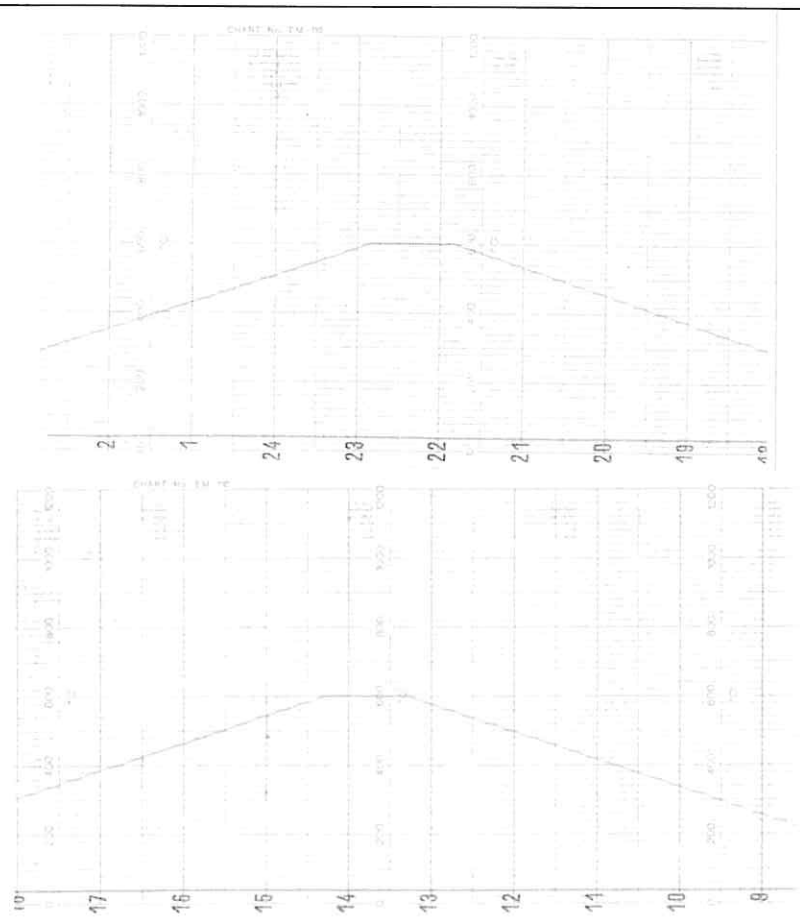
Apparecchiatura e codice V.M. / Equipment and V.M. code	**SICORTHERM ETTS/50**
Registratore / Recorder	**CHINO KL4106 Serial n° R1131C006**
Specifica del cliente / Client specification	**X3 Cycle**
Temperatura massima /Temperature	**610 °C**
Tempo di mantenimento / Holding time	**1h**
Gradiente di salita - discesa / Heating - cooling rate	**80°C/h**



BUREAU VERITAS
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WITNESSED NOTED REVIEWED
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STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-09_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P423**		**Foglio N°** / Sheet No. **10 di 10**
Oggetto / Subject **PQR P423 GTAW+SMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Electrode Tenax 35S Heat: M1MS21209+M1MS212140**			**Data ricevimento 31/03/2021** **Data report 18/05/2021**
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

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ITALY
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SURVEYOR G. FRACASSI
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Trattamento termico eseguito il / Heat treated performed on **05/04/2021**

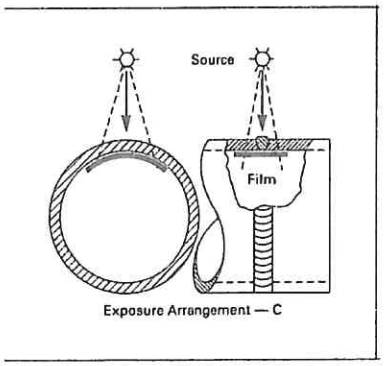
C.A.M.P.I. srl Ferrara (Italy)	CONTROLLO RADIOGRAFICO RADIOGRAPHIC EXAMINATION REPORT	RT No. 2021-01 Foglio / Sheet 1 of 2

APPARECCHIO- Equipment: Test plates **P421 / P422 / P423 / P424 & P425** *Talloni di saldatura **P421 / P422 / P423 / P424 & P425***	**COLLAUDO** *Inspection Authority*	**COMMESSA** / Job No. / **N.F.** / Item Serial No. /

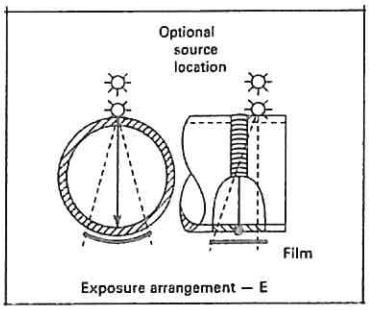
STADIO DI LAVORAZIONE : Dopo saldatura *Fabrication step : After welding*	CONDIZIONI SUPERFICIALI : come saldato *Test surface status : As welded*	
SPECIFICA DI CONTROLLO *Testing procedure:* C.A.M.P.I. IO ND101AS rev.6 / ASME Sect. V Ed.19 Art. 2	*CLASSE ACCETTABILITA' / Acceptance standard* C.A.M.P.I. IO ND101AS rev.6 / ASME VIII Div.1 Ed.19 - UW51 & App.4 / ASME IX Ed.19 QW191.1	ESTENSIONE *Extension* : 100%

TECNICA RADIOGRAFICA *Radiographic method*			1	2		3
SALDATURA *Weldjoint*	MATERIALE BASE TIPO *Base material type*		SA333Gr.6 / SA106Gr.C	SA333Gr.6 / SA106Gr.C		SA333Gr.6 / SA106Gr.C
	SPESSORE (nom.) mm *Thickness (nom.)*		8"x12,7	3"x7,62	1"½ x 7,14	½"x3,73
	RINFORZO mm *Weld reinforcement thk*		1,0+1,5	1,0+1,5		1,0+1,5
	TIPO DI SALDATURA *Welding type*		Butt Weld	Butt Weld		Butt Weld
PELLICOLA *Film*	MARCA – TIPO *Trade mark – type*		AGFA Structurix D7	AGFA Structurix D7		AGFA Structurix D7
	DOPPIA *Double film*		NO	NO		NO
	SINGOLA *Single film*		YES	YES		YES
	FORMATO *Size*		10x24	10x16 / 10x24		10x16
PENETRAMETRO *Penetrameter*	TIPO *Type*	ASME	ASTM 1B	ASTM 1A		ASTM 1A
		EN	-	-		-
	POSIZIONE *Location*	LATO SORG. *Source side*	□	□		□
		LATO FILM *Film side*	■	■		■
SCHERMI *Screens*	ANTERIORE *Front*	TIPO *Type*	Pb	Pb		Pb
		SPESSORE *Thickness*	0,05mm	0,05mm		0,05mm
	POSTERIORE *Back*	TIPO *Type*	Pb	Pb		Pb
		SPESSORE *Thickness*	0,10mm	0,10mm		0,10mm
SORGENTE *Source*	TIPO *Type*		Ir192	Ir192		Ir192
	ENERGIA *Energy*		15 Ci	15 Ci		15 Ci
	INTENSITA' *Intensity*		/	/		/
	F: MACCHIA FOCALE mm *F: Focal spot*		2x1,32	2x1,32		2x1,32
PARETI ATTRAV. *Radiation through*	Singola *Single wall*	Direzionale *Single*	□	□		□
		Panoramica *Multiple*	□	□		□
	Doppia	*Double wall*	■	■		■
D:Distance from source of radiation to weld or object being radiographed : mm *Distanza Fuoco- pezzo*			220	90	50	40
d:distance from surce side of weld or object being radiographated to the film : mm *Distanza pezzo- pellicola*			2	2	2	2
TEMPO DI ESPOSIZIONE / DOSE *Exposure / Dose*			6'	4'	2'	5"
DENSITA' PELLICOLA *Film density*			2,3 to 3,1	2,2 to 3,5		2,4 to 3,3
SENSIBILITA' RADIOGR. MINIMA *Penetrameter min. sensitivity*			2%	2%		2%

TECNICA RADIOGRAFICA
Radiographic method



TECNICA RADIOGRAFICA 1-2-3
Radiographic method



Ug : Geometric Unsharpness:
Penombra geometrica
Ug=Fd/D
D and d shall be determined at the approximate center of the area of interest.
For material thk <50mm
Ug max 0.51mm
- Result : OK

NUMERO TOTALE FILM: **37**
Number of films

DATA / *Date*	**CAMPI**	**ISPETTORI** / *Inspectors*	**CLIENTE** / *Purchaser*
09-March-2021	**LIVELLO** *Level* □ 1 ■ 2 □ 3	C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL UT TC 1A EN473/ISO 9712	BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. PRACAS DATE 18 MAG. 2021

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date 09/03/21
Signature

C.A.M.P.I. srl Ferrara (Italy)	CONTROLLO RADIOGRAFICO RADIOGRAPHIC EXAMINATION REPORT	RT No. 2021-01 Foglio / Sheet 2 of 2

N. saldatura *Weld no.*	Tratto *Section*	Diametro *Diameter*	Spessore *Thickness*	Tecnica radiografica *Radiographic method*	Difetto *Defect*	Giudizio *Evaluation*	Giudizio cliente *Customer evaluation*
P421 W1	1	21,3	3,73	3		A	
P421 W1	2	21,3	3,73	3		A	
P421 W2	1	21,3	3,73	3		A	
P421 W2	2	21,3	3,73	3		A	
P421 W3	1	21,3	3,73	3		A	
P421 W3	2	21,3	3,73	3		A	
P421 W4	1	21,3	3,73	3		A	
P421 W4	2	21,3	3,73	3		A	
P421 W5	1	21,3	3,73	3		A	
P421 W5	2	21,3	3,73	3		A	
P421 W6	1	21,3	3,73	3		A	
P421 W6	2	21,3	3,73	3		A	
P422 W1	1	48,3	7,14	2		A	
P422 W1	2	48,3	7,14	2		A	
P422 W1	3	48,3	7,14	2		A	
P422 W2	1	48,3	7,14	2		A	
P422 W2	2	48,3	7,14	2		A	
P422 W2	3	48,3	7,14	2		A	
P422 W3	1	48,3	7,14	2		A	
P422 W3	2	48,3	7,14	2		A	
P422 W3	3	48,3	7,14	2		A	
P423 W1	1-2	219,1	12,7	1		A	
P423 W1	2-3	219,1	12,7	1		A	
P423 W1	3-4	219,1	12,7	1		A	
P423 W1	4-1	219,1	12,7	1		A	
P424 W1	1-2	88,9	7,62	2		A	
P424 W1	2-3	88,9	7,62	2		A	
P424 W1	3-4	88,9	7,62	2		A	
P424 W1	4-1	88,9	7,62	2		A	
P424 W2	1-2	88,9	7,62	2		A	
P424 W2	2-3	88,9	7,62	2		A	
P424 W2	3-4	88,9	7,62	2		A	
P424 W2	4-1	88,9	7,62	2		A	
P425 W1	1-2	219,1	12,7	1		A	
P425 W1	2-3	219,1	12,7	1		A	
P425 W1	3-4	219,1	12,7	1		A	
P425 W1	4-1	219,1	12,7	1		A	

CLASSIFICAZIONE DIFETTI
Defects classification

100 - C Cricca / *Crack*
104 – CC Cricca di cratere / *Crater crack*
2011 - P Porosità isolate / *Gas pore*
2012 - PD Porosità distribuita uniformemente / *Uniformly distribuited porosity*
2013 – PP Nido di porosità/ *Clustered porosity*
2014 – PA Porosità alleneate / *Linear porosity*
2015 – IG Inclusioni di gas allungata / *Elonged cavity*
2016 – T Tarlo / *Worm hole*
202 – CA Cavità di ritiro / *Shrinkage cavity*
2024 –K Cavità di cratere / *Crater pipe*
301 – IS Inclusioni di scoria / *Slag inclusion*
302 – IF Inclusioni di flusso / *Flux inclusions*
303 – IO Inclusione di ossido / *Oxide inclusion*
3041 – IW Inclusione di tungsteno / *Tungsten inclusion*
401 - MF Mancanza di fusione / *Lack of fusion*
402 - MP Mancanza di penetrazione / *Lack of penetraion*

5011 – IMC Incisioni marginali continue / *Continuos undercut*
5012 – IMI Incisioni marginali intermittenza / *Intermittent undercut*
5013 – IMS Incisioni di radice / *Shrinkage groove*
504 – EP Eccesso di penetrazione / *Excess penetration*
5041- SG Sgoccilamento / *Local excessive penetration*
507 – SL Slivellamento / *Linear misalignment*
509 – SL Avvallamento / *Sagging*
511 – IN Insellamento / *Incompletely filled grove*
514 – SI Superfice irregolare / *Inter-run undercut*
515 – CR Concavità di radice / *Root concavity*
517 – RD Ripresa difettosa / *Poor restart*
601 – CD Colpo d'arco /*Arc strike stray arc*
602 – SP Spruzzi / *Spatter*
606 – EM Eccesso di molatura / *Underflusching*
BM Difetto materiale base /*Base material defect*
DF Difetto film / *Film defect*

A = ACCETTABILE (*acceptable)*
R = DA RIPARARE (*to repair*)
RRX= RIPETERE FILM *(Film repeat)*
A1 – A2 – A3 =
accettabile dopo 1^, 2^ e 3^ riparazione
(*acceptable after 1st, 2nd and 3rd repair*)

NOTES:

Date of exposure from 08-March-2021

DATA / *Date*	CAMPI	ISPETTORI / *Inspectors*	CLIENTE / *Purchaser*
09-March-2021	LIVELLO *Level* ☐ 1 ■ 2 ☐ 3 C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL ENT TC 1A EN 473 ISO 9712	ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021	

C.A.M.P.I. srl Ferrara (Italy)	**CERTIFICATO DI CONTROLLO VISIVO SALDATURE** *Visual Inspection Certificate Welded joints*	Certificato N. VT 423-01AS *Certificate no.* FOGLIO 1 DI 1 *Sheet of*

CLIENTE: / *Customer*	ORDINE N.: / *Order no.*	COMMESSA N.: 21004 *Job no.*
SIGLA - *Item :* / *SERVIZIO- Service :* *Test Plate Qualification*	NUM. FABBRICA: / *Serial number*	DISEGNO N.: / *Drawing n*
QCP N.: / FASE N.: / *QCP no. Stage no.*	PROCEDURA N. C.A.M.P.I. ND 105AS rev.2 *Procedure no.*	
COMPONENTE SOTTOPOSTO AL CONTROLLO *Component subject to test* DESCRIZIONE: Test Pipe Qualification P423-AS d.8" x 12,7mm Thk. *Description*		TIPO DI MATERIALE: *Type of material* SA333 Gr.6 / SA106 Gr.C
SPECIF. APPLICAB. / *Appl. Specifications.* ASME Sect. IX Ed.2019 QW-194 / QW-302.4 ASME V Ed.2019 Art.9	CRITERI ACCETTABILITA' / *Acceptance criteria:* C.A.M.P.I. ND 105AS rev.2 / ASME Sect. IX Ed.2019 QW-194 / QW-302.4	

Designazione delle imperfezioni *Imperfections designation*	**Accettabilita'** *Acceptable*	**Note** Note
1)-Incompleto riempimento di cianfrini. Incomplete fill-up of weldgroove.	**Non Accettabile** *Unaccettable*	*None*
2)-Cricche, mancanza di fusione e penetrazione superficiale. Crack, lack of fusion or penetration.	**Non Accettabile** Unaccettable	*None*
3)-Incisioni marginali con profondità superiore a quella prevista dal Codice applicabile. Undercuts having depth greater than allowable values permitted by referencing Code section.	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
4)-Rinforzo di saldatura superiore a quanto previsto dal Codice applicabile. Weld reinforcement greater than allowable values permitted by referencing Code section	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
5)-Spigoli acuti o situazioni geometriche che possono interferire con la successiva esecuzione di esami non distruttivi. Sharp corners and weld profile that could interfere with radiographic examination or other N.D.E. methods.	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
6)-Scarsa raccordatura tra le passate, sovrapposizioni, brusche variazioni di sezione ed intagli. Coarse ripples, grooves, overlaps, abrupt ridges and valleys.	**Non Accettabile** Unaccettable	*None*
7)-Scorie di saldatura aderente, spruzzi e inneschi d'arco. Slag, spatters and arc spots.	**Non Accettabile** Unaccettable	*None*

Si certifica che il saggio sopra citato è stato sottoposto ad esame visivo delle saldature (100%) alla presenza di:

We certify that the piece has been visual examined and witnessed by:

Signor *Mr*		**Ispettore per** *Inspector for*	

RISULTATO DELL'ESAME VISIVO
VISUAL EXAMINATION RESULTS
SODDISFACENTE / Satisfactory

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

DATA / *Date* ***05-March-2021***	**C.A.M.P.I. Srl** **QC Dept.** C.A.M.P.I. S.r.l. Ferrara Quality Control dept. Witnessed ☒ Reviewed ☐ Date 05/03/21 Signature	Foglio 1 di 1 *Sheet of* N. ----------

C.A.M.P.I. srl **Ferrara (Italy)**	**CERTIFICATO DI CONTROLLO CON LIQUIDI PENETRANTI** *LIQUID PENETRANT EXAMINATION REPORT*	**PT No.** P423-01AS Foglio / Sheet 1 of 1

CLIENTE: *Purchaser:* / ORDINE: *Purchase Order No.:* / APPARECCHIO: **Test pipe coupon** Sigla: **P423** *Type of vessel :* *Item:*	**COLLAUDO** *Inspection Authority*	**COMMESSA** / Job No. / **N.F.** / Item Serial No. /

PARTE ESAMINATA : controllo effettuato su tallone di saldatura diametro 8" e spessore 12,7mm *Examined part* *Test performed on test plate diameter 8" and 12,7mm thickness*			
STADIO DI LAVORAZIONE *Working Step*	O *AFTER FORMING* O *AFTER MACHINING*	O *AFTER GRINDING* • *AFTER WELDING*	O *AFTER PWHT* O *AFTER HYDR.*
CONDIZIONI SUPERFICIALI *Test Surface Status*	■ COME SALD. *As welded*	□ MOLATO *Ground*	□ LAV. DI MACCHINA *Machined*
SPEC. DI CONTROLLO / *Examination procedure* C.A.M.P.I. IO ND102AS rev.4 / ASME Sect.V Art. 6 Ed 2019 & ASME IX Ed.2019 QW195		**CRITERI ACCETT.** *Acceptance criteria* C.A.M.P.I. IO ND102AS rev.4 / ASME Sect VIII Div.1 App.8 Ed. 2019 & ASME IX Ed.2019 QW195.2	

COMBINAZIONE LIQUIDI PENETRANTI / *Liquid Penetrant Grouping*

	■ LAVABILE CON ACQUA *Water washable*		□ LAVAB. CON SOLVENTE *Solvent removable*		□ POST-EMULSIFICABILE *Post-emulsified*	
	■ VISIBILE *Visible*	□ FLUOR. *Fluorescent*	□ VISIBILE *Visible*	□ FLUOR. *Fluorescent*	□ VISIBILE *Visible*	□ FLUOR. *Fluorescent*
PULITORE *Cleaner*	VELNET Batch 19/0526					
PENETRANTE *Penetrant*	RED W/W Batch 20/0074					
EMULSIFICATORE *Emulsified*	/					
RIMOZIONE PENETRANTE *Penetrant Remover*	/					
RIVELATORE *Developer*	ROTRIVEL U Batch 20/0146					
MARCA *Trade-mark*	CGM					
MEZZO DI ILLUMINAZIONE *Lighting Equipment*	■ NATURALE *Natural*	☐ ARTIFICIALE *Artificial*				
LUXOMETRO S.N. *Luxmeter S.N.*	900710		DATA CALIBR. *Calibrat. Date*	02/10/2020	Lux value: 1200 lux	

PROCEDURA DI CONTROLLO / *Examination procedure*			**Refer doc. / Note**
PULITURA CON *Cleaning by*	*BRUSHING & VELNET*		WPS 421-01AS WELDER: PERELLI CRISTIAN STAMP No 8 MATERIALS: SA333 Gr.6 / SA106 Gr.C Ambient Temperature 15,8°C
APPLICAZIONE PENETRANTE CON *Penetrant application by*	SPRAY		
TEMPO MINIMO DI PENETRAZIONE Penetrant minimum time	15	MINUTI Minutes	
APPLICAZIONE EMULSIFICATORE CON *Emulsifier application by*	/		
RIMOZIONE PENETRANTE CON *Penetrant removal by*	ACQUA *WATER*		
APPLICAZIONE RIVELATORE *Developer application*	SPRAY		
ESSICCAZIONE CON *Drying process by*	NATURAL		
TEMPO MINIMO DI SVILUPPO *Developing minimum time*	10	MINUTI *Minutes*	
TEMPO MASSIMO DI LETTURA *Checking maximum time*	30	MINUTI *Minutes*	
ANALISI ACCETTAZIONE LIQUIDI *Liquid acceptance testing*	VEDI CERTIFICATO CGM *SEE CGM CERTIFICATE*		

RISULTATI DELL'ESAME ■ *NO REPORTABLE INDICATIONS ACCEPTABLE* □ *SEE ATTACHED SHEETS* □ *NOT ACCEPTABLE*
Examination Result

DATA / *Date*	**CAMPI**	**ISPETTORI** / *Inspectors*
05-March-2021	**LIVELLO** □ 1 ■ 2 □ 3 *Level* C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL UNT TC 1A EN473/ISO 9712 C.A.M.P.I. S.R.L. - Ferrara Quality Control dept. Witnessed ☑ Reviewed ☐ Date 05/3/21 Signature	BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS

Product Line	TIG
Product	Carborod Ni1
Size(s) mm	2.4X1000XTUB05
Item No.	W000283394
Lot/Batch	B102854T24
Class	AWS A5.28 ER80S-Ni1 EN ISO 636-A W 46 6 W3Ni1

Customer Ref	17/21
Our Reference	815341935
Quantity	25.0 KG
Customer	MOLESINI

VIA VENEZUELA 8
Portomaggiore 44015
Italia

Chemical analysis (%) According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Al
0.088	0.67	1.09	0.005	0.013	0.03	0.87	0.01	0.12	<0.01	0.002

Mechanical tests, all weld metal According to EN10204 2.2

Tensile testing

Cond.	Temp. °C	RpO.2 MPa	Rm MPa	A5 %
AW	20	520	610	26

Impact testing

Cond.	Temp. °C	KV J	Temp. °C	KV J
AW	20	160	-60	65

BUREAU VERITAS
ITALY
WITNESSED - NOTED - REVIEWED
SURVEYOR G. FRACASSI
DATE

Remarks

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Via Fratelli Canepa 8
16010 Serra Riccò
Italy

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☑
Date
Signature

Printed By: Giuseppe Lavezzari
Function: Warehouse
Date: 19/FEB/2021

Cert. No. 01304582
ZEU_LOWALLOY , 1

METRODE

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS

Product Line	Electrode
Product	TENAX 35S
Size(s) mm	3.2mm
Item No.	W000380291
Lot/Batch	M1MS212209
Class	AWS A5.1 E7018-1 H4 EN-ISO 2560-A E 42 5 B 3 2 H5

Customer Ref	47/21
Our Reference	815606479
Quantity	174.0 KG
Customer	MOLESINI

VIA VENEZUELA 8
Portomaggiore 44015
Italia

Chemical analysis (%) According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Nb	Cu	V
0.047	0.42	1.39	0.015	0.006	0.05	0.02	<0.01	0.01	0.04	0.02

Mechanical tests, all weld metal According to EN10204 2.2

Tensile testing

Cond.	Temp. °C	Rp0.2 MPa	Rm MPa	A5 %
AW	20	490	541	30

Impact testing

Cond.	Temp. °C	KV J
AW	-50	148

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE

Remarks

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Via Fratelli Canepa 8
16010 Serra Riccò
Italy

DUCTIL S.A.

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date
Signature

Printed By	Christian Grigoli
Function	Warehouse Operator
Date	16/APR/2021

Cert. No. 01362941
ZEU_CMN , 1

METRODE

SPECIAL ALLO

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS

Product Line	**Electrodes**
Product	**TENAX 35S**
Size(s) mm	**4.00X0450XCBOX**
Item No.	**W000380293**
Lot/Batch	**M1MS212140**
Class	**AWS A5.1 E7018-1 H4**
	EN-ISO 2560-A E 42 5 B 3 2 H5

Chemical analysis (%) According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Nb	Cu	V
0.067	**0.42**	**1.34**	**0.008**	**0.007**	**0.03**	**0.03**	**<0.01**	**0.01**	**0.03**	**0.02**

Mechanical tests, all weld metal According to EN10204 2.2

Tensile testing

Cond.	Temp. °C	Rp0.2 MPa	Rm MPa	A5 %
AW	**20**	**490**	**541**	**30**

Impact testing

Cond.	Temp. °C	KV J
AW	**-50**	**148**

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE

Remarks

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Loc. Casalmenini 3
37010 Rivoli Veronese
Italy

DUCTIL S.A.
C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date
Signature

Printed By	**Silvana Martinetto**	Cert. No. **01385200**
Function	**Customer Service Center**	ZEU_CMN , 1
Date	**03/MARCH/2021**	

OERLIKON SAF-FRO METRODE WELDING CONSUMABLES SPECIAL ALLOYS

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **01-20-05894** | Page / Pagina: **1 / 9**

Date / Data: **June 18, 2020**

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3427 fax

Customer / Cliente: **COMMERCIALE TUBI ACCIAIO SPA**	Customer's Order Item / Rifer. Ordine Cliente - I: **AB00060/OA0000063**	Customer's Reference / Posizione Cliente:	Manufacturer's Works Order N° / Conferma-Posizione: **1240573/001**
Manufacture Process / Processo di fabbricazione: **NORMALIZED / NORMALIZZATI**	Product Type / Tipo di prodotto: **See note nr.1 / Vedi nota nr.1**		Surface / Superficie: **BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH / GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE**
Standard or Specification / Norme o specifica: **See note nr.2 / Vedi nota nr.2**		Steel Grade / Grado dell'Acciaio: **STEEL GR 6 ASTM A 333 AND ASME SA 333 / ACC. GR 6 ASTM A 333 E ASME SA 333**	Ends / Estremità: **BEVELLED AS PER ASME B 16.25 / SMUSSATI SECONDO ASME B 16.25**
Dimensions / Dimensioni: **ø 8.625" O.D. x .500" W.T. / ø 219.10mm O.D. x 12.70mm W.T.**	Schedule / Schedula: **80 / .**	Length / Lunghezza: **32.808 ft ÷ 38.714 ft / 10000 mm ÷ 11800 mm**	Quantity / Quantità: **32Pcs/Pz** — **1202'05" ft** **52033,4 lb** / **366.5 mt** **23602 kg**	Nominal Weight / Peso nominale: **43.44 lb/ft / 64.65 Kg/m**

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes / Avvisi di spedizione	Delivery Notes / Avvisi di spedizione
Job Number: 0031264534 / 000030 Shipping note: 0101975269 - 18/06/2020 Address: VIALE LIDICE, 40	Town: 10095 GRUGLIASCO, Country: Italy

TENSILE TEST / PROVA DI TRAZIONE

Heat N° / Colata N°	Sample N° / Prova N°	Lot N° / Lotto N°	Specimen condition / Condizioni della provetta: Ls	Sc	Type / Tipo	Ori	Specimen dimensions / Dimensioni della provetta: Size / Dimensioni	Area	Test temp. / Temp. di prova	Y.S. OffSet 0,2% Min: 240.00 Max: --	Y.S. EUL 0,5% Min: 240.00 Max: --	U.T.S. Req. Min: 415.00 Max: --	Y.S./U.T.S Req. Max. 0.85	Elongation / Allungamento: Lo	Min.	Min.	Obt.
							mm	mm2	°C	MPa	MPa	MPa		cal.	mm	%	%
901679	Q8778/C	5	B	N	Ss	L	37.89 x 12.83	488.90	+20	309.00	307.00	444.00	0.70	2"	50.0	30.0%	46.5%
901679	Q8779	5	B	N	Ss	L	37.92 x 12.99	495.40	+20	308.00	303.00	445.00	0.69	2"	50.0	30.0%	46.5%
901679	Q8780/C	5	B	N	Ss	L	37.86 x 12.88	490.40	+20	320.00	318.00	446.00	0.72	2"	50.0	30.0%	46.5%

B: Body / Corpo
L: Longitudinal / Longitudinale
Lo: Initial length / Lunghezza iniziale
Ls: Location of sample / Ubicazione provetta
Max: Maximum / Massimo
Min: Minimum / Minimo
N: Normalized / Normalizzato
Obt: Obtained / Ottenuto
Ori: Orientation / Orientamento
Req. Max: Required maximum / Massimo richiesto
Req: Required / Richiesto
Sc: Specimen condition / Condizioni Provetta
Ss: Strip specimen / Rettangolare
U.T.S: Ultimate Tensile Strength / Rottura
Y.S: Yield Strength / Snervamento

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original on taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

Questo certificato è emesso da un sistema computerizzato ed è valido con firma elettronica. Il certificato originale riporta il marchio "Tenaris" in colore verde. Il possessore dell'originale, qualora rilasci copia, deve attestarne a suo nome la conformità all'originale, assumendosi ogni responsabilità per usi illeciti o non. Qualunque alterazione e/o falsificazione sarà perseguita a norma di legge.

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date
Signature

CTA Group
This document is reproduced by a computerized system and is conform to the original

Customer : C.A.M.P.I. SRL
P.O. No.: PO: 20023.15-20024.14
Item: 6
Heat No.: 901679
Cta's job: LC0000327
Kg 324
Mt 4,99
Date: 17/02/2021
Pz No.: 1

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **01-20-05894** | Page / Pagina: **2 / 9**

Date / Data: **June 18, 2020**

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: **COMMERCIALE TUBI ACCIAIO SPA**	Customer's Order Item / Rifer. Ordine Cliente - I: **AB00060/OA0000063**	Customer's Reference / Posizione Cliente:	Manufacturer's Works Order N° / Conferma-Posizione: **1240573/001**
Manufacture Process / Processo di fabbricazione: **NORMALIZED** **NORMALIZZATI**	Product Type / Tipo di prodotto: **See note nr.1** **Vedi nota nr.1**		Surface / Superficie: **BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH** **GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE**
Standard or Specification / Norme o specifica: **See note nr.2** **Vedi nota nr.2**		Steel Grade / Grado dell'Acciaio: **STEEL GR 6 ASTM A 333 AND ASME SA 333** **ACC. GR 6 ASTM A 333 E ASME SA 333**	Ends / Estremità: **BEVELLED AS PER ASME B 16.25** **SMUSSATI SECONDO ASME B 16.25**
Dimensions / Dimensioni: **ø 8.625" O.D. x .500" W.T.** **ø 219.10mm O.D. x 12.70mm W.T.**	Schedule / Schedula: **80**	Length / Lunghezza: **32.808 ft ÷ 38.714 ft** **10000 mm ÷ 11800 mm**	Quantity / Quantità: **32Pcs/Pz** **1202'05" ft** **52033,4 lb** **366.5 mt** **23602 kg**	Nominal Weight / Peso nominale: **43.44 lb/ft** **64.65 Kg/m**

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

				Composition % / Composizione %																	
				x 100									x 1000						x 10000		
				C	Mn	Si	Ni	Cr	Mo	Cu	Ce LF	F1	P	S	Al	Ti	Nb	V	N	B	Ca
			H Max	18	130	30	40	40	12	40	42	60	25	10	40	20	20	50	120	5	60
			Min	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heat N°	Sample N°	Lot N°	P Max	18	130	30	40	40	12	40	42	60	25	10	40	20	20	50	120	5	60
Colata N°	Prova N°	Lotto N°	Min	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
901679			H	9	104	21	17	16	7	15	33	38.8	14	4	27	2	1	5	75	1	15
901679	Q8778/C	5	P	9	105	21	17	16	7	15	33	38.9	14	4	27	2	1	6	85	1	15
901679	Q8779	5	P	9	104	20	17	16	7	15	33	38.8	14	3	27	2	1	5	75	1	15

Ce LF: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
F1: (Nb+V +Ti+Cr+Cu+Mo)

H: Heat / Colata
Max: Maximum / Massimo
Min: Minimum / Minimo
P: Product / Prodotto

THROUGH WALL HARDNESS / DUREZZA ATTRAVERSO LO SPESSORE

Required values / Valori richiesti			Individuals / Individuali			Average / Media			Hardness type / Tipo de dureza: brinell		Formula applied / Formula Applicata								
			Min: --	Max: 200.0	Var: --	Min: --	Max: --	Var: --	Minimum martensite / martensite minima: (%): --										
Heat N°	Sample N°	Lot N°	Specimen condition						Quad.	Scale	OD				ID				
Colata N°	Prova N°	Lotto N°	Ls		Sc					Scala	1	2	Dist. (mm)	Avg.	1	2	Dist. (mm)	Avg.
901679	Q8778/C	5	B		N				1	HBW	133.0	132.0	- 2.00	132.5	135.0	132.0	2	133.5

Avg: Average / Media
B: Body / Corpo
ID: Internal Diameter / Diametro interno
Ls: Location of sample / Ubicazione provetta
N: Normalized / Normalizzato
OD: Outside Diameter / Diametro esterno
Var: Variation / Variazione

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CTA Group
Customer: C.A.M.P.I. SRL
P.O. No.: PO: 20023.15-20024.14
Heat No.: 901679
Cta's job: LC0000327
Kg 324
Mt 4,99
Pz No.: 1
Date: 17/02/2021
Item: 6

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	3 / 9
Date / Data: June 18, 2020	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED / NORMALIZZATI	Product Type / Tipo di prodotto: See note nr.1 / Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH / GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 / Vedi nota nr.2		Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 / ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 / SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. / ø 219.10mm O.D. x 12.70mm W.T. — Schedule / Schedula: 80	Length / Lunghezza: 32.808 ft ÷ 38.714 ft / 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz — 1202'05" ft 52033,4 lb / 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft / 64.65 Kg/m

THROUGH WALL HARDNESS / DUREZZA ATTRAVERSO LO SPESSORE

Dist: Distance from outer diameter / Distanza dal diametro esterno
Max: Maximum / Massimo
Min: Minimum / Minimo
Quad: Quadrant / Quadrante
Sc: Specimen condition / Condizioni Provetta

IMPACT TEST / PROVA DI RESILIENZA

Type/Tipo: KCV — Orientation/Direzione: L — Unit / Unità: JOULE
Position/Posizione: — Temp: - 50 — Unit/Unità: °C — Ind.Min.Req: 32 — Req.Min.Avg: 41

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Lot N° / Lotto N°	Ls	Sc	Size / Dimensioni mm	Results / Risultato 1	2	3	Avg.
901679	Q8778/C	butside	5	B	N	10 x 10.00	384.0	328.0	355.0	356.0

Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
L: Longitudinal / Longitudinale
Ls: Location of sample / Ubicazione provetta
N: Normalized / Normalizzato
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
Temp: Temperature / Temperatura

Type/Tipo: KCV — Orientation/Direzione: T — Unit / Unità: JOULE
Position/Posizione: — Temp: - 50 — Unit/Unità: °C — Ind.Min.Req: 21 — Req.Min.Avg: 27

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Lot N° / Lotto N°	Ls	Sc	Size / Dimensioni mm	Results / Risultato 1	2	3	Avg.
901679	Q8778/C	butside	5	B	N	10 x 10.00	372.0	370.0	371.0	371.0

Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
Ls: Location of sample / Ubicazione provetta
N: Normalized / Normalizzato
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
T: Transversal / Trasversale
Temp: Temperature / Temperatura

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CTA Group

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Customer: C.A.M.P.I. SRL
P.O. No.: PO: 20023.15-20024.14
Heat No.: 901679
Cta's job: LC0000327
Item: 6
Kg 324
Mt 4,99
Date: 17/02/2021
Pz No.: 1

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	4 / 9
Date / Data: June 18, 2020	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) - Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI	Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2		Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

FLATTENING TEST / PROVA DI SCHIACCIAMENTO

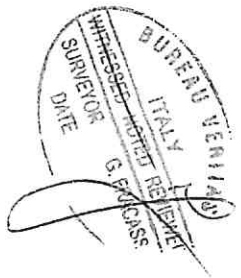
Standard / Norma:

Heat N° Colata N°	Lot N° Lotto N°	Sample N° Prova N°	Zone Zona	Sc	Test Frequency Frequenza prova	Result Esito
901679	5	Q8775	E1	N	5% of the lot	Good /Buono
901679	5	Q8776/C	E1	N	5% of the lot	Good /Buono

Standard / Norma:

Heat N° Colata N°	Lot N° Lotto N°	Sample N° Prova N°	Zone Zona	Sc	Test Frequency Frequenza prova	Result Esito
901679	5	Q8777	E1	N	5% of the lot	Good /Buono

E1 / E2: Ends of Sampling / Estremità della provetta — N: Normalized / Normalizzato — Sc: Specimen condition / Condizioni Provetta



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Customer : C.A.M.P.I. SRL		Kg 324	Pz No.: 1		
P.O. No.: PO: 20023.15-20024.14	Heat No.: 901679	Mt 4,99	Date: 17/02/2021		
	Cta's job: LC0000327		Item: 6		

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	5 / 9

Date / Data: June 18, 2020

Dalmine S.p.A. – Dalmine plant
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24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA		Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI		Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2			Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366,5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

HYDROSTATIC TEST / PROVA IDRAULICA

Pressure / Pressione		Time / Tempo	Results / Risultato
Unit / Unità.	Value / Valore	Seconds / Secondi	
MPa	17	5	Satisfactory / Soddisfacente

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

STANDARD EDITIONS
EDIZIONI NORME

Standard:ASTM A 333/333M Year:2018	Norma:ASTM A 333/333M Anno:2018
Standard:ASME SA333M Year:2019	Norma:ASME SA333M Anno:2019
Standard:NACE MR0175/ISO 15156 Year:2015	Norma:NACE MR0175/ISO 15156 Anno:2015
Standard:NACE MR0103/ISO 17945 Year:2015	Norma:NACE MR0103/ISO 17945 Anno:2015

PRODUCT DESCRIPTION NOTES
NOTE DI DESCRIZIONE DEL PRODOTTO

Note 1 is the full description of the 'Product type' SEAMLESS HOT FINISHED TUBES FOR LOW TEMPERATURE SERVICES (WITH SUPPLEMENTARY REQUIREMENTS)	La nota 1 è la descrizione completa del 'Tipo prodotto' TUBI S.S. DI QUALITA' FINITI A CALDO PER IMPIEGHI A BASSE TEMPERATURE (CON RICHIESTE SUPPLEMENTARI)
Note 2 is the full description of the 'Standard or specification' NORM ASTM A 333 M/ASME SA333M, MPD-O2-PS-GS R.0, NACE MR0175/ISO 15156, MR0103, TEMPL. CTA-MPD-6 REV.1.4	La nota 2 è la descrizione completa delle 'Norme o specifiche' NORMA ASTM A 333 M/ASME SA333M, MPD-O2-PS-GS R.0, NACE MR0175/ISO 15156, MR0103, TEMPL. CTA-MPD-6 REV.1.4

WITNESSED NOTED SURVEYOR DATE

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Customer : C.A.M.P.I. SRL

P.O. No.: PO: 20023.15-20024.14

Item: 6

Kg 324

Heat No.: 901679

Cta's job: LC0000327

Mt 4,99

Pz No.: 1

Date: 17/02/2021

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	6 / 9
Date / Data: June 18, 2020	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I	Customer's Reference / Posizione Cliente:	Manufacturer's Works Order N° / Conferma-Posizione:
	AB00060/OA0000063	.	1240573/001

Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto:	Surface / Superficie:
NORMALIZED NORMALIZZATI	See note nr.1 Vedi nota nr.1	BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE

Standard or Specification / Norme o specifica:	Steel Grade / Grado dell'Acciaio:	Ends / Estremità:
See note nr.2 Vedi nota nr.2	STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: 32Pcs/Pz		Nominal Weight / Peso nominale:
ø 8.625" O.D. x .500" W.T.	80	32.808 ft ÷ 38.714 ft	1202'05" ft	52033,4 lb	43.44 lb/ft
ø 219.10mm O.D. x 12.70mm W.T.		10000 mm ÷ 11800 mm	366.5 mt	23602 kg	64.65 Kg/m

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

Supplementary Information Informazioni supplementari	
La Societe' DALMINE garantit que tous les produits, objet du Certificat susdit, respectent en leur totalite' les Specifications de l'Article 15 de l'Arrete Ministeriel du 24 mars 1978 modifiè: C max 0.25% P max 0.05% S max 0.05% Rm (N/mm2) max 700 A(Lo=5.65VSo) min 16% long Rm (A-2) min 10500 E max 0.9 A(Lo=5.65VSo) min 14% trans RA min 10500	La Societe' DALMINE garantit que tous les produits, objet du Certificat susdit, respectent en leur totalite' les Specifications de l'Article 15 de l'Arrete Ministeriel du 24 mars 1978 modifiè: C max 0.25% P max 0.05% S max 0.05% Rm (N/mm2) max 700 A(Lo=5.65VSo) min 16% long Rm (A-2) min 10500 E max 0.9 A(Lo=5.65VSo) min 14% trans RA min 10500

Supplementary Information Informazioni supplementari	
Country of melt ITALY Continuous casting and Fully killed	Paese di colaggio acciaio ITALIA Colaggio continuo ed acciaio di tipo calmato

Supplementary Information Informazioni supplementari	
DALMINE OPERATES A QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER NR. LRC 110950/QMS/U/EN/001,AND IT HAS UNDERGONE A SPECIFIC ASSESSMENT SUPPORTING THE REQUIREMENTS OF ANNEX 1 SECT 4.3 OF "PRESSURE EQUIPMENT DIRECTIVE (PED) 2014/68/EU". INSPECTION CERTIFICATE ISSUED IN AGREEMENT WITH T.U.V SUD INDUSTRIE SERVICE GmbH.QMS APPROVED ACCORDING TO ANNEX I PAR.4.3 OF PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU BY NOTIFIED BODY 0036. CERTIFICATION no. DGR-0036-QS-W 200/2003/MUC. MATERIAL ACCORDING TO ASME II PART. D TAB. Y1 AFTER INSPECTION OPERATION, THE MATERIAL HAS NOT A RESIDUAL MAGNETISM	DALMINE OPERA CON UN QUALITY MANAGEMENT SYSTEM CERTIFICATO DAL LLOYD'S REGISTER NR. LRC 110950/QMS/U/EN/001 CHE SUPPORTA I REQUISITI DELL' ANNEX 1 SECT. 4.3 DEL "PRESSURE EQUIPMENT DIRECTIVE (PED) 2014/68/EU" ISPEZIONE. CERTIFICATO RILASCIATO IN ACCORDO CON TUV SUD INDUSTRIE SERVICE GmbH QMS, APPROVATO SECONDO L'ALLEGATO I PAR.4.3 DELLA DIRETTIVA APPARECCHIATURE DI PRESSIONE 2014/68 / UE PER L'ORGANISMO NOTIFICATO 0036.CERTIFICAZIONE n. DGR-0036-QS-W 200/2003 / MUC MATERIALE IN ACCORDO ALLA SPEC. ASME II PART. D TAB. Y1 DOPO LE OPERAZIONI DI CONTROLLO, IL MATERIALE NON PRESENTA UN MAGNETISMO RESIDUO SUPERIORE A 20 GAUSS

WITNESSED - NOTED REVIEW
SURVEYOR
DATE
BUREAU VERITAS
ITALY
G. PRACA

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CTA Group

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Customer :	Kg	Pz No.:
C.A.M.P.I. SRL	324	1
P.O. No.:	Heat No.:	Mt
PO: 20023.15-20024.14	901679	4,99
	Cta's job:	Date:
	LC0000327	17/02/2021
	Item:	
	6	

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Number / Numero:	Page / Pagina:
01-20-05894	7 / 9
Date / Data: June 18, 2020	

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA		Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI		Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2			Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80 .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

Supplementary Information	Informazioni supplementari
GREATER THAN 20 GAUSS	DUREZZA HRC 22 MAX, IN ACCORDO ALLA SPEC. NACE MR0175/ISO 15156
HARDNESS HRC 22 MAX, ACCORDING TO NACE MR0175/ISO 15156	DUREZZA HBW 200 MAX, IN ACCORDO ALLA SPEC. NACE MR0103/ISO 17945
HARDNESS HBW 200 MAX, ACCORDING TO NACE MR0103/ISO 17945	I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO ELETTROMAGNETICO
ALL PIPES HAVE BEEN TESTED BY ELECTROMAGNETIC TEST	(LONG/TRASV INT/EST TARATURA 10%) IN ACCORDO
(LONG/TRANSV INT/EXT NOTCH 10%) ACCORDING TO SPEC.	ALLA SPEC. E 570 CON ESITO SODDISFACENTE
E 570, WITH SATISFACTORY RESULT	I TUBI SONO STATI NORMALIZZATI A 920°C PER 13 MIN. E RAFFREDDATI IN
ALL PIPES HAVE BEEN NORMALIZED AT 920°C FOR 13 MINS. AND COOLED IN	ARIA CALMA
STILL AIR	EMI SU TUTTA LA LUNGHEZZA
EMI FULL LENGTH	MATERIALE IN ACCORDO ALLA ASME B 36.10
MATERIAL ACCORDING TO ASME B 36.10	ACCIAIO TRITATO AL CALCIO PER CONTROLLO MICROINCLUSIONI
STEEL IS CALCIUM TREATED FOR MICROINCLUSION SHAPE CONTROL	.
SEAMLESS HOT FINISHED PIPES	TUBI SENZA SALDATURA FINITI A CALDO
VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT	IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE
STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE	L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO
THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER.	IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE.
MANUFACTURED BY TENARIS DALMINE	FABBRICATO DA TENARIS DALMINE
NO WELD REPAIR, MERCURY AND RADIATION FREE	NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI
AS PER STANDARD, PIPES CAN BE REPAIRED; MANUFACTURER SHOULD DECIDE TO GRIND THE	COME DA PROCEDURA STANDARD, I TUBI POSSONO ESSERE RIPARATI; IL COSTRUTTORE DOVREBBE
SURFACE OF THE PIPES WHEN, DURING FINAL VISUAL INSPECTION, SOME IMPERFECTIONS	PROCEDERE ALLA RETTIFICA DELLA LORO SUPERFICIE QUANDO DURANTE L'ISPEZIONE VISIVA
ARE DETECTED. THE RESULTED SURFACE AREAS, AFTER GRINDING, HAS DIFFERENT	FINALE VENGONO RILEVATE DELLE IMPERFEZIONI. DOPO LA RETTIFICA, LE AREE SUPERFICIALI
COLORATION COMPARED WITH USUAL ONE AS MANUFACTURED. THE RESIDUAL WALL THICKNESS	INTERESSATE PRESENTANO UNA COLORAZIONE DIVERSA RISPETTO A QUELLA ORIGINALE. LO
AFTER GRINDING HAS BEEN CHECKED RESULTING IN TOLERANCE WITH STANDARD.	SPESSORE RESIDUO DELLE PARETI RIENTRA NELLA SOGLIA DI TOLLERANZA.
Tenaris IT identification number for MTC: 58[9w5r4	Numero Identificativo Tenaris IT per MTC: 58[9w5r4

BUREAU VERITAS ITALY WITNESSED / NOTED SURVEYOR DATE

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

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CTA Group
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Customer : C.A.M.P.I. SRL
Kg 324
Mt 4,99
Pz No.: 1
Heat No.: 901679
Cta's job: LC0000327
Date: 17/02/2021
P.O. No.: PO: 20023.15-20024.14
Item: 6

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	8 / 9

Date / Data: June 18, 2020

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I	Customer's Reference / Posizione Cliente:	Manufacturer's Works Order N° / Conferma-Posizione:
	AB00060/OA0000063	.	1240573/001

Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto:	Surface / Superficie:
NORMALIZED NORMALIZZATI	See note nr.1 Vedi nota nr.1	BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE

Standard or Specification / Norme o specifica:	Steel Grade / Grado dell'Acciaio:	Ends / Estremità:
See note nr.2 Vedi nota nr.2	STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: 32Pcs/Pz		Nominal Weight / Peso nominale:
ø 8.625" O.D. x .500" W.T.	80	32.808 ft ÷ 38.714 ft	1202'05" ft	52033,4 lb	43.44 lb/ft
ø 219.10mm O.D. x 12.70mm W.T.	.	10000 mm ÷ 11800 mm	366.5 mt	23602 kg	64.65 Kg/m

MARKING / MARCATURA

Marking
Marcatura

STENCILING
_T ASTM/ASME A/SA 333M 6 HOT FINISHED SEAMLESS 219,1 x 12,70 SCH. 80 LT-50C
HEAT: _COLATA MT _MT KG _KG NR. _NR

LEGEND
_T = TENARIS Logo
_COLATA = Heat Number
_MT = Pipe/Tube Length in meters
_KG = Pipe/Tube Weight in kilograms
_NR = Pipe/Tube identifier

PUNCHING
HEAT: _COLATA

LEGEND
_COLATA = Heat Number

VERNICIATURA
_T ASTM/ASME A/SA 333M 6 HOT FINISHED SEAMLESS 219,1 x 12,70 SCH. 80 LT-50C
HEAT: _COLATA MT _MT KG _KG NR. _NR

LEGENDA
_T = Logo TENARIS
_COLATA = Numero di colata
_MT = Lunghezza del tubo in metri
_KG = Peso del tubo in chilogrammi
_NR = Identificativo numerico del tubo

PUNZONATURA
HEAT: _COLATA

LEGENDA
_COLATA = Numero di colata

BUREAU VERITAS ITALY WITNESSED REVIEW SURVEYOR DATE GERMANY

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CTA Group
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Customer: C.A.M.P.I. SRL
Kg 324
Heat No.: 901679
Mt 4,99
P.O. No.: PO: 20023.15-20024.14
Cta's job: LC0000327
Pz No.: 1
Item: 6
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Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	9 / 9
Date / Data: June 18, 2020	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 5827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA		Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI		Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2			Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schecula: 80 .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance w purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Si certifica che il prodotto descritto è stato prodotto, provato, testato e controllato in conformità ai requisiti dell'ordine del cliente. Questo certificato non è una dichiarazione d'origine e non può essere usato come tale.

	CUSTOMER THIRD PARTY	TENARIS QUALITY DEPARTMENT SIGNATURE	
	INSPECTION COMPANY COMPAGNIA D'ISPEZIONE	QUALITY CERTIFICATION DEPT. UFFICIO CERTIFICAZIONE QUALITA' SIGOLI Gianluca	CHIEF OF QUALITY CERTIFICATION DEPT. RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA' FERRARI Donigio

BUREAU VERITAS (2) ITALY WITNESSED NOTED RETIENE SURVEYOR G.FRICASS DATE

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CTA Group

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Customer : C.A.M.P.I. SRL		Kg 324	Mt 4,99	Pz No.: 1	
P.O. No.: PO: 20023.15-20024.14	Heat No.: 901679	Cta's job: LC0000327	Date: 17/02/2021	Item: 6	

ISP N°0006

PERMANENT JOINING PROCEDURE APPROVAL CERTIFICATE

CERTIFICATO DI APPROVAZIONE DELLE GIUNZIONI PERMANENTI

N° QP-AP-ITA-24-00166-rev.0

MANUFACTURER FABBRICANTE	**C.A.M.P.I. rsl – Ferrara Italy**		
PJPQR IN APPROVAL N° NO DELLA QUALIFICA IN APPROVAZIONE	**PQR No. P425-AS Rev. 0**		
REFERENCE STANDARD OF PQR IN APPROVAL NORMA DI RIFERIMENTO QUALIFICA IN APPROVAZIONE	**ASME Sect. IX**		
THIRD PART RECOGNIZED OR BODY TERZA PARTE RICONOSCIUTA O ORGANISMO	**Bureau Veritas Italia**		
TEST IN PQR EQUIVALENT TO TEST AS PER HARMONIZED STANDARD TEST EFFETTUATI IN PQR SONO EQUIVALENTI COME PER NORMA ARMONIZZATA	**Yes /** Si **No /** No	☒ ☐	(Supplementary test required)
SUPPLEMENTED BY RIFERIMENTO DI EVENTUALI PROVE COMPLEMETARI	**N.A.**		
COMPLEMENTARY TEST(S) PERFORMED IN PRESENCE OF PROVE COMPLEMENTARI REALIZZATE IN PRESENZA DI	**N.A.**		

BUREAU VERITAS ITALIA S.P.A. NOTIFIED BODY NR 1370

BUREAU VERITAS ITALIA S.P.A. ORGANISMO NOTIFICATO N°1370

OFFICE LOCATION /AGENZIA DI :	**MILAN - ITALY**

CERTIFIES THAT THE PERMANENT JOINING PROCEDURE QUALIFICATION RECORD, POSSIBLY COMPLETED BY SUPPLEMENTARY TESTS, COMPLIES WITH THE ESSENTIAL SAFETY REQUIREMENTS STATED BY 2014/68/UE DIRECTIVE - APPENDIX 1- § 3.1.2.

CERTIFICA CHE LA QUALIFICA DI ASSEMBLAGGIO PERMANENTE, COMPLETATO DA EVENTUALI PROVE COMPLEMENTARI, SODDISFA LE ESIGENZE ESSENZIALI DI SICUREZZA DELLA DIRETTIVA 2014/68/UE DIRECTIVE - ALLEGATO1 - § 3.1.2.

Observations : **All tests are equivalent to the requirements of harmonized standard EN ISO 15614-1**
OSSERVAZIONI :

NAME / **Nome**	DATE/ **Data**	VISA / **Firma**	STAMP / **Timbro**
Gabriele Fracassi	**16/09/2024**		

OTHER IDENTIFICATION (AS NECESSARY) : **IT FILE 23.SF.7028064.138 Chrono No. P16346/24/GF/gf** PAGE 1/1
ALTRE IDENTIFICAZIONI (SE NECESSARIE)

Attachment : Approved document & Supplementary test certificate (if required)
ALLEGATO : DOCUMENTO APPROVATO & CERTIFICATO PROVE SUPPLEMENTARI (SE RICHIESTO)

C.A.M.P.I. srl Ferrara (Italy)	**PROCEDURE QUALIFICATION RECORD** (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon **PQR No. P425-AS**	**Rev.** 0 **Date:** May 18,2021

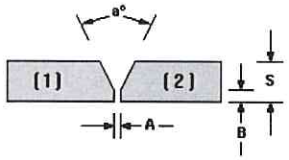
Company Name: C.A.M.P.I. S.r.l. Via Diamantina,15 - 44122 Ferrara, ITALY

WPS No.: P425-01AS

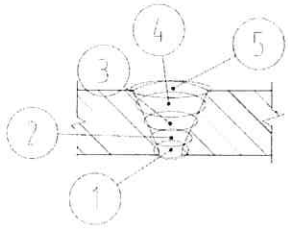
Welding Process(es): GTAW + GMAW

Types (Manual, Automatic, Machine): Manual + Semiautomatic

JOINTS (QW-402)



A:3÷5mm - **B:**1,5±1mm **a°:**75±2,5 - **S:**12,7mm
Dia. 8"



Groove Design of Test Coupon
(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used)

BASE METALS (QW-403)
Material Spec. **(1):** SA333 **(2):** SA106
Type or Grade Gr.6 to Gr.C
P. No. 1 Gr. 1 to P. No. 1 Gr. 2
Thickness of Test Coupon: 12,7 mm
Diameter of Test Coupon: 8" (219,1mm)

POSTWELD HEAT TREATMENT (QW-407)
Temperature: 610±10°C
Time: 1hr/in minimum 60min.

Other: Heat and Cool rate 80°C/h above 300°C

Performed N°1 & N°3 cycles of simulated PWHT

FILLER METALS (QW-404)	(1)GTAW	(2)GMAW
Weld Metal Analysis A-No.	10	1
Size of Filler Metal (mm)	2,4	1,2
Filler Metal F-No.	6	6
SFA Specification	5.28	5.36
AWS Classification	ER80S-Ni1	E71T15-M21A6-CS1-H4
Deposited weld metal (mm)	2,0	10,7
Flux Type	/	/
Flux Trade name	/	/
Filler Metal Product Form	Solid wire	Metal Cored
Supplemental filler metal	NO	NO
Alloy elements	NO	NO
Filler Material trade name	Carborod Ni1	Diamondspark 54 MC
Manufacturer	LINCOLN	Böhler
QW-404.35 Flux/wire class.	/	/

Others: QW404.23: Solid wire – QW 404.22: No –QW404.14:With Filler Metal

GAS (QW-408) Percent composition

	Gas(es)	Mixture %	Flow rate
Shelding (1)	Ar	99,999	10 l/min
Shelding (2)	Ar+CO_2	92+8	15 l/min
Trailing	None		
Backing	None		

ELECTRICAL CHARACTERISTICS (QW-409)

Current : DC	Polarity: (1)SP (2) RP	Travel Speed (mm/1')
1) Amps: 146	Volts: 9,1	78
2-3) Amps: 220	Volts: 22,5	340
4-5) Amps: 230	Volts: 22,5	340

Heat Input (KJ/mm): 1):1,02; 2÷3):0,87; 4÷5):0,91

Others: Transfer mode: Pulsed Arc

POSITION (QW-405)
Position of Groove 1G
Weld Progression (Uphill, Downhill) /
Other

PREHEAT (QW-406)
Preheat Temp. >15°C
Interpass Temp. Max 300°C
Other

TECHNIQUE (QW-410)
String or wave bead: STRING
Oscillation: NO Frequency: N.A.
Multi pass or single pass (per side) MULTI
Single or multiple electrodes: SINGLE
Contact tube to work distance : GMAW 15÷20 mm
Orifice or Gas cap size: 16mm
Use of Thermal process: N.A.

C.A.M.P.I. srl Ferrara (Italy)	PROCEDURE QUALIFICATION RECORD (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon PQR No. P425-AS	Rev. 0 Date: May 18,2021

Tensile Test (QW-150) with 1PWHT

Specimen No. QW 462.1(a)	Width mm	Thickness mm	Area mm^2	Ultimate Total Load N.	Tensile Strenght Rm (MPa)	Type of Failure & Location
425-1-t1	18,96	12,72	241,17	/	453	BM SA333 Gr.6
425-1-t2	18,90	12,75	240,97	/	460	BM SA333 Gr.6

Guided Bend Tests (QW-160) with 1PWHT

Type and Figure no.	Result
1-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
2-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
3-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
4-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163

Toughness Tests (QW-170) with 1PWHT size 5mm

Specimen No.	Notch Location	Notch Type	Test. Temp.	Impact values-J.		Lateral Exp.		Drop Weight	
				Single	Average	% Shear	Mils.mm	Break	No.break
4-1	BM Gr.6	KV	-52°C	41					
4-2	BM Gr.6	KV	-52°C	40	40,3				
4-3	BM Gr.6	KV	-52°C	40					
2-1	HAZ	KV	-52°C	30					
2-2	HAZ	KV	-52°C	28	28,7				
2-3	HAZ	KV	-52°C	28					
1-1	WM	KV	-52°C	32					
1-2	WM	KV	-52°C	34	33,7				
1-3	WM	KV	-52°C	35					
3-1	HAZ	KV	-52°C	26					
3-2	HAZ	KV	-52°C	27	26,7				
3-3	HAZ	KV	-52°C	27					
5-1	BM Gr.C	KV	-52°C	45					
5-2	BM Gr.C	KV	-52°C	44	44,7				
5-3	BM Gr.C	KV	-52°C	45					

Fillet Weld Test (QW-180)

Result – Satisfactory: Yes ____/_____ No ____/___ Penetration into Parent Metal: Yes __/__ No __/__

Macro – Results

Other Tests

1) **Hardness test**: HV10 – Max 210 : SATISFACTORY Max 193HV
2) **Macrographic examination**: SATISFACTORY
3) **Deposit Analysis**: On weld metal – See certificate Studio VM Ferrara
4) **X Ray** according to ASME Sect. IX QW 191 & QW-302.2: SATISFACTORY
   See certificate RT 2021-01 on 09-March-2021
5) **Liquid Penetrant examination**: SATISFACTORY – see cert. PT 425-01AS on 05-March-2021
6) **Visual examination** According to ASME Sect. IX QW 194 & QW-302.4: SATISFACTORY
   See cert. VT 425-01AS on 05-March-2021

Tests conducted by: C.A.M.P.I. / Studio V.M. Laboratory Test No LAB-035-011_21 on 18-May-2021

C.A.M.P.I. srl Ferrara (Italy)	**PROCEDURE QUALIFICATION RECORD** (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code) Record Actual Conditions Used to weld Test Coupon **PQR No. P425-AS**	**Rev.** 0 **Date:** May 18,2021

Tensile Test (QW-150) with 3PWHT

Specimen No. QW 462.1(a)	Width mm	Thickness mm	Area mm^2	Ultimate Total Load N.	Tensile Strenght Rm (MPa)	Type of Failure & Location
425-3-t1	18,87	12,73	240,21	/	502	BM SA333 Gr.6
425-3-t2	19,03	12,74	242,44	/	501	BM SA333 Gr.6

Guided Bend Tests (QW-160) with 3PWHT

Type and Figure no.	Result
5-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
6-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
7-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163
8-Transverse Side bend QW462.2	No imperfections – Acceptable criteria acc. to QW-163

Toughness Tests (QW-170) with 3PWHT size 5mm

Specimen No.	Notch Location	Notch Type	Test. Temp.	Impact values-J.		Lateral Exp.		Drop Weight	
				Single	Average	% Shear	Mils.mm	Break	No.break
9-1	BM Gr.6	KV	-52°C	44	45,3				
9-2	BM Gr.6	KV	-52°C	45					
9-3	BM Gr.6	KV	-52°C	47					
7-1	HAZ	KV	-52°C	30	32,7				
7-2	HAZ	KV	-52°C	33					
7-3	HAZ	KV	-52°C	35					
6-1	WM	KV	-52°C	38	35,3				
6-2	WM	KV	-52°C	32					
6-3	WM	KV	-52°C	36					
8-1	HAZ	KV	-52°C	37	35				
8-2	HAZ	KV	-52°C	37					
8-3	HAZ	KV	-52°C	31					
10-1	BM Gr.C	KV	-52°C	45	47,7				
10-2	BM Gr.C	KV	-52°C	48					
10-3	BM Gr.C	KV	-52°C	50					

Fillet Weld Test (QW-180)

Result – Satisfactory: Yes ____/_____ No ____/___ Penetration into Parent Metal: Yes __/__ No __/__
Macro – Results

Other Tests

1) **Hardness test**: HV10 – Max 210 : SATISFACTORY Max 184HV
2) **Macrographic examination**: SATISFACTORY
3) **Deposit Analysis**: On weld metal – See certificate Studio VM Ferrara
4) **X Ray** according to ASME Sect. IX QW 191 & QW-302.2: SATISFACTORY
   See certificate RT 2021-01 on 09-March-2021
5) **Liquid Penetrant examination**: SATISFACTORY – see cert. PT 425-01AS on 05-March-2021
6) **Visual examination** According to ASME Sect. IX QW 194 & QW-302.4: SATISFACTORY
   See cert. VT 425-01AS on 05-March-2021

Welder's Name: Perelli Cristian Clock No.: 85 Stamp No.: 8

Tests conducted by: C.A.M.P.I. / Studio V.M. Laboratory Test No LAB-035-011_21 on 18-May-2021

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 Ed.2019 of the ASME Boiler and Pressure Vessel Code.

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

Test Supervised by

Signed

Date 18-May-2021

Manufacturer C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
I - 44122 FERRARA

By QUALITY CONTROL QC

Exhibit 7-2 Rev. 0 | 1 | 2 | 3 | 4 | 5

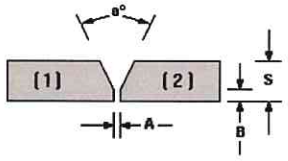
C.A.M.P.I. srl Ferrara (Italy)	WELDING PROCEDURE SPECIFICATION (WPS) (QW 482)	WPS-N. P425-01AS Rev. 0 Date: 03/03/2021 Supp. PQR N. P425-AS

Welding Process(es) a) GTAW b) GMAW c) _____
Type(s) a) Manual b) Semiautomatic c) _____
Joints (QW-402)

Joint design BW: V groove weld butt joint (see sketch)
Backing GMAW (Yes) GTAW (No) _____
Backing material (Type) WELD METAL
- Metal — Non fusing metal _____
- Non metallic — Other _____

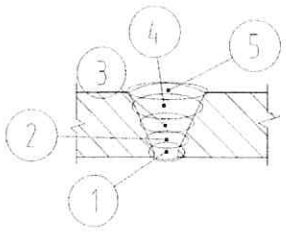
Base metal (QW-403)
P-No. 1 Gr.No. 1 to P-No. 1 Gr. No. 2
Spec. type & grade SA333 Gr.6
to spec. type & grade SA106 Gr.C
Chem. anal. & mech. prop. _____
to Chem. Anal. & Mech. Prop. _____
Thickness range
Base metal (mm/inches): Groove 12,7mm Fillet All
Pipe dia.: Groove : 8" Fillet: All
Other:

Joint Design
Disegno giunto



A:3÷5mm - **B:**1,5±1mm
a°:75±2,5 - **S:**12,7mm
Dia. 8"

Welding Sequences
sequenze saldatura



FILLER METALS (QW-404)	a)	b)	c)
Spec. No. (SFA)	5.28	5.36	
AWS No. (Class)	ER80S-Ni1	E71T15-M21A6-CS1-H4	
F-No.	6	6	
A-No.	10	1	
Size of filler metal	2,4 mm	1,2 mm	
F.M. Trade Name	Carborod Ni1	Diamondspark 54 MC	
Manufacturer	Lincoln	Boehler	
Weld Metal Thickness Thickness Groove:	2,0 mm	10,7mm	
Fillet:	All	All	
Flux Trade Name	/	/	
Manufacturer	/	/	
Electr.-Flux (Class)	/	/	

Other **a):**QW404.23: Solid wire – QW 404.22: No –QW404.14:With Filler Metal

GAS (QW-408)	Gas(es)	Percent Composition Mixture	Flow rate	
Plasma				l/min
Shielding (a)	Ar	99,999%	10	l/min
Shielding (c)	Ar+CO_2	92%+8%	15	l/min
Trailing				l/min
Backing	NO	N.A.	N.A.	l/min

Other:

ELECTRICAL CHARACTERISTICS (QW-409)	
Current:	a)-b) DC
Polarity:	a)SP b)RP
Mode of Metal Transfer for GMAW:	PULSED
Tungsten Electrode Type & Size	SFA 5.12 EWTh-2
Electrode wire feed speed range	/

TECHNIQUE (QW-410)	
String or Weave Bead	STRING & WEAVE
Orifice or Gas Cup Size	16 mm
Initial & Interpass Cleaning	GRINDING
Stick out:	12÷14mm
Method of Back Gouging	/
Oscillation: Amplitude	
Frequency	
Contact Tube to Work Distance: GMAW	15÷20mm
Multipass or Single Pass (per side)	MULTI
Single or Multiple Electrodes	N.A.

POSITIONS (QW-405)	
Position(s) of groove or fillet	Flat (1G)
Welding Progression:	/
Other:	

PREHEAT (QW-406)	
Preheat Temp.	>15°C
Interpass Temp.	Max 300°C
Preheat maintenance	

POSTWELD HEAT TREATMENT (QW-407)	
Temp. Range	610±10°C
Time Range	60 minutes
Heat rate: Max 80°C/h – above 300°C	
Cool rate: Max 80°C/h– above 300°C and cooled in still air	

Other
Peening not permitted
■ t Pass < 1/2" □ Sup. powder □ Alloy elements
a):QW410.64 N.A. and QW410.11:No – **b):** QW410.64 No

Weld pass(es) or layers	Welding process(es)	Filler metal AWS Class or Trade Name	Filler metal Size/Dia (mm)	Current Type & polarity	Current Amp. Range ±10%	Volt Range ±10%	Travel Speed Range (mm/min) ±10%	Other HEAT IMPUT KJ/mm
1	GTAW	ER80S-Ni1	2,0	DC-SP	146	9,1	78	1,02
2-3	GMAW	Diamondspark 54 MC	1,2	DC-RP	220	22,5	340	0,87
4÷5	GMAW	Diamondspark 54 MC	1,2	DC-RP	230	22,5	340	0,91

Impiegare saldatori con qualifica / *Qualified welders or welding operator:* ASME IX

Preparato da / *Prepared by*	Accettato per la qualifica *Accepted as ready for qualification*	Approvato da Ispettore Autorizzato *Approved by Authorized Inspector*
	C.A.M.P.I. srl Partita IVA 01[illegible]90389 Via Dir[illegible]ria, 15 I 44100 FERRARA	BUREAU VERITAS ITALIA WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 03 MAR. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **1 di 10**	
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**	
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

M-Lab Rev2

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Il laboratorio garantisce la correttezza delle procedure adottate, il campionamento eseguito dal Cliente e non oggetto di accreditamento.
I campioni testati sono archiviati per 30gg.
(#)= dati forniti dal cliente, per i quali il laboratorio non si assume responsabilità.
(*)= prova non accreditata da Accredia

The results of this Report refer only to the objects under examination and can not in any case be extended to others.
Any partial reproduction must be authorized by Studio V.M.
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The tested samples have been stored for 30 day.
(#) = data provided by the customer, for which the laboratory assumes no responsibility.
(*) = test not accredited by Accredia

Responsabile di prova Test responsible	Responsabile di laboratorio Laboratory manager	Controllo qualità del cliente Q.C. Client Supervisor	Ispettore di 3^ parte 3rd party Inspector
STUDIO V.M. srl M. Provasi Resp. Prove Meccaniche	STUDIO V.M. srl M. Bruschi Resp. Laboratorio		BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **2 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679 **81463**	**-** **-**	**SA333 Gr.6** **SA106 Gr.C**	**Heat treated**

M-Lab Rev2

1) PROVA DI TRAZIONE TRASVERSALE/ Transversal tensile test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**WAW 600 D Lab-01**
Estensimetro digitale / Digital extensimeter	**-**
Metodo di prova / Standard	**ASME IX-19 QW-150**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Tipo di provetta / Test specimen	**Flat**

N.	**Dimensioni** Dimension (mm)	**Sezione** Section So (mm)	**Lunghezza utile** Rupture length Lo (mm)	**Lunghezza finale** Final length Lf (mm)	**Loc. rottura** Failure pos (see note)	**Carico di rottura** Tensile strength Rm (MPa)	**Carico di snervamento** Yield strength ReH (MPa)	**Allungamento** Elongation A %	**Z %**
1	18.96*12.72	241.17	-	-	BM **SA333 Gr.6**	453	313	-	-
2	18.90*12.75	240.97	-	-	BM **SA333 Gr.6**	460	318	-	-
3	18.87*12.73	240.21	-	-	BM **SA333 Gr.6**	502	336	-	-
4	19.03*12.74	242.44	-	-	BM **SA333 Gr.6**	501	340	-	-
Valore richiesto dal cliente Required value by client						-	-	-	-

N°1-2 performed after 1 cycle of PWHT
N°3-4 performed after 3 cycle of PWHT

BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSO
DATE 18 MAG. 2021

Note / note :
BM = metallo base / base metal **WM = saldatura** / weld metal **HAZ = zona termicamente alterata** / heat affected zone

Prova di trazione eseguita il / Tensile test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **3 di 10**	
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**	
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

M-Lab Rev2

2) *PROVA DI PIEGA / Bending test*

Apparecchiatura e codice V.M. / Equipment and V.M. code	**WAW 600 D Lab-01**
Metodo di prova / Standard	**ASTM E190-14, ASME IX-19 QW-160**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Tipo di piega / Bend type	**Side**

No.	Dimensioni Dimensions (mm)	Tipo di Piega Bend type (see note)	Diametro del mandrino Diameter of spindle (mm)	Distanza rulli Rollers distance (mm)	Angolo° Bend angle°	Risultato Result
1	10*12.7	Side bend	40	63	180	No defect founds
2	10*12.7	Side bend	40	63	180	No defect founds
3	10*12.7	Side bend	40	63	180	No defect founds
4	10*12.7	Side bend	40	63	180	No defect founds
5	10*12.7	Side bend	40	63	180	No defect founds
6	10*12.7	Side bend	40	63	180	No defect founds
7	10*12.7	Side bend	40	63	180	No defect founds
8	10*12.7	Side bend	40	63	180	No defect founds

N°1-4 performed after 1 cycle of PWHT
N°5-8 performed after 3 cycle of PWHT

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

Note / note :
Face = Piega dritta / face bend **Root = Piega al rovescio** / root bend **Side = Piega laterale** / side bend

Prova di piega eseguita il / Bending test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **4 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

M-Lab Rev2

3) PROVA DI RESILIENZA / Charpy impact test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**JBS 500J - KV8 Lab-01**
Metodo di prova / Standard	**ASME IX-19 QW-170**
Specifica del cliente / Client specification	**ASTM SA516 Gr.70**
Temperatura di prova / Test temperature	**-52°C**
Tipo di intaglio / Notch type	**V-NOTCH**

No.	Dimensioni Dimensions (mm)	Posizione Position	Valore Value (J)	Valore medio Average (J)	Shear fracture (%)	Lateral expansion (mm)
1-1	**10*10*55**	WZ 1 cycle PWHT	32	33.7	-	-
1-2	**5*10*55**		34		-	-
1-3	**5*10*55**		35		-	-
2-1	**5*10*55**	HAZ SA333 Gr.6 1 cycle PWHT	30	28.7	-	-
2-2	**5*10*55**		28		-	-
2-3	**5*10*55**		28		-	-
3-1	**5*10*55**	HAZ SA106 Gr.C 1 cycle PWHT	26	26.7	-	-
3-2	**5*10*55**		27		-	-
3-3	**5*10*55**		27		-	-
4-1	**5*10*55**	B.M. SA333 Gr.6 1 cycle PWHT	41	40.3	-	-
4-2	**5*10*55**		40		-	-
4-3	**5*10*55**		40		-	-
5-1	**5*10*55**	B.M. SA106 Gr.C 1 cycle PWHT	45	44.7	-	-
5-2	**5*10*55**		44		-	-
5-3	**5*10*55**		45		-	-
6-1	**5*10*55**	WZ 3 cycle PWHT	38	35.3	-	-
6-2	**5*10*55**		32		-	-
6-3	**5*10*55**		36		-	-
7-1	**5*10*55**	HAZ SA333 Gr.6 3 cycle PWHT	30	32.7	-	-
7-2	**5*10*55**		33		-	-
7-3	**5*10*55**		35		-	-
8-1	**5*10*55**	HAZ SA106 Gr.C 3 cycle PWHT	37	35.0	-	-
8-2	**5*10*55**		37		-	-
8-3	**5*10*55**		31		-	-
9-1	**5*10*55**	B.M. SA333 Gr.6 3 cycle PWHT	44	45.3	-	-
9-2	**5*10*55**		45		-	-
9-3	**5*10*55**		47		-	-
10-1	**5*10*55**	B.M. SA106 Gr.C 3 cycle PWHT	45	47.7	-	-
10-2	**5*10*55**		48		-	-
10-3	**5*10*55**		50		-	-
Valore richiesto dalla distinta Required value cutt-off sheet			**>34** **For specimen 10*10**	**>34** **For specimen 10*10**	**-**	**-**

Note / note :
BM = metallo base / base metal **WM = saldatura** / weld metal **HAZ = zona termicamente alterata** / heat affected zone

Prova di resilienza eseguita il / Charpy impact test performed on **18/05/2021**

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **5 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

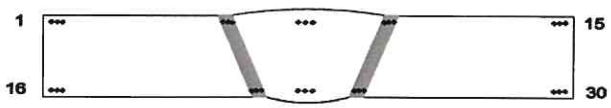
#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

M-Lab Rev2

4) PROVA DI DUREZZA VICKERS / Vickers hardness test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**HVS 30Z – Lab 04**
Metodo di prova / Standard	**ASTM E92-16**
Specifica del cliente / Client specification	**-**
Temperatura del controllo / Test temperature	**22°C**
Modalità di prova / Testing parameters	**In section - After 1 cycle PWHT**
Valore richiesto / Required value	**210 HV10 max**

No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10
1	B.M. SA333 Gr.6	135	16	B.M. SA333 Gr.6	141	-	-	-
2	B.M. SA333 Gr.6	133	17	B.M. SA333 Gr.6	138	-	-	-
3	B.M. SA333 Gr.6	131	18	B.M. SA333 Gr.6	140	-	-	-
4	H.A.Z.	154	19	H.A.Z.	157	-	-	-
5	H.A.Z.	179	20	H.A.Z.	169	-	-	-
6	H.A.Z.	182	21	H.A.Z.	180	-	-	-
7	W.Z.	188	22	W.Z.	191	-	-	-
8	W.Z.	186	23	W.Z.	193	-	-	-
9	W.Z.	190	24	W.Z.	187	-	-	-
10	H.A.Z.	185	25	H.A.Z.	180	-	-	-
11	H.A.Z.	174	26	H.A.Z.	180	-	-	-
12	H.A.Z.	170	27	H.A.Z.	164	-	-	-
13	B.M. SA106 Gr.C	140	28	B.M. SA106 Gr.C	145	-	-	-
14	B.M. SA106 Gr.C	143	29	B.M. SA106 Gr.C	143	-	-	-
15	B.M. SA106 Gr.C	139	30	B.M. SA106 Gr.C	137	-	-	-



BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

Note / note :
B.M. = **metallo base** / base metal **W.M.** = **saldatura** / weld metal **H.A.Z.** = **zona termicamente alterata** / heat affected zone

Prove di durezza eseguite il / Hardness test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **6 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

M-Lab Rev2

5) PROVA DI DUREZZA VICKERS / Vickers hardness test

Apparecchiatura e codice V.M. / Equipment and V.M. code	**HVS 30Z – Lab 04**
Metodo di prova / Standard	**ASTM E92-16**
Specifica del cliente / Client specification	**-**
Temperatura del controllo / Test temperature	**22°C**
Modalità di prova / Testing parameters	**In section - After 3 cycle PWHT**
Valore richiesto / Required value	**210 HV10 max**

No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10	No.	Posizione Position	Valore Rilevato Measured value HV10
1	B.M. SA333 Gr.6	129	16	B.M. SA333 Gr.6	134	-	-	-
2	B.M. SA333 Gr.6	130	17	B.M. SA333 Gr.6	130	-	-	-
3	B.M. SA333 Gr.6	133	18	B.M. SA333 Gr.6	129	-	-	-
4	H.A.Z.	136	19	H.A.Z.	140	-	-	-
5	H.A.Z.	143	20	H.A.Z.	152	-	-	-
6	H.A.Z.	159	21	H.A.Z.	160	-	-	-
7	W.Z.	179	22	W.Z.	182	-	-	-
8	W.Z.	178	23	W.Z.	180	-	-	-
9	W.Z.	181	24	W.Z.	178	-	-	-
10	H.A.Z.	176	25	H.A.Z.	184	-	-	-
11	H.A.Z.	171	26	H.A.Z.	170	-	-	-
12	H.A.Z.	153	27	H.A.Z.	154	-	-	-
13	B.M. SA106 Gr.C	130	28	B.M. SA106 Gr.C	130	-	-	-
14	B.M. SA106 Gr.C	134	29	B.M. SA106 Gr.C	135	-	-	-
15	B.M. SA106 Gr.C	132	30	B.M. SA106 Gr.C	135	-	-	-



BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

Note / note :
B.M. = metallo base / base metal **W.M. = saldatura** / weld metal **H.A.Z. = zona termicamente alterata** / heat affected zone

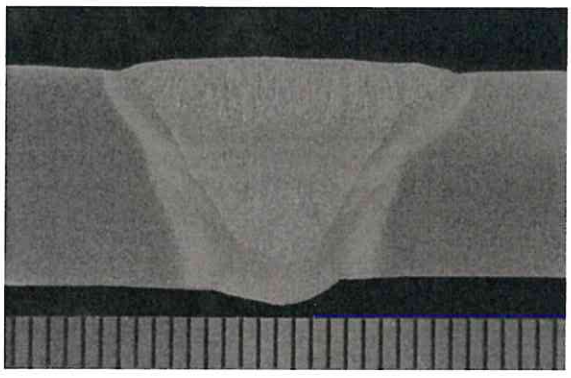
Prove di durezza eseguite il / Hardness test performed on **18/05/2021**

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L	
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**		**Foglio N°** / Sheet No. **7 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**			**Data ricevimento 31/03/2021** **Data report 18/05/2021**
#Colata / Heat **901679** **81463**	**#Cert. No.** **-** **-**	**#Mat. dichiarato** / Steel dec. **SA333 Gr.6** **SA106 Gr.C**	**Stato** / Status **Heat treated**

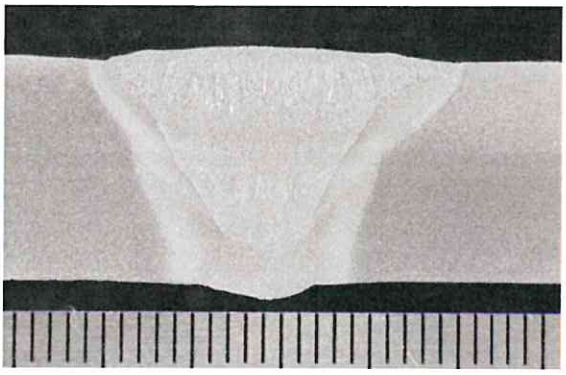
M-Lab Rev2

6) *ESAME MACROGRAFICO / Macrographic examination*

Apparecchiatura e codice V.M. / Equipment and V.M. code	**MACRO INFINITY - Lab 07**
Metodo di prova / Standard	**ASME IX-19 QW184**
Specifica del cliente / Client specification	**-**
Temperatura di prova / Test temperature	**22°C**
Modalità di prova / Test modality	**In section**
Reattivo / Eatching	**Nital 10%**
Ingrandimento / Magnification	**3.5X**



After 1 Cycle PWHT



After 3 Cycle PWHT

Esame macrografico eseguito il / Macrographic examination performed on **18/05/2021**

BUREAU VERITAS ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **8 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679 **81463**	**-** **-**	**SA333 Gr.6** **SA106 Gr.C**	**Heat treated**

M-Lab Rev2

*7) ANALISI CHIMICA / Chemical analysis**

Apparecchiatura e codice V.M. / Equipment and V.M. code	**AMETEK SPEKTROMAXX**
Metodo di prova / Standard	**PO13**
Specifica del cliente / Client specification	**ASME IX-19 QW440 Table QW442**
Modalità di prova / Test modality	**Weld Metal**

No.	C %	Cr %	Mo %	Ni %	Mn %	Si %	-
1	0.133	0.062	0.007	0.259	1.30	0.572	-

BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

Analisi chimica eseguita il /Chemical analysisperformed on **18/05/2021**

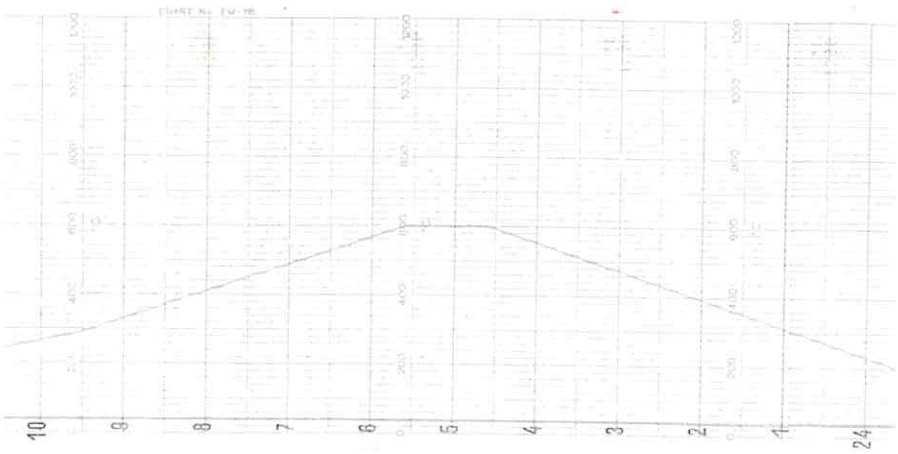
Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **9 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679	**-**	**SA333 Gr.6**	
81463	**-**	**SA106 Gr.C**	**Heat treated**

M-Lab Rev2

*8) TRATTAMENTO TERMICO / Heat treatment **

Apparecchiatura e codice V.M. / Equipment and V.M. code	**SICORTHERM ETTS/50**
Registratore / Recorder	**CHINO KL4106 Serial n° R1131C006**
Specifica del cliente / Client specification	**X3 Cycle**
Temperatura massima /Temperature	**610 °C**
Tempo di mantenimento / Holding time	**1h**
Gradiente di salita - discesa / Heating - cooling rate	**80°C/h**



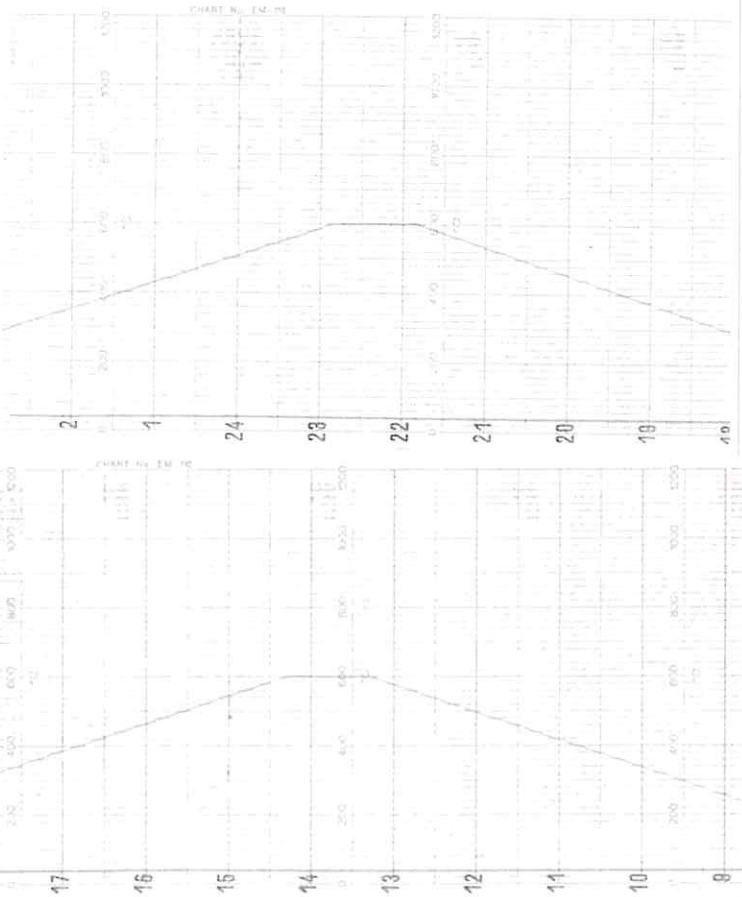
BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

STUDIO V.M. S.r.l. Ferrara Via F. L. Ferrari 24/C 44124	**RAPPORTO DI PROVA** TEST REPORT **Report No. Lab-035-011_21 Rev. 0**	ilac-MRA	ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO LAB N° 1630 L

Committente / Customer **C.A.M.P.I. S.r.l.** Via Diamantina, 15, 44123 Ferrara (Fe)	**Codice campione** / Sample code **P425**	**Foglio N°** / Sheet No. **10 di 10**
Oggetto / Subject **PQR P425 GTAW+GMAW Pipe Ø8" Thk.12.7mm Welder: Perelli Cristian** **Rod Carborod Ni1 Heat: B102854T24 Wire Diamondspark Heat: 926712**		**Data ricevimento 31/03/2021** **Data report 18/05/2021**

#Colata / Heat	**#Cert. No.**	**#Mat. dichiarato** / Steel dec.	**Stato** / Status
901679 **81463**	**-** **-**	**SA333 Gr.6** **SA106 Gr.C**	**Heat treated**

M-Lab Rev2



BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE 18 MAG. 2021

Trattamento termico eseguito il / Heat treated performed on **05/04/2021**

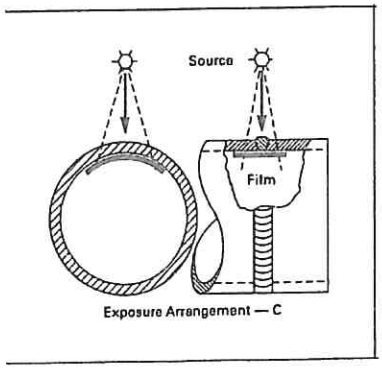
C.A.M.P.I. srl Ferrara (Italy)	CONTROLLO RADIOGRAFICO RADIOGRAPHIC EXAMINATION REPORT	RT No. 2021-01 Foglio / Sheet 1 of 2

APPARECCHIO- Equipment: Test plates **P421 / P422 / P423 / P424 & P425** *Talloni di saldatura **P421 / P422 / P423 / P424 & P425***	**COLLAUDO** *Inspection Authority*	**COMMESSA** / Job No. / **N.F.** / Item Serial No. /

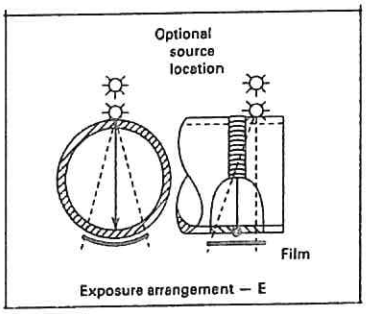
STADIO DI LAVORAZIONE : Dopo saldatura *Fabrication step : After welding*	CONDIZIONI SUPERFICIALI : come saldato *Test surface status : As welded*	
SPECIFICA DI CONTROLLO *Testing procedure:* C.A.M.P.I. IO ND101AS rev.6 / ASME Sect. V Ed.19 Art. 2	*CLASSE ACCETTABILITA' / Acceptance standard* C.A.M.P.I. IO ND101AS rev.6 / ASME VIII Div.1 Ed.19 - UW51 & App.4 / ASME IX Ed.19 QW191.1	ESTENSIONE *Extension* : 100%

TECNICA RADIOGRAFICA *Radiographic method*			1	2		3
SALDATURA *Weldjoint*	MATERIALE BASE TIPO *Base material type*		SA333Gr.6 / SA106Gr.C	SA333Gr.6 / SA106Gr.C		SA333Gr.6 / SA106Gr.C
	SPESSORE (nom.) mm *Thickness (nom.)*		8"x12,7	3"x7,62	1"½ x 7,14	½"x3,73
	RINFORZO mm *Weld reinforcement thk*		1,0+1,5	1,0+1,5		1,0+1,5
	TIPO DI SALDATURA *Welding type*		Butt Weld	Butt Weld		Butt Weld
PELLICOLA *Film*	MARCA – TIPO *Trade mark – type*		AGFA Structurix D7	AGFA Structurix D7		AGFA Structurix D7
	DOPPIA *Double film*		NO	NO		NO
	SINGOLA *Single film*		YES	YES		YES
	FORMATO *Size*		10x24	10x16 / 10x24		10x16
PENETRAMETRO *Penetrameter*	TIPO *Type*	ASME	ASTM 1B	ASTM 1A		ASTM 1A
		EN	-	-		-
	POSIZIONE *Location*	LATO SORG. *Source side*	□	□		□
		LATO FILM *Film side*	■	■		■
SCHERMI *Screens*	ANTERIORE *Front*	TIPO *Type*	Pb	Pb		Pb
		SPESSORE *Thickness*	0,05mm	0,05mm		0,05mm
	POSTERIORE *Back*	TIPO *Type*	Pb	Pb		Pb
		SPESSORE *Thickness*	0,10mm	0,10mm		0,10mm
SORGENTE *Source*	TIPO *Type*		Ir192	Ir192		Ir192
	ENERGIA *Energy*		15 Ci	15 Ci		15 Ci
	INTENSITA' *Intensity*		/	/		/
	F: MACCHIA FOCALE mm *F: Focal spot*		2x1,32	2x1,32		2x1,32
PARETI ATTRAV. *Radiation through*	Singola *Single wall*	Direzionale *Single*	□	□		□
		Panoramica *Multiple*	□	□		□
	Doppia	*Double wall*	■	■		■
D:Distance from source of radiation to weld or object being radiographed : mm *Distanza Fuoco- pezzo*			220	90	50	40
d:distance from surce side of weld or object being radiographated to the film : mm *Distanza pezzo- pellicola*			2	2	2	2
TEMPO DI ESPOSIZIONE / DOSE *Exposure / Dose*			6'	4'	2'	5''
DENSITA' PELLICOLA *Film density*			2,3 to 3,1	2,2 to 3,5		2,4 to 3,3
SENSIBILITA' RADIOGR. MINIMA *Penetrameter min. sensitivity*			2%	2%		2%

TECNICA RADIOGRAFICA
Radiographic method



TECNICA RADIOGRAFICA 1-2-3
Radiographic method



Ug : Geometric Unsharpness:
Penombra geometrica
Ug=Fd/D
D and d shall be determined at the approximate center of the area of interest.
For material thk <50mm
Ug max 0.51mm
- Result : OK

NUMERO TOTALE FILM: **37**
Number of films

DATA / *Date*	**CAMPI**	**ISPETTORI** / *Inspectors*	**CLIENTE** / *Purchaser*
09-March-2021	**LIVELLO** *Level* □ 1 ■ 2 □ 3	C.A.M.P.I. S.R.L. - Ferrara Quality Control dept. Witnessed □ Reviewed ☒ Date 09/03/21 Signature	BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG 2021

C.A.M.P.I. SRL MICHELE ANTOLINI 3 LEVEL EN473/ISO 9712 TC 1A

C.A.M.P.I. srl Ferrara (Italy)	CONTROLLO RADIOGRAFICO RADIOGRAPHIC EXAMINATION REPORT	RT No. 2021-01 Foglio / Sheet 2 of 2

N. saldatura *Weld no.*	Tratto *Section*	Diametro *Diameter*	Spessore *Thickness*	Tecnica radiografica *Radiographic method*	Difetto *Defect*	Giudizio *Evaluation*	Giudizio cliente *Customer evaluation*
P421 W1	1	21,3	3,73	3		A	
P421 W1	2	21,3	3,73	3		A	
P421 W2	1	21,3	3,73	3		A	
P421 W2	2	21,3	3,73	3		A	
P421 W3	1	21,3	3,73	3		A	
P421 W3	2	21,3	3,73	3		A	
P421 W4	1	21,3	3,73	3		A	
P421 W4	2	21,3	3,73	3		A	
P421 W5	1	21,3	3,73	3		A	
P421 W5	2	21,3	3,73	3		A	
P421 W6	1	21,3	3,73	3		A	
P421 W6	2	21,3	3,73	3		A	
P422 W1	1	48,3	7,14	2		A	
P422 W1	2	48,3	7,14	2		A	
P422 W1	3	48,3	7,14	2		A	
P422 W2	1	48,3	7,14	2		A	
P422 W2	2	48,3	7,14	2		A	
P422 W2	3	48,3	7,14	2		A	
P422 W3	1	48,3	7,14	2		A	
P422 W3	2	48,3	7,14	2		A	
P422 W3	3	48,3	7,14	2		A	
P423 W1	1-2	219,1	12,7	1		A	
P423 W1	2-3	219,1	12,7	1		A	
P423 W1	3-4	219,1	12,7	1		A	
P423 W1	4-1	219,1	12,7	1		A	
P424 W1	1-2	88,9	7,62	2		A	
P424 W1	2-3	88,9	7,62	2		A	
P424 W1	3-4	88,9	7,62	2		A	
P424 W1	4-1	88,9	7,62	2		A	
P424 W2	1-2	88,9	7,62	2		A	
P424 W2	2-3	88,9	7,62	2		A	
P424 W2	3-4	88,9	7,62	2		A	
P424 W2	4-1	88,9	7,62	2		A	
P425 W1	1-2	219,1	12,7	1		A	
P425 W1	2-3	219,1	12,7	1		A	
P425 W1	3-4	219,1	12,7	1		A	
P425 W1	4-1	219,1	12,7	1		A	

CLASSIFICAZIONE DIFETTI
Defects classification

100 - C Cricca / *Crack*
104 – CC Cricca di cratere / *Crater crack*
2011 - P Porosità isolate / *Gas pore*
2012 - PD Porosità distribuita uniformemente / *Uniformly distribuited porosity*
2013 – PP Nido di porosità/ *Clustered porosity*
2014 – PA Porosità alleneate / *Linear porosity*
2015 – IG Inclusioni di gas allungata / *Elonged cavity*
2016 – T Tarlo / *Worm hole*
202 – CA Cavità di ritiro / *Shrinkage cavity*
2024 –K Cavità di cratere / *Crater pipe*
301 – IS Inclusioni di scoria / *Slag inclusion*
302 – IF Inclusioni di flusso / *Flux inclusions*
303 – IO Inclusione di ossido / *Oxide inclusion*
3041 – IW Inclusione di tungsteno / *Tungsten inclusion*
401 - MF Mancanza di fusione / *Lack of fusion*
402 - MP Mancanza di penetrazione / *Lack of penetraion*

5011 – IMC Incisioni marginali continue / *Continuos undercut*
5012 – IMI Incisioni marginali intermittenza / *Intermittent undercut*
5013 – IMS Incisioni di radice / *Shrinkage groove*
504 – EP Eccesso di penetrazione / *Excess penetration*
5041- SG Sgoccilamento / *Local excessive penetration*
507 – SL Slivellamento / *Linear misalignment*
509 – SL Avvallamento / *Sagging*
511 – IN Insellamento / *Incompletely filled grove*
514 – SI Superfice irregolare / *Inter-run undercut*
515 – CR Concavità di radice / *Root concavity*
517 – RD Ripresa difettosa / *Poor restart*
601 – CD Colpo d'arco /*Arc strike stray arc*
602 – SP Spruzzi / *Spatter*
606 – EM Eccesso di molatura / *Underflusching*
BM Difetto materiale base /*Base material defect*
DF Difetto film / *Film defect*

A = ACCETTABILE (*acceptable*)
R = DA RIPARARE (*to repair*)
RRX= RIPETERE FILM (*Film repeat*)
A1 – A2 – A3 =
accettabile dopo 1^, 2^ e 3^ riparazione
(*acceptable after 1st, 2nd and 3rd repair*)

NOTES:

Date of exposure from 08-March-2021

DATA / *Date*	CAMPI	ISPETTORI / *Inspectors*	CLIENTE / *Purchaser*
09-March-2021	LIVELLO *Level* ☐ 1 ■ 2 ☐ 3 C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL ENT TC 1A EN 473 ISO 9712	ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021	

C.A.M.P.I. srl Ferrara (Italy)	**CERTIFICATO DI CONTROLLO VISIVO SALDATURE** *Visual Inspection Certificate* *Welded joints*	Certificato N. VT 425-01AS *Certificate no.* FOGLIO 1 DI 1 *Sheet of*

CLIENTE: / *Customer*	ORDINE N.: / *Order no.*	COMMESSA N.: 21004 *Job no.*
SIGLA - *Item :* / *SERVIZIO- Service :* *Test Plate Qualification*	NUM. FABBRICA: / *Serial number*	DISEGNO N.: / *Drawing n*
QCP N.: / FASE N.: / *QCP no.* *Stage no.*	PROCEDURA N. C.A.M.P.I. ND 105AS rev.2 *Procedure no.*	
COMPONENTE SOTTOPOSTO AL CONTROLLO *Component subject to test* DESCRIZIONE: Test Pipe Qualification P425-AS d.8" x 12,7mm Thk. *Description*		TIPO DI MATERIALE: *Type of material* SA333 Gr.6 / SA106 Gr.C
SPECIF. APPLICAB. / *Appl. Specifications.* ASME Sect. IX Ed.2019 QW-194 / QW-302.4 ASME V Ed.2019 Art.9	CRITERI ACCETTABILITA' / *Acceptance criteria:* C.A.M.P.I. ND 105AS rev.2 / ASME Sect. IX Ed.2019 QW-194 / QW-302.4	

Designazione delle imperfezioni *Imperfections designation*	**Accettabilita'** *Acceptable*	**Note** Note
1)-Incompleto riempimento di cianfrini. Incomplete fill-up of weldgroove.	**Non Accettabile** *Unaccettable*	*None*
2)-Cricche, mancanza di fusione e penetrazione superficiale. Crack, lack of fusion or penetration.	**Non Accettabile** Unaccettable	*None*
3)-Incisioni marginali con profondità superiore a quella prevista dal Codice applicabile. Undercuts having depth greater than allowable values permitted by referencing Code section.	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
4)-Rinforzo di saldatura superiore a quanto previsto dal Codice applicabile. Weld reinforcement greater than allowable values permitted by referencing Code section	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
5)-Spigoli acuti o situazioni geometriche che possono interferire con la successiva esecuzione di esami non distruttivi. Sharp corners and weld profile that could interfere with radiographic examination or other N.D.E. methods.	**ASME VIII Div 1** **UW 35** **ND 101AS**	*None*
6)-Scarsa raccordatura tra le passate, sovrapposizioni, brusche variazioni di sezione ed intagli. Coarse ripples, grooves, overlaps, abrupt ridges and valleys.	**Non Accettabile** Unaccettable	*None*
7)-Scorie di saldatura aderente, spruzzi e inneschi d'arco. Slag, spatters and arc spots.	**Non Accettabile** Unaccettable	*None*

Si certifica che il saggio sopra citato è stato sottoposto ad esame visivo delle saldature (100%) alla presenza di:

We certify that the piece has been visual examined and witnessed by:

Signor *Mr*		**Ispettore per** *Inspector for*	

RISULTATO DELL'ESAME VISIVO
VISUAL EXAMINATION RESULTS
SODDISFACENTE / Satisfactory

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

DATA / *Date* ***05-March-2021***	**C.A.M.P.I. Srl** **QC Dept.** C.A.M.P.I. S.R.L. - Ferrara Quality Control dept. Witnessed ☑ Reviewed ☐ Date 05/03/21 Signature	Foglio 1 di 1 *Sheet of* N. ----------

C.A.M.P.I. srl **Ferrara (Italy)**	**CERTIFICATO DI CONTROLLO CON LIQUIDI PENETRANTI** *LIQUID PENETRANT EXAMINATION REPORT*	**PT No.** P425-01AS Foglio / Sheet 1 of 1

CLIENTE: *Purchaser: /* ORDINE: *Purchase Order No.: /* APPARECCHIO: **Test pipe coupon** Sigla: **P425** *Type of vessel :* *Item:*	**COLLAUDO** *Inspection Authority*	**COMMESSA** / Job No. */* **N.F.** / Item Serial No. */*

PARTE ESAMINATA : controllo effettuato su tallone di saldatura diametro 8" e spessore 12,7mm *Examined part* *Test performed on test plate diameter 8" and 12,7mm thickness*				
STADIO DI LAVORAZIONE *Working Step*	O *AFTER FORMING* O *AFTER MACHINING*	O *AFTER GRINDING* • *AFTER WELDING*	O *AFTER PWHT* O *AFTER HYDR.*	
CONDIZIONI SUPERFICIALI *Test Surface Status*	■ COME SALD. *As welded*	□ MOLATO *Ground*	□ LAV. DI MACCHINA *Machined*	
SPEC. DI CONTROLLO / *Examination procedure* C.A.M.P.I. IO ND102AS rev.4 / ASME Sect.V Art. 6 Ed 2019 & ASME IX Ed.2019 QW195		**CRITERI ACCETT.** *Acceptance criteria* C.A.M.P.I. IO ND102AS rev.4 / ASME Sect VIII Div.1 App.8 Ed. 2019 & ASME IX Ed.2019 QW195.2		

COMBINAZIONE LIQUIDI PENETRANTI / *Liquid Penetrant Grouping*

	■ LAVABILE CON ACQUA *Water washable*		□ LAVAB. CON SOLVENTE *Solvent removable*		□ POST-EMULSIFICABILE *Post-emulsified*	
	■ VISIBILE *Visible*	□ FLUOR. *Fluorescent*	□ VISIBILE *Visible*	□ FLUOR. *Fluorescent*	□ VISIBILE *Visible*	□ FLUOR. *Fluorescent*
PULITORE *Cleaner*	VELNET Batch 19/0526					
PENETRANTE *Penetrant*	RED W/W Batch 20/0074					
EMULSIFICATORE *Emulsified*	/					
RIMOZIONE PENETRANTE *Penetrant Remover*	/					
RIVELATORE *Developer*	ROTRIVEL U Batch 20/0146					
MARCA *Trade-mark*	CGM					
MEZZO DI ILLUMINAZIONE *Lighting Equipment*	■ NATURALE *Natural*	□ ARTIFICIALE *Artificial*				
LUXOMETRO S.N. *Luxmeter S.N.*	900710		DATA CALIBR. *Calibrat. Date*	02/10/2020	Lux value: 1200 lux	

PROCEDURA DI CONTROLLO / *Examination procedure*			**Refer doc. / Note**
PULITURA CON *Cleaning by*	*BRUSHING & VELNET*		WPS 425-01AS WELDER: PERELLI CRISTIAN STAMP No 8 MATERIALS: SA333 Gr.6 / SA106 Gr.C Ambient Temperature 15,8°C
APPLICAZIONE PENETRANTE CON *Penetrant application by*	SPRAY		
TEMPO MINIMO DI PENETRAZIONE *Penetrant minimum time*	15	MINUTI *Minutes*	
APPLICAZIONE EMULSIFICATORE CON *Emulsifier application by*	/		
RIMOZIONE PENETRANTE CON *Penetrant removal by*	ACQUA *WATER*		
APPLICAZIONE RIVELATORE *Developer application*	SPRAY		
ESSICCAZIONE CON *Drying process by*	NATURAL		
TEMPO MINIMO DI SVILUPPO *Developing minimum time*	10	MINUTI *Minutes*	
TEMPO MASSIMO DI LETTURA *Checking maximum time*	30	MINUTI *Minutes*	
ANALISI ACCETTAZIONE LIQUIDI *Liquid acceptance testing*	VEDI CERTIFICATO CGM *SEE CGM CERTIFICATE*		

RISULTATI DELL'ESAME *Examination Result* ■ *NO REPORTABLE INDICATIONS ACCEPTABLE* □ *SEE ATTACHED SHEETS* □ *NOT ACCEPTABLE*

DATA / *Date*	**CAMPI**	**ISPETTORI** / *Inspectors*
05-March-2021	**LIVELLO** *Level* □ 1 ■ 2 □ 3 C.A.M.P.I. SRL MICHELE ANTOLINI 2 LEVEL SNT TC 1A EN 473/ISO 9712 C.A.M.P.I. S.R.L. - Ferrara Quality Control dept. Witnessed ☒ Reviewed ☐ Date 05/03/21 Signature	BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR G. FRACASSI DATE 18 MAG. 2021

EXHIBIT 8-2

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS

Product Line	TIG
Product	Carborod Ni1
Size(s) mm	2.4X1000XTUB05
Item No.	W000283394
Lot/Batch	B102854T24
Class	AWS A5.28 ER80S-Ni1 EN ISO 636-A W 46 6 W3Ni1

Customer Ref	17/21
Our Reference	815341935
Quantity	25.0 KG
Customer	MOLESINI

VIA VENEZUELA 8
Portomaggiore 44015
Italia

Chemical analysis (%) According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Al
0.088	0.67	1.09	0.005	0.013	0.03	0.87	0.01	0.12	<0.01	0.002

Mechanical tests, all weld metal According to EN10204 2.2

Tensile testing

Cond.	Temp. °C	Rp0.2 MPa	Rm MPa	A5 %
AW	20	520	610	26

Impact testing

Cond.	Temp. °C	KV J	Temp. °C	KV J
AW	20	160	-60	65

BUREAU VERITAS
ITALY
WITNESSED - NOTED - REVIEWED
SURVEYOR G. FRACASSI
DATE

Remarks

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Via Fratelli Canepa 8
16010 Serra Riccò
Italy

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☑
Date
Signature

Printed By	Giuseppe Lavezzari	Cert. No. 01304582
Function	Warehouse	ZEU_LOWALLOY , 1
Date	19/FEB/2021	

METRODE

voestalpine Böhler Welding Italia S.r.l.

voestalpine Böhler Welding Italia S.r.l.

Via Palizzi, 90
I – 20157 MILANO MI
Tel. +39 02 39017.1
Fax +39 02 39017244

www.voestalpine.com/welding

Certificato di prova 3.1
Inspection certificate 3.1

secondo / as per : EN 10204
No. : No. : 2021-2014565923-10-926712-014
Rev. 0 Page / Page : 1 / 1

METALUTENSILI SRL

VIA DEL COMMERCIO 25
44123 FERRARA
Italia

Ordine N°	PO no.	0000501032/Laura Tenani	del / of	04.03.2021
Ordine N°	Order no.	1014241789		
Bolla di consegna/Pos./Splitt.	Delivery note/pos./splitt	2014565923/000000/000010	del / of	04.03.2021

Oggetto test	Product	filo animato / Tubular cored electrode
Denominazione commerciale	Trade name	**diamondspark 54 MC**
Classificazione norma	Standard designation	EN ISO 17632-A: T46 6 M M21 1 H5/T42 5 M C1 1 H5
		AWS A5.36/SFA-5.36: E71T15-M21A8-CS1-H4
		AWS A5.36/SFA-5.36: E71T15-C1A6-CS1-H4
AWS A5.18 / SFA-5.18: E70C-6M-H4		

281645
44445
CU004190F
0140

Dimensione	Dimension.	1,2 mm
Colata	Serial no.	926712
Quantità fornita	Quantity	1600,0 KG

Composizione chimica in % del deposito **Chemical composition in % of the weld metal**

C	Si	Mn	P	S	Cr	Mo	Ni	V	Cu	Al	Nb			
0,08	0,68	1,23	0,006	0,012	0,02	< 0,01	0,02	< 0,01	0,08	< 0,1	< 0,01			

proprietà meccaniche **Mechanical properties** **EN 10204 - 2.2**

Prova di trazione Tensile test

T	ReL / Rp 0,2 MPa	Rp 1,0 MPa	Rm MPa	A (Lo = 5d) %	Z %	WBH PWHT	Note Remarks
20°C	≥ 460		550 - 660	≥ 20			

Prova di resilienza Impact test

T	Energia di impatto Impact energy KV / J	Medio Average KV / J	Espansione lat. Lateral expansion mm	Frattura cristalliina Shear fracture %	WBH PWHT	Note Remarks
-60°C	≥ 47					

Questo certificate é stato emesso con sistema automatizzato e non richiede firma
This certificate was issued by DP-equipment and does not require signature.

Centro / Town: Milano
Data / Date: 05.03.2021

Q.A. representative / Authorized representative
Zuin

C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date
Signature

BUREAU VERITAS
ITALY
WITNESSED NOTED REVIEWED
SURVEYOR G. FRACASSI
DATE

voestalpine
ONE STEP AHEAD.

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	1 / 9

Date / Data: June 18, 2020

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED / NORMALIZZATI	Product Type / Tipo di prodotto: See note nr.1 / Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH / GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 / Vedi nota nr.2		Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 / ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 / SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. / ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80 / .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft / 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz; 1202'05" ft 52033,4 lb; 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft / 64.65 Kg/m

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes / Avvisi di spedizione	Delivery Notes / Avvisi di spedizione
Job Number: 0031264534 / 000030 Shipping note: 0101975269 - 18/06/2020 Address: VIALE LIDICE, 40	Town: 10095 GRUGLIASCO, Country: Italy

TENSILE TEST / PROVA DI TRAZIONE

Heat N° / Colata N°	Sample N° / Prova N°	Lot N° / Lotto N°	Specimen condition / Condizioni della provetta: Ls	Sc	Type / Tipo	Ori	Specimen dimensions / Dimensioni della provetta: Size / Dimensioni	Area / Area	Test temp / Temp. di prova	Y.S. OffSet 0.2% Min: 240.00 Max: --	Y.S. EUL 0.5% Min: 240.00 Max: --	U.T.S. Req. Min: 415.00 Max: --	Y.S./U.T.S Req. Max. 0.85	Elongation / Allungamento: Lo	Min.	Min.	Obt.
							mm	mm2	°C	MPa	MPa	MPa		cal.	mm	%	%
901679	Q8778/C	5	B	N	Ss	L	37.89 x 12.83	488.90	+20	309.00	307.00	444.00	0.70	2"	50.0	30.0%	46.5%
901679	Q8779	5	B	N	Ss	L	37.92 x 12.99	495.40	+20	308.00	303.00	445.00	0.69	2"	50.0	30.0%	46.5%
901679	Q8780/C	5	B	N	Ss	L	37.86 x 12.88	490.40	+20	320.00	318.00	446.00	0.72	2"	50.0	30.0%	46.5%

B: Body / Corpo
L: Longitudinal / Longitudinale
Lo: Initial length / Lunghezza iniziale
Ls: Location of sample / Ubicazione provetta
Max: Maximum / Massimo
Min: Minimum / Minimo
N: Normalized / Normalizzato
Obt: Obtained / Ottenuto
Ori: Orientation / Orientamento
Req. Max: Required maximum / Massimo richiesto
Req: Required / Richiesto
Sc: Specimen condition / Condizioni Provetta
Ss: Strip specimen / Rettangolare
U.T.S: Ultimate Tensile Strength / Rottura
Y.S: Yield Strength / Snervamento

WITNESSED / NOTED SURVEYOR DATE BUREAU VERITAS ITALY

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C.A.M.P.I. S.R.L. - Ferrara
Quality Control dept.
Witnessed ☐ Reviewed ☒
Date
Signature

CTA Group
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Customer : C.A.M.P.I. SRL
Kg 324
Heat No.: 901679
Mt. 4,99
P.O. No.: PO: 20023.15-20024.14
Cla's job: LC0000327
Pz No.: 1
Date: 17/02/2021
Item: 6

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **01-20-05894** | Page / Pagina: **2 / 9**

Date / Data: **June 18, 2020**

Dalmine S.p.A. - Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: **COMMERCIALE TUBI ACCIAIO SPA**	Customer's Order Item / Rifer. Ordine Cliente - I: **AB00060/OA0000063**	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: **1240573/001**
Manufacture Process / Processo di fabbricazione: **NORMALIZED** **NORMALIZZATI**	Product Type / Tipo di prodotto: **See note nr.1** **Vedi nota nr.1**		Surface / Superficie: **BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH** **GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE**
Standard or Specification / Norme o specifica: **See note nr.2** **Vedi nota nr.2**		Steel Grade / Grado dell'Acciaio: **STEEL GR 6 ASTM A 333 AND ASME SA 333** **ACC. GR 6 ASTM A 333 E ASME SA 333**	Ends / Estremità: **BEVELLED AS PER ASME B 16.25** **SMUSSATI SECONDO ASME B 16.25**
Dimensions / Dimensioni: **ø 8.625" O.D. x .500" W.T.** **ø 219.10mm O.D. x 12.70mm W.T.**	Schedule / Schedula: **80**	Length / Lunghezza: **32.808 ft ÷ 38.714 ft** **10000 mm ÷ 11800 mm**	Quantity / Quantità: **32Pcs/Pz** **1202'05" ft** **52033,4 lb** **366.5 mt** **23602 kg**	Nominal Weight / Peso nominale: **43.44 lb/ft** **64.65 Kg/m**

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

				Composition % / Composizione %																
				X 100									X 1000						X 10000		
				C	Mn	Si	Ni	Cr	Mo	Cu	Ce LF	F1	P	S	Al	Ti	Nb	V	N	B	Ca
			H Max	18	130	30	40	40	12	40	42	60	25	10	40	20	20	50	120	5	60
			Min	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heat N°	Sample N°	Lot N°	P Max	18	130	30	40	40	12	40	42	60	25	10	40	20	20	50	120	5	60
Colata N°	Prova N°	Lotto N°	Min	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
901679			H	9	104	21	17	16	7	15	33	38.8	14	4	27	2	1	5	75	1	15
901679	Q8778/C	5	P	9	105	21	17	16	7	15	33	38.9	14	4	27	2	1	6	85	1	15
901679	Q8779	5	P	9	104	20	17	16	7	15	33	38.8	14	3	27	2	1	5	75	1	15

Ce LF: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
F1: (Nb+V +Ti+Cr+Cu+Mo)

H: Heat / Colata
Max: Maximum / Massimo
Min: Minimum / Minimo
P: Product / Prodotto

THROUGH WALL HARDNESS / DUREZZA ATTRAVERSO LO SPESSORE

Required values / Valori richiesti			Individuals / Individuali			Average / Media			Hardness type / Tipo de dureza: **brinell** Minimum martensite / martensite minima: (%): --			Formula applied / Formula Applicata							
			Min: --	Max: 200.0	Var: --	Min: --	Max: --	Var: --											
Heat N°	Sample N°	Lot N°	Specimen condition						Quad.	Scale	OD				ID				
Colata N°	Prova N°	Lotto N°	Ls		Sc					Scala	1	2	Dist. (mm)	Avg.	1	2	Dist. (mm)	Avg.
901679	Q8778/C	5	B		N				1	HBW	133.0	132.0	- 2.00	132.5	135.0	132.0	2	133.5

Avg: Average / Media
B: Body / Corpo
ID: Internal Diameter / Diametro interno
Ls: Location of sample / Ubicazione provetta
N: Normalized / Normalizzato
OD: Outside Diameter / Diametro esterno
Var: Variation / Variazione

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Customer : C.A.M.P.I. SRL
Kg 324
P.O. No.: PO: 20023.15-20024.14
Heat No.: 901679
Mt 4,99
Cta's job: LC0000327
Pz No.: 1
Item: 6
Date: 17/02/2021

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Number / Numero:	Page / Pagina:
01-20-05894	3 / 9
Date / Data: June 18, 2020	

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED / NORMALIZZATI	Product Type / Tipo di prodotto: See note nr.1 / Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH / GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 / Vedi nota nr.2		Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 / ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 / SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. / ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80 / .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft / 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz; 1202'05" ft 52033,4 lb / 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft / 64.65 Kg/m

THROUGH WALL HARDNESS / DUREZZA ATTRAVERSO LO SPESSORE

Dist: Distance from outer diameter / Distanza dal diametro esterno
Max: Maximum / Massimo
Min: Minimum / Minimo
Quad: Quadrant / Quadrante
Sc: Specimen condition / Condizioni Provetta

IMPACT TEST / PROVA DI RESILIENZA

Type/Tipo: KCV | Orientation/Direzione: L | Unit / Unità: JOULE
Position/Posizione: | Temp: - 50 | Unit/Unità: °C | Ind.Min.Req: 32 | Req.Min.Avg: 41

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Lot N° / Lotto N°	Ls	Sc	Size / Dimensioni mm	Results / Risultato 1	2	3	Avg.
901679	Q8778/C	butside	5	B	N	10 x 10.00	384.0	328.0	355.0	356.0

Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
L: Longitudinal / Longitudinale
Ls: Location of sample / Ubicazione provetta
N: Normalized / Normalizzato
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
Temp: Temperature / Temperatura

Type/Tipo: KCV | Orientation/Direzione: T | Unit / Unità: JOULE
Position/Posizione: | Temp: - 50 | Unit/Unità: °C | Ind.Min.Req: 21 | Req.Min.Avg: 27

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Lot N° / Lotto N°	Ls	Sc	Size / Dimensioni mm	Results / Risultato 1	2	3	Avg.
901679	Q8778/C	butside	5	B	N	10 x 10.00	372.0	370.0	371.0	371.0

Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
Ls: Location of sample / Ubicazione provetta
N: Normalized / Normalizzato
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
T: Transversal / Trasversale
Temp: Temperature / Temperatura

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CTA Group
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Customer: C.A.M.P.I. SRL
Kg 324
Heat No.: 901679
Mt 4,99
P.O. No.: PO: 20023.15-20024.14
Cta's job: LC0000327
Pz No.: 1
Item: 6
Date: 17/02/2021

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	4 / 9
Date / Data: June 18, 2020	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) - Italy
+39 035 560 111 tel
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Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI	Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2		Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80 .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

FLATTENING TEST / PROVA DI SCHIACCIAMENTO

Standard / Norma:

Heat N° / Colata N°	Lot N° / Lotto N°	Sample N° / Prova N°	Zone / Zona	Sc	Test Frequency / Frequenza prova	Result / Esito
901679	5	Q8775	E1	N	5% of the lot	Good /Buono
901679	5	Q8776/C	E1	N	5% of the lot	Good /Buono

Standard / Norma:

Heat N° / Colata N°	Lot N° / Lotto N°	Sample N° / Prova N°	Zone / Zona	Sc	Test Frequency / Frequenza prova	Result / Esito
901679	5	Q8777	E1	N	5% of the lot	Good /Buono

E1 / E2: Ends of Sampling / Estremità della provetta — N: Normalized / Normalizzato — Sc: Specimen condition / Condizioni Provetta

BUREAU VERITAS ITALY WITNESSED NOTED REVIEWED SURVEYOR DATE G. PASCASS.

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CTA Group

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Customer : C.A.M.P.I. SRL	P.O. No.: PO: 20023.15-20024.14	Heat No.: 901679	Cta's job: LC0000327	Item: 6	Date: 17/02/2021
		Kg 324	Mt 4,99	Pz No.: 1	

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	5 / 9

Date / Data: June 18, 2020

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+39 035 560 3827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA		Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI		Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNISI GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2			Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80 .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

HYDROSTATIC TEST / PROVA IDRAULICA

Pressure / Pressione		Time / Tempo	Results / Risultato
Unit / Unità.	Value / Valore	Seconds / Secondi	
MPa	17	5	Satisfactory / Soddisfacente

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

STANDARD EDITIONS EDIZIONI NORME	
Standard:ASTM A 333/333M Year:2018	Norma:ASTM A 333/333M Anno:2018
Standard:ASME SA333M Year:2019	Norma:ASME SA333M Anno:2019
Standard:NACE MR0175/ISO 15156 Year:2015	Norma:NACE MR0175/ISO 15156 Anno:2015
Standard:NACE MR0103/ISO 17945 Year:2015	Norma:NACE MR0103/ISO 17945 Anno:2015

PRODUCT DESCRIPTION NOTES NOTE DI DESCRIZIONE DEL PRODOTTO	
Note 1 is the full description of the 'Product type' SEAMLESS HOT FINISHED TUBES FOR LOW TEMPERATURE SERVICES (WITH SUPPLEMENTARY REQUIREMENTS)	La nota 1 è la descrizione completa del 'Tipo prodotto' TUBI S.S. DI QUALITA' FINITI A CALDO PER IMPIEGHI A BASSE TEMPERATURE (CON RICHIESTE SUPPLEMENTARI)
Note 2 is the full description of the 'Standard or specification' NORM ASTM A 333 M/ASME SA333M, MPD-02-PS-GS R.0, NACE MR0175/ISO 15156, MR0103, TEMPL. CTA-MPD-6 REV.1.4	La nota 2 è la descrizione completa delle 'Norme o specifiche' NORMA ASTM A 333 M/ASME SA333M, MPD-02-PS-GS R.0, NACE MR0175/ISO 15156, MR0103, TEMPL. CTA-MPD-6 REV.1.4

WITNESSED INSPECTION SURVEYOR DATE
BUREAU VERITAS ITALIA

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Customer : C.A.M.P.I. SRL

P.O. No.: PO: 20023.15-20024.14

Heat No.: 901679

Cta's job: LC0000327

Item: 6

Kg 324

Mt 4,99

Pz No.: 1

Date: 17/02/2021

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-20-05894	6 / 9
Date / Data: June 18, 2020	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 2827 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA		Customer's Order Item / Rifer. Ordine Cliente - I: AB00060/OA0000063	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: 1240573/001
Manufacture Process / Processo di fabbricazione: NORMALIZED NORMALIZZATI		Product Type / Tipo di prodotto: See note nr.1 Vedi nota nr.1		Surface / Superficie: BARE INSIDE, EXTERNALLY PROTECTED BY VARNIS GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE
Standard or Specification / Norme o specifica: See note nr.2 Vedi nota nr.2			Steel Grade / Grado dell'Acciaio: STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	Ends / Estremità: BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25
Dimensions / Dimensioni: ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.	Schedule / Schedula: 80 .	Length / Lunghezza: 32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm	Quantity / Quantità: 32Pcs/Pz 1202'05" ft 52033,4 lb 366.5 mt 23602 kg	Nominal Weight / Peso nominale: 43.44 lb/ft 64.65 Kg/m

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

Supplementary Information	Informazioni supplementari
La Societe' DALMINE garantit que tous les produits, objet du Certificat susdit, respectent en leur totalite' les Specifications de l'Article 15 de l'Arrete Ministeriel du 24 mars 1978 modifiè: C max 0.25% P max 0.05% S max 0.05% Rm (N/mm2) max 700 A(Lo=5.65VSo) min 16% long Rm (A-2) min 10500 E max 0.9 A(Lo=5.65VSo) min 14% trans RA min 10500	La Societe' DALMINE garantit que tous les produits, objet du Certificat susdit, respectent en leur totalite' les Specifications de l'Article 15 de l'Arrete Ministeriel du 24 mars 1978 modifiè: C max 0.25% P max 0.05% S max 0.05% Rm (N/mm2) max 700 A(Lo=5.65VSo) min 16% long Rm (A-2) min 10500 E max 0.9 A(Lo=5.65VSo) min 14% trans RA min 10500

Supplementary Information	Informazioni supplementari
Country of melt ITALY Continuous casting and Fully killed	Paese di colaggio acciaio ITALIA Colaggio continuo ed acciaio di tipo calmato

Supplementary Information	Informazioni supplementari
DALMINE OPERATES A QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER NR. LRC 110950/QMS/U/EN/001,AND IT HAS UNDERGONE A SPECIFIC ASSESSMENT SUPPORTING THE REQUIREMENTS OF ANNEX 1 SECT 4.3 OF "PRESSURE EQUIPMENT DIRECTIVE (PED) 2014/68/EU". INSPECTION CERTIFICATE ISSUED IN AGREEMENT WITH T.U.V SUD INDUSTRIE SERVICE GmbH.QMS APPROVED ACCORDING TO ANNEX I PAR.4.3 OF PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU BY NOTIFIED BODY 0036. CERTIFICATION no. DGR-0036-QS-W 200/2003/MUC. MATERIAL ACCORDING TO ASME II PART. D TAB. Y1 AFTER INSPECTION OPERATION, THE MATERIAL HAS NOT A RESIDUAL MAGNETISM	DALMINE OPERA CON UN QUALITY MANAGEMENT SYSTEM CERTIFICATO DAL LLOYD'S REGISTER NR. LRC 110950/QMS/U/EN/001 CHE SUPPORTA I REQUISITI DELL' ANNEX 1 SECT. 4.3 DEL "PRESSURE EQUIPMENT DIRECTIVE (PED) 2014/68/EU" ISPEZIONE. CERTIFICATO RILASCIATO IN ACCORDO CON TUV SUD INDUSTRIE SER VICE GmbH QMS, APPROVATO SECONDO L'ALLEGATO I PAR.4.3 DELLA DIRETTIVA APPARECCHIATURE DI PRESSIONE 2014/68 / UE PER L'ORGANISMO NOTIFICATO 0036.CERTIFICAZIONE n. DGR-0036-QS-W 200/2003 / MUC MATERIALE IN ACCORDO ALLA SPEC. ASME II PART. D TAB. Y1 DOPO LE OPERAZIONI DI CONTROLLO, IL MATERIALE NON PRESENTA UN MAGNETISMO RESIDUO SUPERIORE A 20 GAUSS

WITNESSED NOTED REVIEWED SURVEYOR DATE BUREAU VERITAS ITALY G.PIACAR

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Customer: C.A.M.P.I. SRL		Kg 324		Pz No.: 1	
P.O. No.: PO: 20023.15-20024.14	Heat No.: 901679	Mt 4,99		Item: 6	Date: 17/02/2021
	Cta's job: LC0000327				

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
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+39 035 560 111 tel
+39 035 560 3827 fax

Number / Numero:	Page / Pagina:
01-20-05894	**7 / 9**

Date / Data: **June 18, 2020**

Customer / Cliente: **COMMERCIALE TUBI ACCIAIO SPA**	Customer's Order Item / Rifer. Ordine Cliente - I: **AB00060/OA0000063**	Customer's Reference / Posizione Cliente: .	Manufacturer's Works Order N° / Conferma-Posizione: **1240573/001**
Manufacture Process / Processo di fabbricazione: **NORMALIZED NORMALIZZATI**	Product Type / Tipo di prodotto: **See note nr.1 Vedi nota nr.1**		Surface / Superficie: **BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE**
Standard or Specification / Norme o specifica: **See note nr.2 Vedi nota nr.2**		Steel Grade / Grado dell'Acciaio: **STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333**	Ends / Estremità: **BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25**
Dimensions / Dimensioni: **ø 8.625" O.D. x .500" W.T. ø 219.10mm O.D. x 12.70mm W.T.**	Schedule / Schedula: **80 .**	Length / Lunghezza: **32.808 ft ÷ 38.714 ft 10000 mm ÷ 11800 mm**	Quantity / Quantità: **32Pcs/Pz** **1202'05" ft** **52033,4 lb** **366.5 mt** **23602 kg**	Nominal Weight / Peso nominale: **43.44 lb/ft 64.65 Kg/m**

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

Supplementary Information Informazioni supplementari	
GREATER THAN 20 GAUSS	DUREZZA HRC 22 MAX, IN ACCORDO ALLA SPEC. NACE MR0175/ISO 15156
HARDNESS HRC 22 MAX, ACCORDING TO NACE MR0175/ISO 15156	DUREZZA HBW 200 MAX, IN ACCORDO ALLA SPEC. NACE MR0103/ISO 17945
HARDNESS HBW 200 MAX, ACCORDING TO NACE MR0103/ISO 17945	I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO ELETTROMAGNETICO
ALL PIPES HAVE BEEN TESTED BY ELECTROMAGNETIC TEST	(LONG/TRASV INT/EST TARATURA 10%) IN ACCORDO
(LONG/TRANSV INT/EXT NOTCH 10%) ACCORDING TO SPEC.	ALLA SPEC. E 570 CON ESITO SODDISFACENTE
E 570, WITH SATISFACTORY RESULT	I TUBI SONO STATI NORMALIZZATI A 920°C PER 13 MIN. E RAFFREDDATI IN
ALL PIPES HAVE BEEN NORMALIZED AT 920°C FOR 13 MINS. AND COOLED IN	ARIA CALMA
STILL AIR	EMI SU TUTTA LA LUNGHEZZA
EMI FULL LENGTH	MATERIALE IN ACCORDO ALLA ASME B 36.10
MATERIAL ACCORDING TO ASME B 36.10	ACCIAIO TRTTATO AL CALCIO PER CONTROLLO MICROINCLUSIONI
STEEL IS CALCIUM TREATED FOR MICROINCLUSION SHAPE CONTROL	.
SEAMLESS HOT FINISHED PIPES	TUBI SENZA SALDATURA FINITI A CALDO
VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT	IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE
STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE	L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO
THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER.	IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE.
MANUFACTURED BY TENARIS DALMINE	FABBRICATO DA TENARIS DALMINE
NO WELD REPAIR, MERCURY AND RADIATION FREE	NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI
AS PER STANDARD, PIPES CAN BE REPAIRED; MANUFACTURER SHOULD DECIDE TO GRIND THE	COME DA PROCEDURA STANDARD, I TUBI POSSONO ESSERE RIPARATI; IL COSTRUTTORE DOVREBBE
SURFACE OF THE PIPES WHEN, DURING FINAL VISUAL INSPECTION, SOME IMPERFECTIONS	PROCEDERE ALLA RETTIFICA DELLA LORO SUPERFICIE QUANDO DURANTE L'ISPEZIONE VISIVA
ARE DETECTED. THE RESULTED SURFACE AREAS, AFTER GRINDING, HAS DIFFERENT	FINALE VENGONO RILEVATE DELLE IMPERFEZIONI. DOPO LA RETTIFICA, LE AREE SUPERFICIALI
COLORATION COMPARED WITH USUAL ONE AS MANUFACTURED. THE RESIDUAL WALL THICKNESS	INTERESSATE PRESENTANO UNA COLORAZIONE DIVERSA RISPETTO A QUELLA ORIGINALE. LO
AFTER GRINDING HAS BEEN CHECKED RESULTING IN TOLERANCE WITH STANDARD.	SPESSORE RESIDUO DELLE PARETI RIENTRA NELLA SOGLIA DI TOLLERANZA.
Tenaris IT identification number for MTC: 58[9w5r4	Numero Identificativo Tenaris IT per MTC: 58[9w5r4

BUREAU VERITAS ITALY WITNESSED / NOTED SURVEYOR DATE

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Customer : C.A.M.P.I. SRL		Kg 324			
P.O. No.: PO: 20023.15-20024.14	Heat No.: 901679	Mt 4,99			
	Cta's job: LC0000327	Pz No.: 1			
Item: 6	Date: 17/02/2021				

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
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Number / Numero:	Page / Pagina:
01-20-05894	**8 / 9**

Date / Data: **June 18, 2020**

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+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: **COMMERCIALE TUBI ACCIAIO SPA**		Customer's Order Item / Rifer. Ordine Cliente - I	Customer's Reference / Posizione Cliente:	Manufacturer's Works Order N° / Conferma-Posizione:
		AB00060/OA0000063	.	**1240573/001**

Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto:	Surface / Superficie:
NORMALIZED **NORMALIZZATI**	**See note nr.1** **Vedi nota nr.1**	**BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH** **GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE**

Standard or Specification / Norme o specifica:	Steel Grade / Grado dell'Acciaio:	Ends / Estremità:
See note nr.2 **Vedi nota nr.2**	**STEEL GR 6 ASTM A 333 AND ASME SA 333** **ACC. GR 6 ASTM A 333 E ASME SA 333**	**BEVELLED AS PER ASME B 16.25** **SMUSSATI SECONDO ASME B 16.25**

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **32Pcs/Pz**		Nominal Weight / Peso nominale:
ø 8.625" O.D. x .500" W.T.	**80**	**32.808 ft ÷ 38.714 ft**	**1202'05" ft**	**52033,4 lb**	**43.44 lb/ft**
ø 219.10mm O.D. x 12.70mm W.T.		**10000 mm ÷ 11800 mm**	**366.5 mt**	**23602 kg**	**64.65 Kg/m**

MARKING / MARCATURA

Marking
Marcatura

STENCILING
_T ASTM/ASME A/SA 333M 6 HOT FINISHED SEAMLESS 219,1 x 12,70 SCH. 80 LT-50C
HEAT: _COLATA MT _MT KG _KG NR. _NR

LEGEND
_T = TENARIS Logo
_COLATA = Heat Number
_MT = Pipe/Tube Length in meters
_KG = Pipe/Tube Weight in kilograms
_NR = Pipe/Tube identifier

PUNCHING
HEAT: _COLATA

LEGEND
_COLATA = Heat Number

VERNICIATURA
_T ASTM/ASME A/SA 333M 6 HOT FINISHED SEAMLESS 219,1 x 12,70 SCH. 80 LT-50C
HEAT: _COLATA MT _MT KG _KG NR. _NR

LEGENDA
_T = Logo TENARIS
_COLATA = Numero di colata
_MT = Lunghezza del tubo in metri
_KG = Peso del tubo in chilogrammi
_NR = Identificativo numerico del tubo

PUNZONATURA
HEAT: _COLATA

LEGENDA
_COLATA = Numero di colata

BUREAU VERITAS ITALY WITNESSED / REVIEWED SURVEYOR DATE

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Customer : C.A.M.P.I. SRL
Kg 324
P.O. No.: PO: 20023.15-20024.14
Heat No.: 901679
Mt 4,99
Cta's job: LC0000327
Pz No.: 1
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Tenaris

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+39 035 560 111 tel
+39 035 560 5927 fax

Customer / Cliente: COMMERCIALE TUBI ACCIAIO SPA	Customer's Order Item / Rifer. Ordine Cliente - I	Customer's Reference / Posizione Cliente:	Manufacturer's Works Order N° / Conferma-Posizione:
	AB00060/OA0000063	.	1240573/001

Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto:	Surface / Superficie:
NORMALIZED NORMALIZZATI	See note nr.1 Vedi nota nr.1	BARE INSIDE, EXTERNALLY PROTECTED BY VARNISH GREZZI INTERNAMENTE, OLEATI ESTERNAMENTE

Standard or Specification / Norme o specifica:	Steel Grade / Grado dell'Acciaio:	Ends / Estremità:
See note nr.2 Vedi nota nr.2	STEEL GR 6 ASTM A 333 AND ASME SA 333 ACC. GR 6 ASTM A 333 E ASME SA 333	BEVELLED AS PER ASME B 16.25 SMUSSATI SECONDO ASME B 16.25

Dimensions / Dimensioni:	Schedule / Schecula:	Length / Lunghezza:	Quantity / Quantità: 32Pcs/Pz		Nominal Weight / Peso nominale:
ø 8.625" O.D. x .500" W.T.	80	32.808 ft ÷ 38.714 ft	1202'05" ft	52033,4 lb	43.44 lb/ft
ø 219.10mm O.D. x 12.70mm W.T.	.	10000 mm ÷ 11800 mm	366.5 mt	23602 kg	64.65 Kg/m

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance w purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Si certifica che il prodotto descritto è stato prodotto, provato, testato e controllato in conformità ai requisiti dell'ordine del cliente. Questo certificato non è una dichiarazione d'origine e non può essere usato come tale.

	CUSTOMER THIRD PARTY	TENARIS QUALITY DEPARTMENT SIGNATURE	
	INSPECTION COMPANY COMPAGNIA D'ISPEZIONE	QUALITY CERTIFICATION DEPT. UFFICIO CERTIFICAZIONE QUALITA' SIGOLI Gianluca	CHIEF OF QUALITY CERTIFICATION DEPT. RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA' FERRARI Donigio

BUREAU VERITAS ITALY
WITNESSED / NOTED / PERFORMED
SURVEYOR
DATE

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Customer :	Kg	324
C.A.M.P.I. SRL	Mt	4,99
P.O. No.: PO: 20023.15-20024.14	Heat No.: 901679	
	Cta's job: LC0000327	
	Pz No.:	1
	Date:	17/02/2021
	Item:	6

SECTION 5

Welders and welder operator qualification
Qualifiche saldatori e operatori

C.A.M.P.I. srl **Ferrara (Italy)**	**LIST OF QUALIFIED WELDERS AND WELDING OPERATORS, according to ASME IX** **Doc. WL24003-01 rev.2** ***Elenco saldatori ed operatori di saldatura qualificati, in accordo alle ASME IX***

Nome Saldatore *Welder's name*	**N. stampo** *Stamp no.*	**Processo** *Process*	*Mater.* *Material*	**Position** *Posizione*	*Certificate n°*	*Code* *Codice*			
BREVIGLIERI MICHELE	5	GTAW+SMAW	C.S	6G	05-02	ASME IX			
BREVIGLIERI MICHELE	5	GTAW+SMAW	C.S	6G	05-03	ASME IX			
BREVIGLIERI MICHELE	5	GTAW+SMAW	C.S	6G	05-04	ASME IX			
BREVIGLIERI MICHELE	5	SAW	C.S	1G	05-05	ASME IX			
BREVIGLIERI MICHELE	5	GMAW	C.S	2G	05-11	ASME IX			
BREVIGLIERI MICHELE	5	GMAW	C.S	3G	05-12	ASME IX			
BREVIGLIERI MICHELE	5	GTAW+GMAW	C.S	1G	14-074	ASME IX			
BREVIGLIERI MICHELE	5	121	CS	PA	QOS-ITA-23-00023	14732			
BREVIGLIERI MICHELE	5	141+138/135	CS	PA	QS-ITA-23-00435	9606-1			
BREVIGLIERI MICHELE	5	141+111	CS	H-L045	QS-ITA-24-03241	9606-1			
BREVIGLIERI MICHELE	5	138/135	CS	PA/PB	QS-ITA-24-03244	9606-1			

Project: BASE LOAD POWER HUB - Netherland - **Client:** Rostti Marino S.p.A.- **P.O.:** 1724000163 –**ITEM:** V-43001 **S.N.:** 24-003

Exhibit 7-4

Rev. 0 | | 2 | 3 | 4 | 5

C.A.M.P.I. srl Ferrara (Italy)	**TEST DI QUALIFICA SALDATORI** *welder performance qualification (WPQ)* (QW-301, Section IX, ASME Boiler and Pressure Vessel Code) **CERTIFICATE No. 05.02**

Welder's Name: Breviglieri Michele Clock number: Stamp no.: 5
Welding process(es) used GTAW + SMAW Type MANUAL

Identification of WPS followed by welder during welding of test coupon 78-04

Base material(s) welded SA 106 Gr B Thickness 10,97 mm

Filler metal specification (SFA) Class (QW-404) GTAW 5.28 – SMAW 5.1

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)	No	GTAW: yes or not SMAW: yes
Material specification - ASME P-No. 1 Gr 1 to ASME P-No. 1 Gr 1 (QW-403)	PN 1 – PN 1	PN 1 TO PN 11
( ) Plate (X) Pipe (enter diameter, if pipe) (QW-403)	NPS 6"	OD.2" 7/8 and over
Base material thickness Groove (mm) (QW 452.1)	10,97	< 21,94 mm
Fillet (mm)	_____	ALL
Filler metal (QW 404)		
- 1st process / 1st layer Fn° 6 SFA 5,28 AWS	ER80SG	Fn° 6
- 2nd process / 2nd layer Fn° 4 SFA 5,1 AWS	E7018.1	Fn° 1-2-3-4
Filler metal product form [solid/cored/flux-cored – GTAW/PAW (QW-404)]	SOLID	SOLID
With or without filler metal (QW404.14)	With	With
Consumbale insert for GTAW or PAW (QW-404)	NO	NO
Weld deposit thickness for each welding process (QW-404)	GTAW 2-SMAW 8,97	< 4 mm - < 17,94
Position (QW 405)	6G	ALL
Progression (uphill/downhill) (QW-405)	uphill	uphill
Torch gas type (QW 408)	ARGON 99,99%	Inert gas
Backing gas for GTAW, PAW or GMAW; fuel gas for OFW (QW-408)	NO	YES OR NOT
Electrical characteristics (QW 409):		
- GTAW welding current type / polarity	DC-SP	DC-SP
Transfer mode (GMAW) (QW-409)	/	/

Guided Bend Test Results

Guided Bend Tests Type < > QW-462.2 (Side) Results < > QW 462.3(A) (Trans. R&F) Type < > QW-462.3(b) (Long. R&F) Results

Visual examination results (QW-302.4): SATISFACTORY

Radiographic test results (QW-304 and QW-305): SATISFACTORY

(For alternative qualification of groove welds by radiography)

Fillet Weld – Fracture test _____ Length and percent of defects _____ in.

Macro test fusion _____ Fillet leg size _____ in. x _____ in. Concavity/convexity _____ in.

Welding test conducted by C.A.M.P.I. Srl

Mechanical tests conducted by _____ Laboratory test no. _____

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.

Organization _____ QUALITY CONTROL QC

Date: 31/01/2005 By _____

C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
I 44100 FERRARA

C.A.M.P.I. srl **Ferrara (Italy)**	**TEST DI QUALIFICA SALDATORI** *welder performance qualification (WPQ)* (QW-301, Section IX, ASME Boiler and Pressure Vessel Code) **CERTIFICATE No. 05.03**

Welder's Name: Breviglieri Michele Clock number: Stamp no.: 5
Welding process(es) used GTAW + SMAW Type MANUAL
Identification of WPS followed by welder during welding of test coupon 79-04A
Base material(s) welded SA 106 Gr B Thickness 3,73 mm
Filler metal specification (SFA) Class (QW-404) GTAW 5.28 – SMAW 5.1

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)	No	GTAW: yes or not SMAW: yes
Material specification - ASME P-No. 1 Gr 1 to ASME P-No. 1 Gr 1 (QW-403)	PN 1 – PN 1	PN 1 TO PN 11
⟨ ⟩ Plate ⟨X⟩ Pipe (enter diameter, if pipe) (QW-403)	NPS 1/2"	NPS≥ 1/2"OD 21.3
Base material thickness Groove (mm) (QW 452.1)	3,73	1,58 ÷ 7,46
Fillet (mm)	_____	ALL
Filler metal (QW 404)		
- 1st process / 1st layer Fn° 6 SFA 5,28 AWS	ER80SG	Fn° 6
- 2nd process / 2nd layer Fn° 4 SFA 5,1 AWS	E7018.1	Fn° 1-2-3-4
Filler metal product form [solid/cored/flux-cored – GTAW/PAW (QW-404)]	SOLID	SOLID
With or without filler metal (QW404.14)	With	With
Consumbale insert for GTAW or PAW (QW-404)	NO	NO
Weld deposit thickness for each welding process (QW-404)	GTAW 2-SMAW 2	< 4 mm - < 4 mm
Position (QW 405)	6G	ALL
Progression (uphill/downhill) (QW-405)	uphill	uphill
Torch gas type (QW 408)	ARGON 99,99%	Inert gas
Backing gas for GTAW, PAW or GMAW; fuel gas for OFW (QW-408)	NO	YES OR NOT
Electrical characteristics (QW 409):		
- GTAW welding current type / polarity	DC-SP	DC-SP
Transfer mode (GMAW) (QW-409)	/	/

Guided Bend Test Results

Guided Bend Tests Type < > QW-462.2 (Side) Results < > QW 462.3(A) (Trans. R&F) Type < > QW-462.3(b) (Long, R&F) Results

Visual examination results (QW-302.4): SATISFACTORY
Radiographic test results (QW-304 and QW-305): SATISFACTORY – SEE RT REPORT N. 981
(For alternative qualification of groove welds by radiography)
Fillet Weld – Fracture test _____ Length and percent of defects _____ in.
Macro test fusion _____ Fillet leg size _____ in. x _____ in. Concavity/convexity _____ in.
Welding test conducted by C.A.M.P.I. Srl
Mechanical tests conducted by _____ Laboratory test no. _____
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.

Organization _____
QUALITY CONTROL QC
Date: 31/01/2005 By _____

C.A.M.P.I. srl
Partita [illegible] 00380389
Via Diamantina, 15
I 44100 FERRARA

C.A.M.P.I. srl **Ferrara (Italy)**	**TEST DI QUALIFICA SALDATORI** *welder performance qualification (WPQ)* (QW-301, Section IX, ASME Boiler and Pressure Vessel Code) **CERTIFICATE No. 05.04**

Welder's Name: Breviglieri Michele Clock number: Stamp no.: 5

Welding process(es) used GTAW + SMAW Type MANUAL

Identification of WPS followed by welder during welding of test coupon 79-05

Base material(s) welded SA 106 Gr B Thickness 5,54 mm

Filler metal specification (SFA) Class (QW-404) GTAW 5.28 – SMAW 5.1

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)	No	GTAW: yes or not SMAW: yes
Material specification - ASME P-No. 1 Gr 1 to ASME P-No. 1 Gr 1 (QW-403)	PN 1 – PN 1	PN 1 TO PN 11
⟨ ⟩ Plate ⟨X⟩ Pipe (enter diameter, if pipe) (QW-403)	NPS 2"	OD 1" and over
Base material thickness Groove (mm) (QW 452.1)	5,54	< 11,08
Fillet (mm)	_____	ALL
Filler metal (QW 404)		
- 1st process / 1st layer Fn° 6 SFA 5,28 AWS	ER80SG	Fn° 6
- 2nd process / 2nd layer Fn° 4 SFA 5,1 AWS	E7018.1	Fn° 1-2-3-4
Filler metal product form [solid/cored/flux-cored – GTAW/PAW (QW-404)]	SOLID	SOLID
With or without filler metal (QW404.14)	With	With
Consumbale insert for GTAW or PAW (QW-404)	NO	NO
Weld deposit thickness for each welding process (QW-404)	GTAW 2-SMAW 3,54	< 4 mm - < 7,08
Position (QW 405)	6G	ALL
Progression (uphill/downhill) (QW-405)	uphill	uphill
Torch gas type (QW 408)	ARGON 99,99%	Inert gas
Backing gas for GTAW, PAW or GMAW; fuel gas for OFW (QW-408)	NO	YES OR NOT
Electrical characteristics (QW 409):		
- GTAW welding current type / polarity	DC-SP	DC-SP
Transfer mode (GMAW) (QW-409)	/	/

Guided Bend Test Results

Guided Bend Tests Type < > QW-462.2 (Side) Results < > QW 462.3(A) (Trans. R&F) Type < > QW-462.3(b) (Long, R&F) Results

Visual examination results (QW-302.4): SATISFACTORY

Radiographic test results (QW-304 and QW-305): SATISFACTORY – SEE RT REPORT N. 953

(For alternative qualification of groove welds by radiography)

Fillet Weld – Fracture test _____ Length and percent of defects _____ in.

Macro test fusion _____ Fillet leg size _____ in. x _____ in. Concavity/convexity _____ in.

Welding test conducted by C.A.M.P.I. Srl

Mechanical tests conducted by _____ Laboratory test no. _____

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.

Organization _____

Date: 31/01/2005 By _____

QUALITY CONTROL

C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
44100 FERRARA

C.A.M.P.I. srl **Ferrara (Italy)**	***WELDING OPERATOR PERFORMANCE QUALIFICATION (WOPQ)*** (QW-301, Section IX, ASME Boiler and Pressure Vessel Code) **CERTIFICATE No.05.05**

Welding operator's Name BREVIGLIERI MICHELE Identification no . STAMP No 5

Test Description

Identification of WPS followed 260.01.A Test coupon ■ Production weld □
Specification of base metal(s) welded : SA 516Gr70 Thickness 14 mm
Base metal P or S-Number 1 to P or S-Number 1 Position (2G, 6G, 3F, etc.) 1G
Plate ■ Pipe □ (enter diameter if pipe or tube): /
Filler metal (SFA) specification 5.17 Filler metal or electrode classification F7A4EM12

Testing Conditions and Qualification Limits When Using Automatic Welding Equipment

Welding Variables (QW-361.1)	Actual values	Range qualified
Type of welding (Automatic)		
Welding process		
Filler metal (EBW or LBW)		
Type of laser for LBW (CO_2 to YAG, etc.)		
Continuous drive or inertia welding (FW)		
Vacuum or out of vacuum (EBW)		

Testing Conditions and Qualification Limits When Using Machine Welding Equipment

Welding Variables (QW-361.2)	Actual values	Range qualified
Type of welding (machine)	ESAB LAE 1250-A6 SFD1 / SGD1	All other similar machine
Welding process	SAW (Machine)	SAW (Machine)
Direct or remote visual control	Direct	Direct
Automatic arc voltage control (GTAW)	/	/
Automatic joint tracking	/	/
Position qualified (2G, 6G, 3F, etc.)	1G Rotated	1G-F
Consumable inserts (GTAW or PAW)	/	/
Backing (metal, weld metal, etc.)	Weld metal	With backing
Single or multiple passes per side	Mulipass	Mulipass / Single pass

RESULTS

Visual Examination of Completed Weld (QW-302.4) Satisfactory
□ Bend test; □ Transverse root and face [QW-462.3(a)]; □ Longitudinal root and face [QW-462.3(b)]; ■ Side (QW-462.2)
□ Pipe bend specimen, corrosion-resistant overlay [QW-462.5(c)]; □ Plate bend specimen, corrosion-resistant overlay [QW-462.5(d)];
□ Macro test for fusion [QW-462.5(b)]; □ Macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result
Side (QW-462.2)	No imperfections	Side (QW-462.2)	No imperfections		
Side (QW-462.2)	No imperfections	Side (QW-462.2)	No imperfections		

Alternative radiographic examination results (QW-191) X Ray 100% see certificate No:RT 1482 on MARCH.01,2011
Fillet Weld – Fracture test (QW-180) _____ Length and percent of defects _____
Macro examination (QW-184) / Fillet size (in.) ___ x ___ Concavity/convexity (in.) ___
Other tests _____
Film or specimen evaluated by Nicolli Tonino Company C.A.M.P.I. S.r.l.
Mechanical tests conducted by / Laboratory test no. _____
Welding supervised by C.A.M.P.I. S.r.l

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 BOILER AND PRESSURE VESSEL CODE

Organization C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
I 44100 FERRARA

Date MARCH.01,2011 By _____

QUALITY CONTROL
QC

C.A.M.P.I. srl **Ferrara (Italy)**	**TEST DI QUALIFICA SALDATORI** ***WELDER PERFORMANCE QUALIFICATION (WPQ)*** (QW-301, Section IX, ASME Boiler and Pressure Vessel Code) **CERTIFICATE No.05.11**

Welder's Name BREVIGLIERI MICHELE Identification no . STAMP No 5

Test Description

Identification of WPS followed 364.01-2G Test coupon ■ Production weld □

Specification of base metal(s) welded :SA 516Gr70 Thickness 10 mm

Testing Conditions and Qualification Limits

Welding Variables (QW-350)	**Actual values**	**Range qualified**
Welding process(es)	GMAW	GMAW and FCAW
Type (ie;manual,semi-automatic)used	Semiautomatic	Semiautomatic
Backing (metal,weld metal,double-welded,etc.)	Welded from both side	With backing
■ Plate □ Pipe (enter diameter if pipe or tube)	Plate	Plate and pipe >2"7/8 in.(73mm)
Base metal P-or S-Number to P or S-Number	PN 1Gr2	PN1 to PN 15F,PN 34,41to49
Filler metal or electrode specification(s) (SFA)(info.only)	5.18	/
Filler metal or electrode classification(s) (info.only)	E71T-1MJH4	/
Filler metal F Number(s)	6	All FN6 filler metal
Consumable insert (GTAW or PAW)	/	/
Filler type (solid/metal or flux cored/powder)(GTAW or PAW)	/	/
Deposit thickness for each		/
Process 1 GMAW 3 layers minimum ■ Yes □ No	10 mm	20 mm max
Process 2 ____ 3 layers minimum □ Yes □ No	/	/
Position qualified (2G,6G,3F, etc.)	2G	Flat and Horizontal
Vertical progression (uphill or downhill)	/	/
Type of fuel gas (OFW)	/	/
Inert gas backing (GTAW,PAW,GMAW)	without	With or without
Transfer mode (sprey/globular or pulse to short circuit-GMAW)	Spray	Spray/Pulse/Globular
GTAW current type/polarity (AC,DCEP,DCEN)	DC/RP	DC/RP

RESULTS

Visual Examination of Completed Weld (QW-302.4) Satisfactory

□ Bend test; □ Transverse root and face [QW-462.3(a)]; □ Longitudinal root and face [QW-462.3(b)]; □ Side (QW-462.2)
□ Pipe bend specimen, corrosion-resistant overlay [QW-462.5(c)]; □ Plate bend specimen, corrosion-resistant overlay [QW-462.5(d)];
□ Macro test for fusion [QW-462.5(b)]; □ Macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

Alternative radiographic examination results (QW-191) X Ray 100% satisfactory see certificate No:RT 05-364-01 ON June.13,2013

Fillet Weld – Fracture test (QW-180) _____ Length and percent of defects _____

Macro examination (QW-184) / Fillet size (in.) ___ x _____ Concavity/convexity (in.) ___

Other tests _____

Film or specimen evaluated by Nicolli Tonino Company C.A.M.P.I. S.r.l.

Mechanical tests conducted by / Laboratory test no. _____

Welding supervised by C.A.M.P.I. S.r.l

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 BOILER AND PRESSURE VESSEL CODE

Organization _____

C.A.M.P.I. srl
Partita IVA 01042560389
Via Diamantina, 15
44100 FERRARA

Date June.13,2013 By _____

QUALITY CONTROL
QC

Exhibit 7-3A Rev. 1 2 3 4 5 6

C.A.M.P.I. srl Ferrara (Italy)	TEST DI QUALIFICA SALDATORI *WELDER PERFORMANCE QUALIFICATION (WPQ)* (QW-301, Section IX, ASME Boiler and Pressure Vessel Code) **CERTIFICATE No.05.12**

Welder's Name BREVIGLIERI MICHELE Identification no . STAMP No 5

Test Description

Identification of WPS followed 364.01-3G Test coupon ■ Production weld □

Specification of base metal(s) welded :SA 516Gr70 Thickness 10 mm

Testing Conditions and Qualification Limits

Welding Variables (QW-350)	**Actual values**	**Range qualified**
Welding process(es)	GMAW	GMAW and FCAW
Type (ie;manual,semi-automatic)used	Semiautomatic	Semiautomatic
Backing (metal,weld metal,double-welded,etc.)	Welded from both side	With backing
■ Plate □ Pipe (enter diameter if pipe or tube)	Plate	Plate and pipe >2"7/8 in.(73mm)
Base metal P-or S-Number to P or S-Number	PN 1Gr2	PN1 to PN 15F,PN 34,41to49
Filler metal or electrode specification(s) (SFA)(info.only)	5.18	/
Filler metal or electrode classification(s) (info.only)	E71T-1MJH4	/
Filler metal F Number(s)	6	All FN6 filler metal
Consumable insert (GTAW or PAW)	/	/
Filler type (solid/metal or flux cored/powder)(GTAW or PAW)	/	/
Deposit thickness for each		/
Process 1 GMAW 3 layers minimum ■ Yes □ No	10 mm	20 mm max
Process 2 ____ 3 layers minimum □ Yes □ No	/	/
Position qualified (2G,6G,3F, etc.)	3G	F/V(pl. & p. over 24in – F(p. ≤24in) –F,H,V,(Fillet)
Vertical progression (uphill or downhill)	Uphill	uphill
Type of fuel gas (OFW)	/	/
Inert gas backing (GTAW,PAW,GMAW)	without	With or without
Transfer mode (sprey/globular or pulse to short circuit-GMAW)	Spray	Spray/Pulse/Globular
GTAW current type/polarity (AC,DCEP,DCEN)	DC/RP	DC/RP

RESULTS

Visual Examination of Completed Weld (QW-302.4) Satisfactory

□ Bend test; □ Transverse root and face [QW-462.3(a)]; □ Longitudinal root and face [QW-462.3(b)]; □ Side (QW-462.2)

□ Pipe bend specimen, corrosion-resistant overlay [QW-462.5(c)]; □ Plate bend specimen, corrosion-resistant overlay [QW-462.5(d)];

□ Macro test for fusion [QW-462.5(b)]; □ Macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

Alternative radiographic examination results (QW-191) X Ray 100% satisfactory see certificate No:RT 05-364-01 ON June.13,2013

Fillet Weld – Fracture test (QW-180) _____ Length and percent of defects _____

Macro examination (QW-184) / Fillet size (in.) ___ x _____ Concavity/convexity (in.) ___

Other tests _____

Film or specimen evaluated by Nicolli Tonino Company C.A.M.P.I. S.r.l.

Mechanical tests conducted by / Laboratory test no. _____

Welding supervised by C.A.M.P.I. S.r.l

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 BOILER AND PRESSURE VESSEL CODE

Organization _____

Date June.13,2013 By _____

C.A.M.P.I. srl
Partita IVA 01042560389
Via Diamantina, 15
I 44100 FERRARA

QUALITY CONTROL
QC

Exhibit 7-3A Rev. 1 2 3 4 5 6

SGS

WELDER PERFORMANCE QUALIFICATION (WPQ)

(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)

WPQ 14-074

Company Name	**C.A.M.P.I. Srl** - Via Diamantina, 15 - 44122 Ferrara - ITALY				
Welder's name	**BREVIGLIERI MICHELE**	Clock number	--	Stamp No.	5
Identification of WPS followed by welder during welding of test coupon	P386-AS			Rev. 0	Date 13/11/2014

Welding process (es) used	a) GTAW	b)	FCAW	c)	
Type (s)	a) Manual	b)	Semiautomatic	c)	
Base material (s) welded	ASTM A106 Gr.B		Thickness (mm)		Ø 48,3 x 10,16 mm

Manual or Semiautomatic Variables for Each Process (QW-350)	Actual Values	Range Qualified
Backing (metal,weld metal,welded from both sides,etc.) (QW-402)	a) Without backing b) With backing	a) With and Without backing b) With backing
ASME P-No. 1 Gr. 1 to ASME P-No.1 Gr. 1 (QW-403)	P-No 1 to P-No 1	P-No 1 through P-No 15F, P-No 34, P-No 41 through P-No 49, and unassigned metals of similar chemical composition of these metals
( ) Plate (X) Pipe (enter O.D., if pipe) (QW-403) (mm)	48,3	Plates and pipes 25,0 mm O.D. and over
Filler metal or electrode specification (s) (SFA) (info only)	a) 5.18 - b) 5.36	
Filler metal or electrode classification (s) (info only)	a) ER 70S-6 b) E70T15-M21A8-CS1-H4	
Filler metal F-No. (QW-404)	a) 6 - b) 6	a) All F-No.6 b) All F-No.6
Filler metal product form (solid/cored/flux-cored GTAW / PAW (QW-404)	Solid rod	Solid and metal cored rods
Consumable insert for GTAW or PAW (QW-404)	without	without
Weld deposit thickness for each welding process (QW-404) (mm)		
Process 1: 3 layers minimum ( ) yes (X) no	1,16	up to 2,32 mm
Process 2: 3 layers minimum ( ) yes (X) no	9,0	up to 18,0 mm
Welding position (1G,5G,etc.) (QW-405)	1G	F
Vertical progression (uphill/downhill) (QW-405)	N.A.	N.A.
Backing gas for GTAW, PAW or GMAW (QW-408)	with	with and without
Type of fuel gas for OFW (QW-408)	N.A.	N.A.
GMAW transfer mode (QW-409)	Pulsed Arc	Globular, Spray and Pulsed Arc
GTAW welding current type/polarity (QW-409) (AC, DCEP, DCEN)	DCEN	DCEN

Guided Bend Test Results

Guided Bend Tests Type ( ) QW-462.2 (Side) Results (X) QW-462.3 (a) (Trans. R&F) Type ( ) QW-462.3 (b) (Long. R&F) Results

		2 at 180°: SATISFACTORY	

Visual examination results (QW-302.4) SATISFACTORY

Radiographic test results (QW-304 and QW-305) SATISFACTORY (For alternative qualification of groove welds by radiography)

Other tests --

Fillet Weld – Fracture test -- Length and percent of defects -- mm

Macro test fusion -- Fillet leg size -- mm x -- mm Concavity/convexity -- mm

Welding test conducted by: C.A.M.P.I. Srl - Via Diamantina, 15 - 44122 Ferrara - ITALY

Mechanical test conducted by: Sider Test Srl - Castel San Giovanni - PC (ITALY) Laboratory test No. VT 171-14 - RT 2956/14 – PM 26728/14

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 BPV (2013).

Date : 02.12.2014

Test supervised by

SGS Italia S.p.A. SGS Italia S.p.A.

C.A.M.P.I. srl
Partita IVA 01042580389
Via Diamantina, 15
I - 44122 FERRARA
(Stamp and signature)

C.A.M.P.I. srl **Ferrara (Italy)**	**WELDER'S LOG - 2024** ***Registrazione attività saldatore***	Welder/operator name - *Nome saldatore/operat.* BREVIGLIERI MICHELE Clock no./*Cartellino* 47 *Stamp / Punzone* 5

Process(es) *Processo/i*	Qualification *Qualifica n°*	Material(s) Materiale/i		MONTHLY ACTIVITY REGISTRATION *Registrazione attività mensile*											
		P. n. to	P. n.	January *Gennaio*	February *Febbraio*	March *Marzo*	April *Aprile*	May *Maggio*	June *Giugno*	July *Luglio*	August *Agosto*	September *Settembre*	October *Ottobre*	November *Novembre*	December *Dicembre*
GTAW	05.02	1	1	**REF JOB:** 23-31 QUALITY CONTROL QC				**REF JOB:** 23-31 23-20 QUALITY CONTROL QC				**REF JOB:** 23-29 24-16 QUALITY CONTROL QC			
	05.03	8	8												
	05.04	1	1												
	05.06	34	34												
	05.07	34	34												
	05.10	34	34												
	05.15	1	1												
	14-073	8	8												
	14-074	1	1												
SMAW	05.02	1	1	**REF JOB:** 23-31 QUALITY CONTROL QC				**REF JOB:** 23-31 23-20 QUALITY CONTROL QC				**REF JOB:** 23-29 24-16 QUALITY CONTROL QC			
	05.03	8	8												
	05.04	1	1												
	05.09	1	1												
	05.15	1	1												
SAW	05.05	1	1	**REF JOB:** 23-31 QUALITY CONTROL QC				**REF JOB:** 23-20 QUALITY CONTROL QC				**REF JOB:** 23-29/24-16 QUALITY CONTROL QC			

C.A.M.P.I. srl Ferrara (Italy)	**WELDER'S LOG - 2024** ***Registrazione attività saldatore***	Welder/operator name - *Nome saldatore/operat.* BREVIGLIERI MICHELE Clock no./*Cartellino* 47 *Stamp / Punzone* 5

				REF JOB:	REF JOB:	REF JOB:
FCAW / GMAW/ GMAWS	05.01	1	1	E3331 E3035 QUALITY CONTROL QC	E3020 QUALITY CONTROL QC	E3029 E4016 QUALITY CONTROL QC
	05.08 X)	34	34			
	05.09	1	1			
	05.10 X)	34	34			
	05.11	1	1			
	05.12	1	1			
	14-073	8	8			
	14-074	1	1			

REMARKS / *Note:* **1):** The Shop Foreman keeps the QCM informed of the monthly activity of each qualified welder / *Il capo officina informa il QCM dell'attività mensile di ogni saldatore qualificato*

2): X): Welder has not welded with a specific process during a period of six (6) months or more, his qualification for that process shall expire. / *Il saldatore che non ha effettuato saldature con lo specifico procedimento per un periodo superiore a 6 mesi , questa qualifica dovrà essere eliminata*

Welding Engineer *Responsabile saldatura*												
Date / *Data*				24/04/24				29/08/24				18/12/24

EXHIBIT 7-5 Rev. 3

C.A.M.P.I. srl **Ferrara (Italy)**	**WELDER'S LOG - 2023** ***Registrazione attività saldatore***	Welder/operator name - *Nome saldatore/operat.* BREVIGLIERI MICHELE Clock no./*Cartellino* 47 *Stamp / Punzone* 5

Process(es) *Processo/i*	Qualification *Qualifica n°*	Material(s) Materiale/i P. n. to	 P. n.	MONTHLY ACTIVITY REGISTRATION *Registrazione attività mensile* January *Gennaio*	February *Febbraio*	March *Marzo*	April *Aprile*	May *Maggio*	June *Giugno*	July *Luglio*	August *Agosto*	September *Settembre*	October *Ottobre*	November *Novembre*	December *Dicembre*
GTAW	05.02	1	1	**REF JOB:** 23012 23021			QUALITY CONTROL QC	**REF JOB:** 1/029 23028 23021			QUALITY CONTROL QC	**REF JOB:** 23026 23030			QUALITY CONTROL QC
	05.03	8	8												
	05.04	1	1												
	05.06	34	34												
	05.07	34	34												
	05.10	34	34												
	05.15	1	1												
	14-073	8	8												
	14-074	1	1												
SMAW	05.02	1	1	**REF JOB:** 23012 23021			QUALITY CONTROL QC	**REF JOB:** 1/029 23028 23021			QUALITY CONTROL QC	**REF JOB:** 23026 23030			QUALITY CONTROL QC
	05.03	8	8												
	05.04	1	1												
	05.09	1	1												
	05.15	1	1												
SAW	05.05	1	1	**REF JOB:** 23012/23021			QUALITY CONTROL QC	**REF JOB:** 23023/23028/23021			QUALITY CONTROL QC	**REF JOB:** 23026/23030			QUALITY CONTROL QC

C.A.M.P.I. srl Ferrara (Italy)	**WELDER'S LOG - 2023** ***Registrazione attività saldatore***	Welder/operator name - *Nome saldatore/operat.* BREVIGLIERI MICHELE Clock no./*Cartellino* 47 *Stamp / Punzone* 5

FCAW / GMAW/ GMAWS	05.01	1	1	**REF JOB:** 22418 23021 QUALITY CONTROL QC	**REF JOB:** 22023 22428 QUALITY CONTROL QC	**REF JOB:** 23030 23021 QUALITY CONTROL QC
	05.08 X)	34	34			
	05.09	1	1			
	05.10 X)	34	34			
	05.11	1	1			
	05.12	1	1			
	14-073	8	8			
	14-074	1	1			

REMARKS / *Note:* **1):** The Shop Foreman keeps the QCM informed of the monthly activity of each qualified welder / *Il capo officina informa il QCM dell'attività mensile di ogni saldatore qualificato*

2): X): Welder has not welded with a specific process during a period of six (6) months or more, his qualification for that process shall expire. / *Il saldatore che non ha effettuato saldature con lo specifico procedimento per un periodo superiore a 6 mesi , questa qualifica dovrà essere eliminata*

Welding Engineer *Responsabile saldatura*												
Date / *Data*				20/04/23				31/08/23				22/12/23

EXHIBIT 7-5 Rev. 3

C.A.M.P.I. srl **Ferrara (Italy)**	**WELDER'S LOG - 2022** ***Registrazione attività saldatore***	Welder/operator name - *Nome saldatore/operat.* BREVIGLIERI MICHELE Clock no./*Cartellino* 47 *Stamp / Punzone* 5

Process(es) *Processo/i*	Qualification *Qualifica n°*	Material(s) Materiale/i		MONTHLY ACTIVITY REGISTRATION *Registrazione attività mensile*											
		P. n. to	P. n.	January *Gennaio*	February *Febbraio*	March *Marzo*	April *Aprile*	May *Maggio*	June *Giugno*	July *Luglio*	August *Agosto*	September *Settembre*	October *Ottobre*	November *Novembre*	December *Dicembre*
GTAW +05.15	05.02	1	1	**REF JOB:** 21004 21023 QUALITY CONTROL QC				**REF JOB:** 21004 21023 21020 QUALITY CONTROL QC				**REF JOB:** 22010 22012 QUALITY CONTROL QC			
	05.03	8	8												
	05.04	1	1												
	05.06	34	34												
	05.07	34	34												
	05.10	34	34												
	14-073	8	8												
	14-074	1	1												
SMAW +05.15	05.02	1	1	**REF JOB:** 21004 QUALITY CONTROL QC				**REF JOB:** 21020 21023 QUALITY CONTROL QC				**REF JOB:** 22010 22012 QUALITY CONTROL QC			
	05.03	8	8												
	05.04	1	1												
	05.09	1	1												
SAW	05.05	1	1	**REF JOB:** 21004 21023 QUALITY CONTROL QC				**REF JOB:** 21023 QUALITY CONTROL QC				**REF JOB:** 22010 22012 QUALITY CONTROL QC			

C.A.M.P.I. srl Ferrara (Italy)	**WELDER'S LOG - 2022** ***Registrazione attività saldatore***	Welder/operator name - *Nome saldatore/operat.* BREVIGLIERI MICHELE Clock no./*Cartellino* 47 *Stamp / Punzone* 5

FCAW / GMAW/ GMAWS	05.01	1	1	**REF JOB:** QUALITY CONTROL QC 21627	**REF JOB:** QUALITY CONTROL QC 21620 21623	**REF JOB:** QUALITY CONTROL QC 22010 22012
	05.08 X)	34	34			
	05.09	1	1			
	05.10 X)	34	34			
	05.11	1	1			
	05.12	1	1			
	14-073	8	8			
	14-074	1	1			

REMARKS / *Note:* **1):** The Shop Foreman keeps the QCM informed of the monthly activity of each qualified welder */ Il capo officina informa il QCM dell'attività mensile di ogni saldatore qualificato*

2): X):Welder has not welded with a specific process during a period of six (6) months or more, his qualification for that process shall expire. */ Il saldatore che non ha effettuato saldatore con lo specifico procedimento per un periodo superiore a 6 mesi , questa qualifica dovrà essere eliminata*

Welding Engineer *Responsabile saldatura*												
Date / *Data*				27/04/22				31/08/22				23/12/22

EXHIBIT 7-5 Rev. 3

BUREAU VERITAS

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
PRD N° 009B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

Area : ITALY
Region :
Certificato No. : QOS-ITA-23-00023-rev.0
Certificate No. :
Rif. Interno : 22.SF.4931880.138
Internal No. : P13007/23/PM/pm
Notified Body Yes

1. CERTIFICATO DI QUALIFICA DELL'OPERATORE IN ACCORDO CON UNI EN ISO 14732:2013

(APPROVAL TEST CERTIFICATE FOR WELDING OPERATOR IN ACCORDANCE WITH UNI EN ISO 14732:2013)

1a Riconduzione del certificato N° *(Renewal of certificate N°):*

2. N° riferimento WPS *(WPS reference No):* **WPS 397-01A** Rev. **0**

3. Nome e Cognome del Saldatore *(Welder's name):* **Michele Breviglieri**
4. Data e luogo di nascita *(Date and Place of birth):* **09/12/1977 - Ferrara - FE - ITALY**
4a. Identificazione *(Identification):* **5** 4.b. Met. di identif. *(Ident. Method):* **STAMP**
5. Datore di lavoro *(Manufacturer):* **C.a.m.p.i. S.r.l. - Via Diamantina 15, 44123 Ferrara (FE)**
6. Conoscenze tecniche / *Job Knowledge* : Accettabile *(Acceptable)* ☐ Non verificato *(Not tested)* ☑

7. Variabili *(Variables)*	48. Dettagli della prova pratica *(Test piece details)*	49. Campo di validità della qualifica *(Range of qualification)*
8. Procedimento(i) saldatura *(Welding process (es))*	121	121
9. Impianto di saldatura *(Welding unit)*	Esab	Same equipment
10. Attrezzatura di saldatura *(Welding equipment)*	MPM4X4 LAE 1250	
11. *Variabili per saldatura meccanizzata (Details for mechanized welding)*		
12. Controllo visivo diretto o indiretto *(Visual control direct or remote)*		
13. Controllo aut. della lunghezza d'arco *(Automatic arc lenght control)*		
14. Controllo Automatico del giunto *(Automatic Joint tracking)*		
15. Posizione di saldatura *(Welding position)*		
16. Passata singola / multi passata *(Single run/ multi run)*		
17. Materiale di supporto *(Material backing)*		
18. Inserto Consumabile *(Consumable insert)*		
19. *Variabili per saldatura automatica (Details for automatic welding)*		
20. Tastatore *(Joint sensor)*	Without	With or without
21. Sensore di controllo dell'arco *(Arc sensor control)*	Without	With or without
22. Passata singola o multi passata *(Single run or multi run)*	Multi	Single and multi
23. Tipo dell'impianto di saldatura *(Type of welding unit)*	Esab MPM4X4 LAE 1250	Same equipment

24. Metodo di qualificazione / The qualification is based on :

25. (4.1a) WPQR in accordo con le parti rilevanti della EN ISO 15614 /Welding procedure test in accordance with the relevant part of EN ISO 15614 ☐
26. (4.1b) Prove di saldatura di pre-produzione o produzione in accordo con EN ISO 15613 / Pre or production welding test in accordance with EN ISO 15613 ☐
27. (4.1c) Prove di saldatura in accordo con le parti rilevanti della EN ISO 9606 / Test piece in accordance with the relevant part of EN ISO 9606 ☐
28. (4.1d) Campionatura di produzione o saggio di produzione / Production test or production test sample ☑

29. Tipo di prova *(Type of test)*	30. Effettuato ed accettabile *(Performed and acceptable)*	31. Non verificato *(Not verified)*
33. Esame visivo *(Visual test)*	☑	☐
34. Radiografia *(Radiographic Examination)*	☑	☐
35. Ultrasuoni *(Ultrasonic Examination)*	☐	☑
36. Frattura *(Fracture test)*	☐	☑
37. Prova di piega *(Bend test)*	☐	☑
38. Macrografia *(Macrographic examination)*	☐	☑
39. Magnetoscopico *(Magn.part. examination)*	☐	☑
40. Altre prove *(Other tests)*	☐	☑

32. Prolungamento della qualifica da parte del datore di lavoro o del supervisore per i successivi 6 mesi
(Prolongation for approval by employer/supervisor for the following 6 months)

41. Data *(Date)*	42. Firma *(Signature)*	43. Posizione *(Position)*
30/05/23		WELDING COORDINATOR
30/11/23		" "
29/05/24		" "

Correlazione fra i parametri ed il risultato finale / ***Correlation between parameter deviations and welding results*** ☐
Messa a punto dei parametri in accordo alla WPS / ***Control parameters setting at the welding unit according to WPS*** ☑
Prova di funzionalità dell'impianto in accordo alla WPS / ***Test the operational items of the welding unit according to WPS*** ☐
Individuazione malfunzionamenti influenzanti la saldatura / ***Welding unit malfunction report influencing the weld*** ☐

45. Nome dell'ispettore *(Examiner name)*	Paolo Milzoni
46. Data inizio validità *(Start of qualification)* :	30/11/2022
47. Validità della qualificazione: fino a (data): *(Welding performance qualification valid until)*	29/11/2028

42. Firma *(Signature)* Approver	41. Data *(Date)*	44. Timbro *(Stamp)*
	09/01/2023	BUREAU VERITAS ITALIA Notified Body no. 1370

v1.0.188

BUREAU VERITAS

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
PRD N° 009B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

Area : ITALY
Region :
Certificato No. : QS-ITA-23-00435-rev.0
Certificate No. :
Rif. Interno : 22.SF.4931880.138
Internal No. : P13006/23/PM/pm
Notified Body Yes

1. CERTIFICATO DI QUALIFICA SALDATORE IN ACCORDO A UNI EN ISO 9606-1:2017

(WELDER QUALIFICATION TEST CERTIFICATE IN ACCORDANCE WITH UNI EN ISO 9606-1:2017)

1a Riconduzione del certificato N° *(Renewal of certificate N°):*

2. DESIGNAZIONE(I): **A) ISO 9606-1, 141, T, BW, FM1, S, s2, D88.9, PA, ss nb**
B) ISO 9606-1, 138, T, BW, FM1, M, s13.24, D88.9, PA, ss mb

3. N° riferimento WPS *(WPS reference No):* **WPS 353-01A** Rev. **0**

4. Nome e Cognome del Saldatore *(Welder's name):* **Michele Breviglieri**
5. Data e luogo di nascita *(Date and Place of birth):* **09/12/1977 - Ferrara - FE - ITALY**
4a. Identificazione *(Identification):* **5** 5a. Met. di identif. *(Ident. Method):* **STAMP**
6. Datore di lavoro *(Manufacturer):* **C.a.m.p.i. S.r.l. - Via Diamantina 15, 44123 Ferrara (FE)**
7. Saggio d'angolo supplementare *(Supplementary fillet weld test):* Si *(Yes)* ☐ No *(No)* ☑
8. Conoscenze tecniche / *Job Knowledge*: Accettabile *(Acceptable)* ☐ Non verificato *(Not tested)* ☑

9. Variabili *(Variables)*	42. Dettagli della prova pratica *(Test piece details)*	43. Campo di validità della qualifica *(Range of qualification)*
10. Procedimento(i) saldatura *(Welding process (es))*	A) 141 B) 138	A) 141, 142, 143 and 145 B) 138, 135
11. Modalità di trasferimento *(Transfer mode)*	B) S	B) G, S, P
12. Lamiera o tubo *(Plate or pipe)*	T	T, P
13. Tipo di saldatura *(Type of weld)*	BW	BW, BC >= 60°
14. Particolari di saldatura *(Weld details)*	A) ss nb B) ss mb	A) ss gb, ss nb, ss mb, bs, ss fb B) ss mb, bs
15. Multistrato o strato singolo *(Multilayer -singlelayer)*		
16. Gruppo *(Parent material group(s))*	1	1 to 11 (1 without FM)
17. Gruppo del Metallo d'apporto *(Filler material group(s))*	A) FM1 B) FM1	A) FM1, FM2 B) FM1, FM2
18. Tipo del Metallo(i) d'apporto *(Filler material types)*	A) S B) M	A) S, M, nm B) S, M
19. Tipo di gas *(Shielding gas)* EN ISO 14175	A) I1 B) M21	A) Appropriated shielding gas protection B) Appropriated shielding gas protection
20. Materiali ausiliari *(Auxiliaries)*		
21. Tipo di corrente e polarità *(Type of current and polarity)*	A) DC EN B) DC EN	
22. Dimensioni *(Dimensions) :*		
23. Spessore(i) materiale *(Material thickness)*	15,24	
24. Spessore *(Deposited thickness metal A)*	A) 2,00	A) 2 to 4
25. Spessore *(Deposited thickness metal B)*	B) 13,24	B) >= 3
26. Ø esterno tubo *(Outside pipe Ø)*	88,90	>= 44,45
27. Posizione saldatura *(Welding position)*	PA	P BW: FLAT P FW: T BW: FLAT T FW: Branch:FLAT

28. Tipo di prova *(Type of test)*	29. Effettuato ed accettabile *(Performed and acceptable)*	30. Non verificato *(Not verified)*
32. Esame visivo *(Visual test)*	☑	☐
33. Radiografia *(Radiographic Examination)*	☑	☐
34. Ultrasuoni *(Ultrasonic Examination)*	☐	☑
35. Frattura *(Fracture test)*	☐	☑
36. Prova di piega *(Bend test)*	☑	☐
37. Macrografia *(Macrographic examination)*	☐	☑
38. Prove complement. FW sup. *(Addit.tests)*	☐	☑

31. Prolungamento della qualifica da parte del datore di lavoro o del supervisore per i successivi 6 mesi
(Prolongation for approval by employer/supervisor for the following 6 months)

44. Data *(Date)*	45. Firma *(Signature)*	46. Posizione *(Position)*
30/05/23		VELOCE CARROLLATORE
30/11/23		4 1
29/05/24		4 4

39. Nome dell'ispettore *(Examiner name)*	Paolo Milzoni
40. Data inizio validità *(Start of qualification) :*	30/11/2022
41. Validità della qualificazione: fino a (data): *(Welding performance qualification valid until)*	29/11/2025

45. Firma *(Signature) Approver*	44. Data *(Date)*	46. Timbro *(Stamp)*
	09/01/2023	BUREAU VERITAS ITALIA Notified Body no. 1370

v1.2.215

BUREAU VERITAS

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N°0076

Area : ITALY
Region :
Certificato No. : QS-ITA-24-03241-rev.0
Certificate No. :
Rif. Interno : 23.SF.7028064.138
Internal No. : P16167/24/GF/gf
Notified Body Yes

1. CERTIFICATO DI QUALIFICA SALDATORE IN ACCORDO A UNI EN ISO 9606-1:2017

(WELDER QUALIFICATION TEST CERTIFICATE IN ACCORDANCE WITH UNI EN ISO 9606-1:2017)

1a Riconduzione del certificato N° *(Renewal of certificate N°):*

2. DESIGNAZIONE(I): **A) ISO 9606-1, 141, T, BW, FM1, S, s2, D60.3, H-L045, ss nb**
B) ISO 9606-1, 111, T, BW, FM1, B, s6.74, D60.3, H-L045, ss mb

3. N° riferimento WPS *(WPS reference No):* **383-01A** Rev. **0**

4. Nome e Cognome del Saldatore *(Welder's name):* **Michele Breviglieri**
5. Data e luogo di nascita *(Date and Place of birth):* **09/12/1977 - Ferrara - FE - ITALY**
4a. Identificazione *(Identification):* **S5** 5a. Met. di identif. *(Ident. Method):* **STAMP**
6. Datore di lavoro *(Manufacturer):* **C.A.M.P.I. Srl - Via Diamantina 15 - FERRARA - ITALY**

7. Saggio d'angolo supplementare *(Supplementary fillet weld test)*: Si *(Yes)* ☐ No *(No)* ☑
8. Conoscenze tecniche / *Job Knowledge*: Accettabile *(Acceptable)* ☐ Non verificato *(Not tested)* ☑

9. Variabili *(Variables)*	42. Dettagli della prova pratica *(Test piece details)*	43. Campo di validità della qualifica *(Range of qualification)*
10. Procedimento(i) saldatura *(Welding process (es))*	A) 141 B) 111	A) 141, 142, 143 and 145 B) 111
11. Modalità di trasferimento *(Transfer mode)*		
12. Lamiera o tubo *(Plate or pipe)*	T	T, P
13. Tipo di saldatura *(Type of weld)*	BW	BW, BC >= 60°
14. Particolari di saldatura *(Weld details)*	A) ss nb B) ss mb	A) ss gb, ss nb, ss mb, bs, ss fb B) ss mb, bs
15. Multistrato o strato singolo *(Multilayer –singlelayer)*		
16. Gruppo *(Parent material group(s))*	11	1 to 11 (11 without FM)
17. Gruppo del Metallo d'apporto *(Filler material group(s))*	A) FM1 B) FM1	A) FM1, FM2 B) FM1, FM2
18. Tipo del Metallo(i) d'apporto *(Filler material types)*	A) S B) B	A) S, M, nm B) A, RA, RB, RC, RR, R, B
19. Tipo di gas *(Shielding gas)* EN ISO 14175	A) I1	A) Appropriated shielding gas protection
20. Materiali ausiliari *(Auxiliaries)*	A) NO B) NO	
21. Tipo di corrente e polarità *(Type of current and polarity)*	A) DC EN B) DC EP	
22. Dimensioni *(Dimensions) :*		
23. Spessore(i) materiale *(Material thickness)*	8,74	
24. Spessore *(Deposited thickness metal A)*	A) 2,00	A) 2 to 4
25. Spessore *(Deposited thickness metal B)*	B) 6,74	B) 3 to 13,48
26. Ø esterno tubo *(Outside pipe Ø)*	60,30	>= 30,15
27. Posizione saldatura *(Welding position)*	H-L045	P BW: ALL, EXCEPT VERTICAL DOWN P FW: T BW: ALL, EXCEPT VERTICAL DOWN T FW: Branch:ALL, EXCEPT VERTICAL DOWN

28. Tipo di prova *(Type of test)*	29. Effettuato ed accettabile *(Performed and acceptable)*	30. Non verificato *(Not verified)*
32. Esame visivo *(Visual test)*	☑	☐
33. Radiografia *(Radiographic Examination)*	☑	☐
34. Ultrasuoni *(Ultrasonic Examination)*	☐	☑
35. Frattura *(Fracture test)*	☐	☑
36. Prova di piega *(Bend test)*	☐	☑
37. Macrografia *(Macrographic examination)*	☐	☑
38. Prove complement. FW sup. *(Addit.tests)*	☐	☑

31. Prolungamento della qualifica da parte del datore di lavoro o del supervisore per i successivi 6 mesi
(Prolongation for approval by employer/supervisor for the following 6 months)

44. Data *(Date)*	45. Firma *(Signature)*	46. Posizione *(Position)*
03/04/2024		WELDING COORDINATOR
04/10/2024		" "

39. Nome dell'ispettore *(Examiner name)*	Gabriele Fracassi
40. Data inizio validità *(Start of qualification) :*	06/10/2023
41. Validità della qualificazione: fino a (data): *(Welding performance qualification valid until)*	05/10/2026

45. Firma *(Signature)* Approver	44. Data *(Date)*	46. Timbro *(Stamp)*
	29/04/2024	BUREAU VERITAS ITALIA Notified Body no. 1370

v1.2.215

BUREAU VERITAS

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N°0076

Area : **ITALY**
Region :
Certificato No. : **QS-ITA-24-03244-rev.0**
Certificate No. :
Rif. Interno : **23.SF.7028064.138**
Internal No. : **P16170/24/GF/gf**
Notified Body **Yes**

1. CERTIFICATO DI QUALIFICA SALDATORE IN ACCORDO A UNI EN ISO 9606-1:2017

(WELDER QUALIFICATION TEST CERTIFICATE IN ACCORDANCE WITH UNI EN ISO 9606-1:2017)

1a Riconduzione del certificato N° *(Renewal of certificate N°):*

2. DESIGNAZIONE(I): **A) ISO 9606-1, 138, P, FW, FM1, M, t13, PB, ml**

3. N° riferimento WPS *(WPS reference No):* **398-01A** Rev. **0**

4. Nome e Cognome del Saldatore *(Welder's name):* **Michele Breviglieri**
5. Data e luogo di nascita *(Date and Place of birth):* **09/12/1977 - Ferrara - FE - ITALY**
4a. Identificazione *(Identification):* **S5** 5a. Met. di identif. *(Ident. Method):* **STAMP**
6. Datore di lavoro *(Manufacturer):* **C.A.M.P.I. Srl - Via Diamantina 15 - FERRARA - ITALY**

7. Saggio d'angolo supplementare *(Supplementary fillet weld test)*: Si *(Yes)* ☐ No *(No)* ☑
8. Conoscenze tecniche / *Job Knowledge*: Accettabile *(Acceptable)* ☐ Non verificato *(Not tested)* ☑

9. Variabili *(Variables)*	42. Dettagli della prova pratica *(Test piece details)*	43. Campo di validità della qualifica *(Range of qualification)*
10. Procedimento(i) saldatura *(Welding process (es))*	A) 138	A) 138, 135
11. Modalità di trasferimento *(Transfer mode)*	A) P	A) G, S, P
12. Lamiera o tubo *(Plate or pipe)*	P	T, P
13. Tipo di saldatura *(Type of weld)*	FW	FW
14. Particolari di saldatura *(Weld details)*		
15. Multistrato o strato singolo *(Multilayer -singlelayer)*	ml	ml, sl
16. Gruppo *(Parent material group(s))*	11	1 to 11
17. Gruppo del Metallo d'apporto *(Filler material group(s))*	A) FM1	A) FM1, FM2
18. Tipo del Metallo(i) d'apporto *(Filler material types)*	A) M	A) S, M
19. Tipo di gas *(Shielding gas)* EN ISO 14175	A) M20	A) Appropriated shielding gas protection
20. Materiali ausiliari *(Auxiliaries)*	A) NO	
21. Tipo di corrente e polarità *(Type of current and polarity)*	A) DC EP	
22. Dimensioni *(Dimensions) :*		
23. Spessore(i) materiale *(Material thickness)*	13,00	>= 3
24. Spessore *(Deposited thickness metal A)*		
25. Spessore *(Deposited thickness metal B)*		
26. Ø esterno tubo *(Outside pipe Ø)*		>=75 rotating pos, >=500 fixed pos
27. Posizione saldatura *(Welding position)*	PB	P BW: P FW: FLAT, HORIZONTAL(ONLY PB) T BW: T FW: FLAT, HORIZONTAL(ONLY PB) Branch:

28. Tipo di prova *(Type of test)*	29. Effettuato ed accettabile *(Performed and acceptable)*	30. Non verificato *(Not verified)*
32. Esame visivo *(Visual test)*	☑	☐
33. Radiografia *(Radiographic Examination)*	☐	☑
34. Ultrasuoni *(Ultrasonic Examination)*	☐	☑
35. Frattura *(Fracture test)*	☐	☑
36. Prova di piega *(Bend test)*	☐	☑
37. Macrografia *(Macrographic examination)*	☑	☐
38. Prove complement. FW sup. *(Addit.tests)*	☐	☑

31. Prolungamento della qualifica da parte del datore di lavoro o del supervisore per i successivi 6 mesi
(Prolongation for approval by employer/supervisor for the following 6 months)

44. Data *(Date)*	45. Firma *(Signature)*	46. Posizione *(Position)*
03/04/2024		WELDING COORDINATOR
04/10/2024		" "

39. Nome dell'ispettore *(Examiner name)*	Gabriele Fracassi
40. Data inizio validità *(Start of qualification) :*	06/10/2023
41. Validità della qualificazione: fino a (data): *(Welding performance qualification valid until)*	05/10/2026

45. Firma *(Signature)* Approver	44. Data *(Date)*	46. Timbro *(Stamp)*
	29/04/2024	

BUREAU VERITAS ITALIA Notified Body no. 1370

v1.2.215

SECTION 6

Repair Procedure
Procedura di Riparazione

DOCUMENT TITLE:

PROCEDURE FOR REPAIRS OF WELDS AND BASE MATERIAL

RISERVATO AL CLIENTE:
Customer reserved:

STATUS OF DOCUMENT REVISIONS

Rev.	Date	Prepared by AQ	Verified by DPRO	Approved By CS	Description of modification
4	05/11/14				Traceability of repairs
3	18/08/98				General modification
2	16/07/97				Modification of point 4.0
1	18/06/97				Modification of point 4.0 and addition of 5.0
0	05/05/97				First issue

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1.0 SCOPE

Scope of the present operative instruction is to describe repairing methods for welds and base material, indicating the operations to be performed and those to be avoided; to document the activity carried out after repairs on welded joints.

REFERENCES TO CODE

- UNI EN ISO 3834-1 Ed. Nov. 2006 : Quality criteria for fusion welding of metallic materials – Criteria for the choice of appropriate level of quality requirements
- UNI EN ISO 3834-2 Ed. Nov. 2006 : Quality criteria for fusion welding of metallic materials – Extended quality requirements
- UNI EN ISO 3834-5 Ed. Nov. 2006 : Quality criteria for fusion welding of metallic materials – Documents to be complied in order to declare the conformity to quality requirements as per parts 2,3,4 of ISO 3834

2.0 RESPONSIBILITY

The person responsible for the repairs is Welding Coordinator (CS) with the support of Welder / Operator involved.

The responsibility for the execution of repairs, by grinding, is of the Shop Foreman.

Quality Control/ Welding Coordinator is responsible for the respect of the procedure, for the evaluation of the repair result and for the documentation of the activity carried out after repair of welded joints.

3.0 REPAIR OF BASE MATERIAL

3.1 SUPERFICIAL REPAIRS

Repairs of the plate surface shall be carried out only through removal of the defect by grinding wheel; the grinded surface shall be uniform and well-connected to the near one. After repair the surface shall be visually examined and the thickness shall be checked as it cannot be lower than the required minimum.

At point 5.0 major and minor defects are defined.

Major defects shall be treated as per point 4.0.

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3.2 REPAIR OF EDGES

Repairs of edges to correct profile deflections or engravings due to performed works are allowed both by grinding as well as by welding.

Repairs by welding are allowed provided that they are small and carried out by qualified welders using approved procedures and weld materials.

The repaired area shall be visually checked and examined with penetrant liquids.

4.0 REPAIR OF WELDS

The procedure for repairs of welds that is here described is applicable to every type of welding (SMAW – SAW – GTAW – GMAW④ or their combination) every time that the visual examination or the CND examination detects unacceptable defects. The defects shall be removed by grinding, the area shall be cleaned of all residues, smoothed and well-connected to the near one, in order to make the following welding operation easier.

The removal by carbon electrode (arc air) is not allowed.

The removal of the defect shall be checked by magnetoscopic examination or penetrant liquid examination.

SMAW, GTAW or GMAW technique (the most suitable one among these) shall be used to carry out the repair.

The preheating temperature, the performing technique and the weld materials shall be according to the WPS for joints to be repaired.

All welding repairs shall be carried out according to qualified welding procedures and only by qualified welders.

④ The traceability of repairs has to be guaranteed all the time. To this purpose, a map or construction drawing shall be prepared, showing the points of repairs. The responsible for the check will write a new report after repair, attesting the positive result and mentioning the WPS used for the repair.

④The Welding Coordinator / Quality Control Manager will keep the documentation by including it in the final book of the equipment.

Major and minor defects of welds and base material are defined at point 5.0.

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All major defects shall be treated according to written procedures approved by the person in charge of quality control and they shall include detailed sketches or well-defined proportions of the discontinuities.
This documentation shall be included in the final dossier of the equipment.
After fulfilment of repair welding, the surface and its edges shall be grounded to make them uniform and well-connected to the near one. The completed repair will be checked with the same technique used for the original welding.
Welding repairs shall be carried out before heat treatment (if any).

In case of dispute between Italian and English text, the Italian one prevails.

5.0 DEFINITION OF MAJOR AND MINOR DEFECTS

MAJOR DEFECTS

BASE METAL	WELD METAL
Crack	Crack, except crater cracks
Repair cavity greater than 6450 square mm (10 square inches)	Repair cavity greater than 6450 square mm (10 square inches)
Repair cavity deeper than 50% of thickness or 13 mm (1/2 inch), whichever is less	Repair cavity deeper than 50% of thickness or 13 mm (1/2 inch), whichever is less
Weld deposit to correct manufacturing mistakes	Lack of fusion and/or penetration

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MAJOR DEFECTS

BASE METAL

Deep or base metal thickness edge defects greater than 25 mm (1 inch) whichever is less

Edge defects greater than 20% of edge length

* All weld deposits or buttering shall be 100% RT or UT examined.

MINOR DEFECTS

Repair cavities or edge defects smaller than the above, excluding cracks

Porosity or slag inclusions
Undercut
Crater cracks

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