Base Load Power Hub (BLPH)

WELD PROCEDURE SPECIFICATION (WPS) WLED LOCATION PLAN (WLP) AND QUALIFICATIONS RECORDS (PQR), WELD OPERATORS LIST and WELDER QUALIFICATIONS RECORDS (WPQ)

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Revision / Change Log

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1. INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

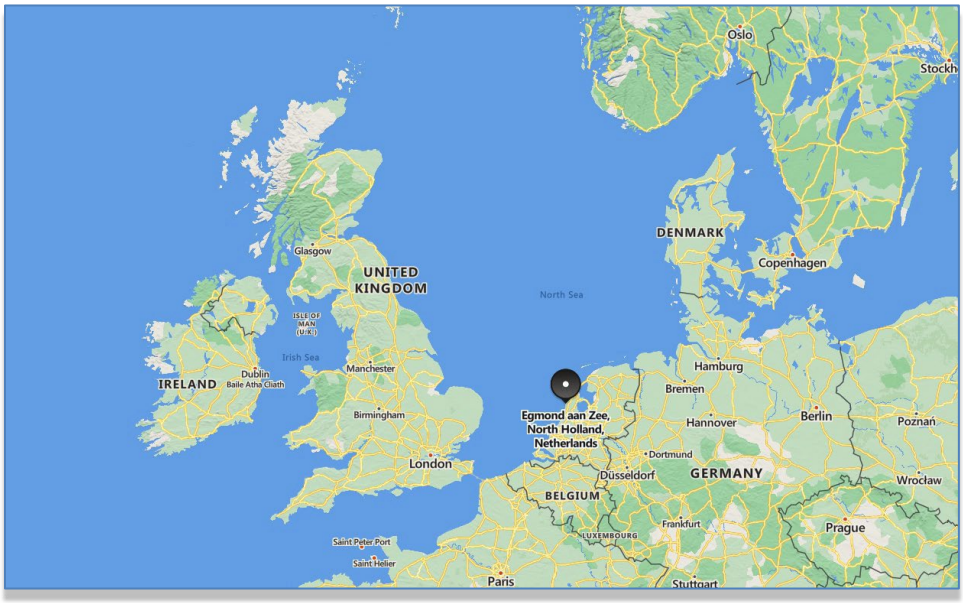


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

Project Concept

All components included in the BLPH will be integrated onshore on a topside and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

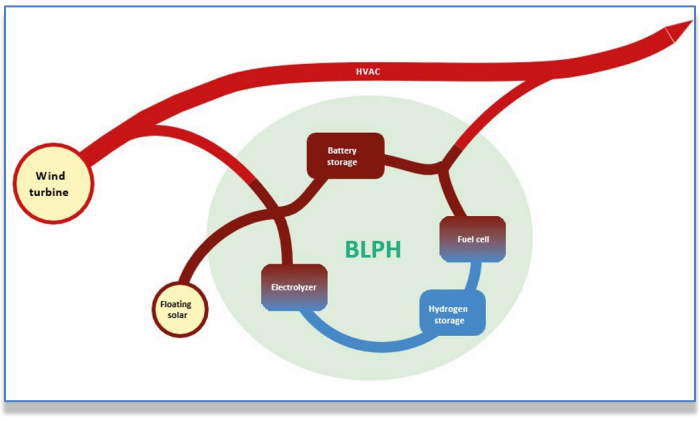


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH is to function as a testbed for the integration of energy storage technologies with

renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

2. INTRODUCTION

This procedure aims to provide information about the welding duty of the project.

2.1 REFERENCES

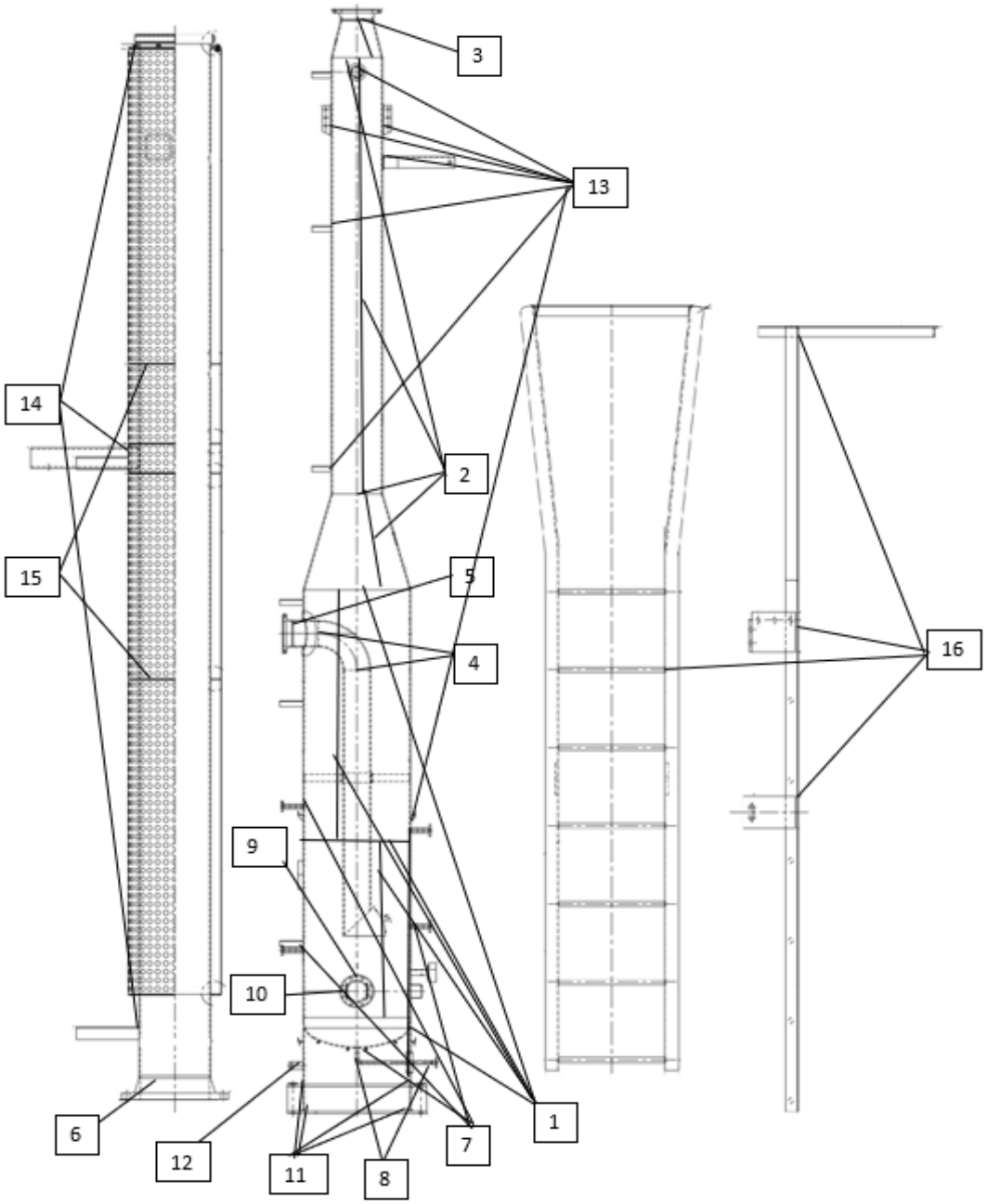
The following procedure is in accordance with the codes and project specifications below:

- **EN 15614-1**
- **ASME CODE SECTION IX**
- **123A90-DDL-MAC-SP-50043 - Technical Specification for Hydrogen Vent - U-43004**

2.2 DEFINITIONS AND ABBREVATIONS

COMPANY or CLIENT (CPY)	CROSSWIND
CONTRACTOR (CTR)	ROSETTI MARINO S.p.A.
PROJECT	HOLLANDSE KUST NOORD WIND PARK Project

Table 1 – Definitions And Abbreviations



WELD MAP Rev.1 DATE: 08 October 2024

JOB : 23-0193	**HYDROGEN VENT**

Note: joints subject to NDT are tracked from the records of those who performed the NDT

NOTE
Welds from 1 to 10 Welds on Pressure parts

Welds from 11 to 16 Welds on NON Pressure parts

JOINT	MATERIAL 1	MATERIAL 2	DIA.	THK.	WELDER	WPS	WPQR
16	S275J0	S275J0	---	---	RS	**23-0193-16**	**EN-R02/14**
15	1.4404	1.4404	420 mm	2 mm	RS	**23-0136-15**	**EN-R04/15**
14	1.4404	1.4404	---	---	RS	**23-0136-14**	**EN-R04/15**
13	P355JH	S275J0	---	---	RS	**23-0193-13**	**EN-R02/14**
12	P355JH	AISI 316L	---	---	DG	**23-0193-12**	**R05/00**
11	S275J0	S275J0	---	---	RS	**23-0193-11**	**EN-R02/14**
10	P265NL	P355QH1	8"	8,18 mm	RS	**23-0193-10**	**EN-R02/14**
9	P265NL	P355JH	8"	8,18 mm	RS	**23-0193-9**	**EN-R02/14**
8	P265NL	P265NL	1"	4,45 mm	RS	**23-0193-8**	**EN-R02/14**
7	P355JH	P355QH1	1"	4,45 mm	RS	**23-0193-7**	**EN-R02/14**
6	1.4404	1.4404	12"	6 mm	RS	**23-0136-6**	**EN-R04/15**
5	P265NL	P355QH1	10"	9,27 mm	RS	**23-0193-5**	**EN-R02/14**
4	P265NL	P265NL	10"	9,27 mm	RS	**23-0193-4**	**EN-R02/14**
3	P355QH1	P355JH	12"	10 mm	RS	**23-0193-3**	**EN-R02/14**
2	P355JH	P355JH	508 mm	10 mm	RS	**23-0193-2**	**EN-R02/14**
1	P355JH	P355JH	1066,8 mm	10 mm	RS	**23-0193-1**	**EN-R02/14** **EN-R07/15**

WELD MAP Rev.1 DATE: 08 October 2024

JOB : 23-0193

HYDROGEN VENT

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-1 Rev. 1**

WPQR No.: **EN-R02/14 + EN-R07/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (135 + 121)**

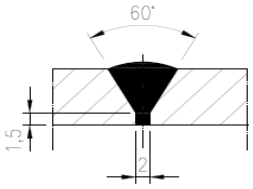
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **10**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1	**135**	**1**	**208-210**	**27-29**	**DCEP**	**130-330**	**6,6 – 6,7**	**0,73**
2-N	**121**	**2**	**399-401**	**29-31**	**DCEP**	**N.A.**	**18 – 19**	**0,69**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 14341-A G 42 4 M G3Si1 (135)**
EN ISO 14171-A S2Si (121)

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar + CO2 (135) nozzle 14 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **15 lt/min (135)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: N.A.**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-2 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141 + 135)**

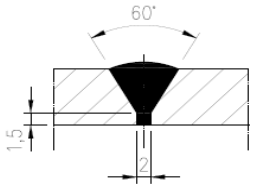
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **10**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**
2-N	**135**	**1**	**208-210**	**27-29**	**DCEP**	**130-330**	**6,6 – 6,7**	**0,73**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**
EN ISO 14341-A G 42 4 M G3Si1 (135)

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**
Ar + CO2 (135) nozzle 14 mm

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**
15 lt/min (135)

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-3 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141 + 135)**

Method of Preparation and Cleaning: **GRINDING, BRUSHING**

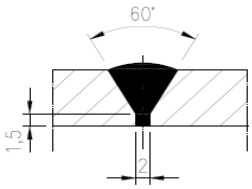
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **10**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**
2-N	**135**	**1**	**208-210**	**27-29**	**DCEP**	**130-330**	**6,6 – 6,7**	**0,73**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**
EN ISO 14341-A G 42 4 M G3Si1 (135)

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**
Ar + CO2 (135) nozzle 14 mm

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**
15 lt/min (135)

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-4 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141 + 135)**

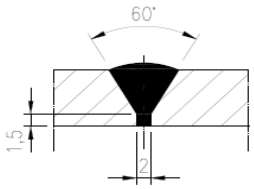
Parent Material Designation: **EN 15608 Gr. 1.1**

Material thickness (mm): **9,27**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**
2-N	**135**	**1**	**208-210**	**27-29**	**DCEP**	**130-330**	**6,6 – 6,7**	**0,69**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**
EN ISO 14341-A G 42 4 M G3Si1 (135)

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**
Ar + CO2 (135) nozzle 14 mm

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**
15 lt/min (135)

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-5 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141 + 135)**

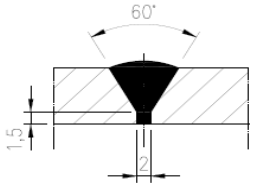
Parent Material Designation: **EN 15608 Gr. 1.1 + 1.2**

Material thickness (mm): **9,27**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**
2-N	**135**	**1**	**208-210**	**27-29**	**DCEP**	**130-330**	**6,6 – 6,7**	**0,73**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**
EN ISO 14341-A G 42 4 M G3Si1 (135)

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**
Ar + CO2 (135) nozzle 14 mm

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**
15 lt/min (135)

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-6 Rev. 1**

WPQR No.: **EN-R04/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141)**

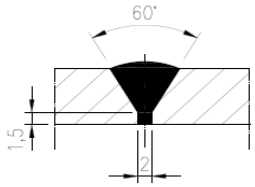
Parent Material Designation: **EN 15608 Gr. 8.1**

Material thickness (mm): **6**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**119-121**	**9-11**	**DCEN**	**N.A.**	**1,1 – 1,2**	**0,72**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 14343 25 20 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-7 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141)**

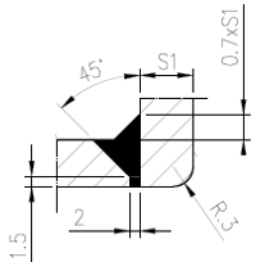
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **4,45**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-8 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141)**

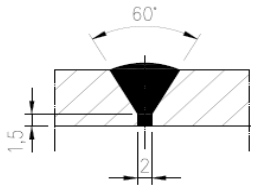
Parent Material Designation: **EN 15608 Gr. 1.1**

Material thickness (mm): **4,45**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-9 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141)**

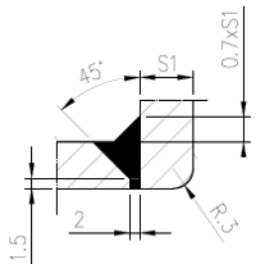
Parent Material Designation: **EN 15608 Gr. 1.1+1.2**

Material thickness (mm): **8,18**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-10 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW (141)**

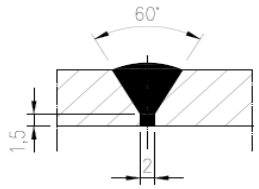
Parent Material Designation: **EN 15608 Gr. 1.1+1.2**

Material thickness (mm): **8,18**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-11 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **FW (141)**

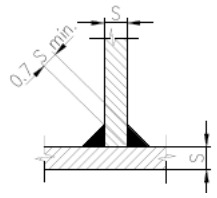
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **N.A.**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-12 Rev. 1**

WPQR No.: **R05/00**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **FW (141)**

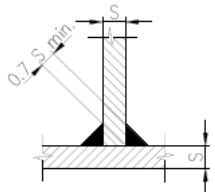
Parent Material Designation: **EN 15608 Gr. 8.2 + 1.1**

Material thickness (mm): **N.A.**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**110-120**	**14-16**	**DCEN**	**N.A.**	**0,8 – 1**	**1,32**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 14343 25 20 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-13 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **FW (141)**

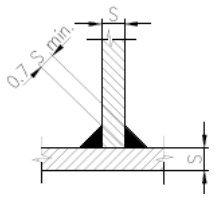
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **N.A.**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**144-146**	**11-13**	**DCEN**	**N.A.**	**0,7 – 0,8**	**1,62**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-14 Rev. 1**

WPQR No.: **EN-R04/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **FW (141)**

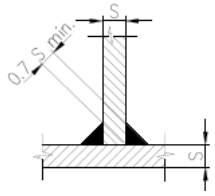
Parent Material Designation: **EN 15608 Gr. 8.1**

Material thickness (mm): **N.A.**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**119-121**	**9-11**	**DCEN**	**N.A.**	**1,1 – 1,2**	**0,72**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 14343 25 20 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-15 Rev. 1**

WPQR No.: **EN-R04/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **FW (141)**

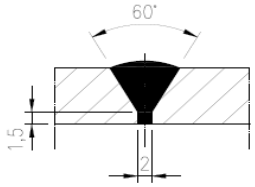
Parent Material Designation: **EN 15608 Gr. 8.1**

Material thickness (mm): **N.A.**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**141**	**2,4**	**119-121**	**9-11**	**DCEN**	**N.A.**	**1,1 – 1,2**	**0,72**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 14343 25 20 (141)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar (141) nozzle 8 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: EN26848 2,4 mmTbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

Welding Procedure Specification (WPS)
According EN 15614-1

Welding Procedure Specification: **23-0193-16 Rev. 1**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **FW (135)**

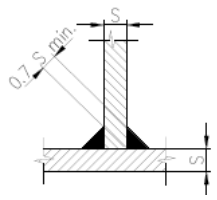
Parent Material Designation: **EN 15608 Gr. 1.2**

Material thickness (mm): **10**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input Max (EN 1011-1) (kJ/mm)
1-N	**135**	**1**	**208-210**	**27-29**	**DCEP**	**130-330**	**6,6 – 6,7**	**0,73**

Bevel cleaning method: **GRINDING**

Weld cleaning method: **BRUSHING, GRINDING**

Filler Material Designation and Make: **EN ISO 14341-A G 42 4 M G3Si1 (135)**

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: − Shielding: **Ar + CO2 (135) nozzle 14 mm**

Oscillation: amplitude, frequency, dwell time: **N.A.**

− Backing**:** **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate: − Shielding: **15 lt/min (135)**

Distance contact tube/work piece: **N.A.**

− Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size**: N.A.**

Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature: **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

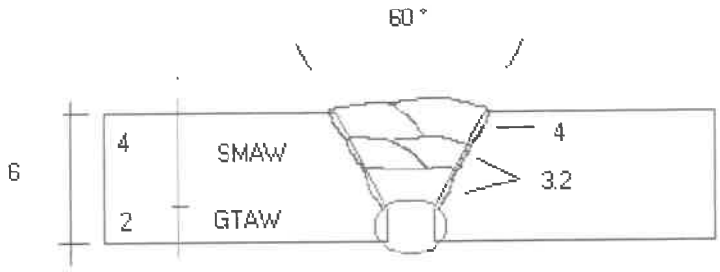
Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. VIANELLI A. Vianelli **TICI S.r.l.** **8 October 2024**

QW - 483	CERTIFICATO DI QUALIFICA DI PROCEDIMENTO *PROCEDURE QUALIFICATION REPORT*				
SOCIETA' *COMPANY NAME*	TICI S.R.L. - MONTODINE - (CR)				
CERTIF. DI QUALIFICA DI *ROCED.* *PROCEDURE QUALIFICATION REPORT*	PQR NR° R05/00	DATA *DATE*	05/09/00	WPS N° *WPS N°*	05-00
PROCEDIMENTO DI SALDATURA *WELDING PROCESS*	GTAW+SMAW	TIPO *TYPE*	MANUAL		

QW-402 - *JOINTS*



QW-403 - BASE METAL			
SPECIFICA DEL MAT. *MATERIAL SPEC.*	A516		A240
TIPO E GRADO *TYPE AND GRADE*	70		TP310S
P N° 1 TO P N° 8 Gr. 2 *TO Gr.* 2			
ANALISI CHIMICA *CHEM. ANALYSIS*	C	Mn	Si	S	P	Cr	Ni	Mo		
SPESSORE *THICKNESS*	6	DIAMETRO *DIAMETER*	NA							

QW-404 - FILLER METALS		
SPECIFICA SFA *SFA SPECIFICATION*	5.9	5.4
CLASSIFICAZIONE AWS *AWS CLASSIFICATION*	ER309L	E309MoL17
METALLO D'APPORTO *FILLER METAL - F Nr.*	6	5
ANALISI DELLA SALD. *WELD METAL ANALYSIS A N°*	8	8
DIAMETRO MATER. D'APPORTO *SIZE OF FILLER METAL*	2.4	3.2 - 4
METALLO DI SALD. DEPOSITATO *WELD METAL THICKNESS*	2	4

QW-405 - POSITION	
POSIZIONE DELLO SMUSSO *POSITIION OF GROOVE*	1G
PROGRESS. DELLA SALD. *WELD PROGRESSION*	NA

QW-406 - PREHEAT	
TEMP. DI PRERISCALDO *PREHEAT TEMPERATURE*	20 °C
TEMP. DI INTERPASS *INTERPASS TEMPERAT.*	150 °C
ALTRO *OTHER*	NONE

QW-407 - POSTWELD HEAT TREATMENT	
TEMPERATURA *TEMPERATURE*	NONE
TEMPO *TIME*	NONE
ALTRO *OTHER*	NONE

QW-408 - GAS	TYPE	% COMPOSIT.	Q.TY lt/min
PROTEZIONE *SHIELDING*	ARGON	99.99	12
AGGIUNTIVO *TRAILING*	NONE	NA	NA
ROVESCIO *BACKING*	ARGON	99.99	11

QW-409 - ELECTRICAL CHARACTERISTICS	
CORRENTE *CURRENT*	DC
POLARITA' *POLARITY*	STRAIGHT + REVERSE
AMPERE *AMPERES*	GTAW 120 - SMAW 115-150
VOLT *VOLT*	GTAW 15 - SMAW 24
DIMENS. ELETTR. AL TUNGSTENO *TUNGSTEN ELECTRODE SIZE*	EW Th 2 DIA 2.4

QW-410 - TECHNIQUE	
VELOCITA' DI LAVORO *TRAVEL SPEED*	GTAW 9 cm/min SMAW 24/55 - 29 cm/min
PASS. STRETTA O LARGA *STRING OR WEAVE BEAD*	STRING
OSCILLAZIONE-AMPIEZZA *OSCILLATION-AMPLITUDE*	NONE
PASS. MULTIPLA/SINGOLA (PER LATO) *MULTIPLE /SINGLE PASS (FOR SIDE)*	MULTIPLE
ELETTRODO MULTIPLO O SINGOLO *SINGLE OR MULTIPLE ELECTRODE*	SINGLE
APPORTO TERMICO *HEAT INPUT*	GTAW - 12000 SMAW 3.2 - max 6900 SMAW 4 - 7448

QW - 483 (BACK)	PQR N° R05/00

PROVA DI TRAZIONE
TENSILE TEST (QW-150)

NR. PROVINO *SPECIMEN NR.*	LARGH. *WIDTH mm*	SPESSORE *THK mm*	AREA *AREA mmq*	CARICO TOT. *ULT. TOT. LOAD*	*ULT. UNIT STRESS N/mmq*	CAR. FRATT. *CHARACT.OF FAIL*
258/1	18.8	5.8	109.04	63500	582	BM 516/70 SIDE
258/2	18.8	5.8	109.04	64000	587	BM 516/70 SIDE

PROVA DI PIEGA GUIDATA
GUIDED BEND TEST (QW-160)

NR. E TIPO DELLA PROVA *TYPE AND FIGURE NR. 462.3(a)*	RISULTATO *RESULT*
258/1 - ROOT	SATISFACTORY
258/2 - FACE	SATISFACTORY
258/3 - ROOT	SATISFACTORY
258/4 - FACE	SATISFACTORY

PROVE DI RESILIENZA
TOUGHNESS TESTS (QW-170)

NR. E TIPO DELLA PROVA *TYPE AND FIGURE NR. 462.3(a)*				RISULTATO *RESULT*				
NR. PROV. *SPECIM. NR.*	LOC. INTAGL. *NOTCH LOCAT.*	TIPO DI INT. *NOTCH TYPE*	T. DI PROVA *TEST TEMP.*	VAL. RESIL. *IMPACT VAL.*	*LATERAL EXPANSION*		*DROP WEIGHT*	
					% SHEAR	*mm*	*BREAK*	*NO-BREAK*
258/1-2	BM SS/CS	KV	-45 °C	72.3 / 25.4 J		1.75 (SS)		
258/1-2	BM SS/CS	KV	-45 °C	68.9 / 26.1		1.58		
258/1-2	BM SS/CS	KV	-45 °C	72.8 / 24.8		1.44		
258/3-4	HAZ SS/CS	KV	-45 °C	25.0 / 25.2		0.64		
258/3-4	HAZ SS/CS	KV	-45 °C	29.7 / 22.2		0.99		
258/3-4	HAZ SS/CS	KV	-45 °C	29.8 / 20.1		0.87		
258/5	WM	KV	-45 °C	28.1		0.92		
258/5	WM	KV	-45 °C	28.1		1.00		
258/5	WM	KV	-45 °C	28.1		0.97		

PROVE DI SALDATURA D'ANGOLO
FILLET WELD TEST (QW-180)

RISULTATO SODDISFACENTE: *RESULT SATISFACTORY:*	SI *YES*	NO *NO*	PENETR. NEL METALLO BASE: *PENETR. INTO PARENT METAL:*	SI *YES*	NO *NO*
RISULTATI MACRO *MACRO RESULTS*					

ALTRE PROVE
OTHER TESTS

TIPO DI PROVA *TYPE OF TEST*	HV10 : WM max 222 - HAZ/CS max 214 - HAZ/SS max 195 - BM/CS max 177 BM/SS max 171		
ANALISI DEL DEPOSITO *DEPOSIT ANALYSIS*			
NOME DEL SALDATORE *WELDER'S NAME*	DENTI GIOVANNI	NR. DI MATR. *CLOCK NR.*	NR. PUNZONE *STAMP NR.*
PROVE CONDOTTE DA *TESTS CONDUCTED BY*	BODYCOTE	NR. CERT. DI LABOR. *LABORATORY TEST NR.*	68538

SI CERTIFICA CHE QUANTO ESPOSTO NEL PRESENTE CERTIFICATO E' CORRETTO E CHE LA SALDATURA PREPARATA E' STATA PROVATA IN ACCORDO CON I REQUISIT DELLA SEZ. IX DEL CODICE ASME

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 SECT. IX OF THE ASME CODE

T.V. D.A.

T.I.C.I. S.n.l.
Via Garibaldi - Zona PIP
26010 MONTODINE (CR)
Tel.+Fax 0373-242255

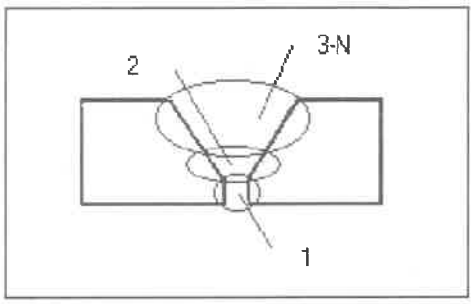
COSTRUTTORE MANUFACTURER	
DATA *DATE* 05/09/00	DA BY

QW - 482	SPECIFICA DI SALDATURA *WELDING PROCEDURE SPECIFICATION* *According to ASME Code Sect. IX*	*W.P.S. N°* 05-00 Sh. 1 of 2

PER QUALIFICA / *FOR QUALIFICATION*

SOCIETA' COMPANY	TICI S.R.L. - MONTODINE - (CR)			COMP. *BY*	V. THEVENET
SPECIFICA PROC. SALDATURA *WELDING PROCEDURE SPECIF.*	05-00	DATA *DATE*	01/08/00	SUPPORTING PQR N°	R05-00
PROCEDIMENTO DI SALDATURA *WELDING PROCESS*	GTAW + SMAW	TIPO *TYPE*	MANUAL		

QW-402 - GIUNTI - *JOINTS*



DIS. DEL GIUNTO *JOINT DESIGN*	V - GROOVE	SUPPORTO *SUPPORT*	YES NO	SMAW GTAW	MATERIALE SUPP. *BACK MAT. TYPE*	WELD METAL	

QW-403 - METALLO BASE - *BASE METAL*

SPECIFICA DEL MAT. *MATERIAL SPEC.*	A516												A240										
TIPO E GRADO *TYPE AND GRADE*	70												TP310S										
P N°	1												8										
Gr.	2												2										
ANALISI CHIMICA CHEM. ANALYSIS	C	Mn	Si	S	P	Cr	Ni	Mo					C	Mn	Si	S	P	Cr	Ni	Mo			
GAMMA DI SPESSORI *THICHNESS RANGE*	GROOVE												FILLET										
METALLO BASE *BASE METAL*	6												NA										
DIA. TUBI - GAMMA SMUSSO *PIPE DIAM. - RANGE THK*	PLATE												NA										
ALTRO *OTHER*	NONE												NONE										

QW-404 - METALLO D'APPORTO - *FILLER METAL*

	GTAW	SMAW		
SPECIFICA SFA *SFA SPECIFICATION*	5.9	5.4		
CLASSIFICAZIONE AWS *AWS CLASSIFICATION*	ER309L	E309MoL-17		
METALLO D'APPORTO *FILLER METAL - F Nr.*	6	5		
ANALISI DELLA SALD. *WELD METAL ANALYSIS A N°*	8	8		
DIAMETRO MATER. D'APPORTO *SIZE OF FILLER METAL*	2.4	3.2 - 4		
METALLO DI SALD. DEPOSITATO *WELD METAL THICKNESS*				
GAMMA DI SPESSORI SALD. D'ANGOLO / *FILLET*	NA	NA		
THICKNESS RANGE SMUSSO / *GROOVE*	2	4		
FILO FLUSSO *ELECTRODE - FLUX (CLASS)*	NA	NA		
DENOMINAZIONE COMMERCIALE FLUSSO *FLUX TRADE NAME*	NA	NA		
INSERTO CONSUMABILE *CONSUMABLE INSERT*	NONE	NA		

QW - 482	SPECIFICA DI SALDATURA *WELDING PROCEDURE SPECIFICATION* *According to ASME Code Sect. IX*	*W.P.S. N°* **05-00** Sh. 2 of 2

PER QUALIFICA / *FOR QUALIFICATION*

QW-405 - POSIZIONE - *POSITION*		**QW-407 - TRATT.TERMICO-*POSTWELD HEAT TREATM.***	
PROGRESSIONE SALD. (UP) (DOWN) *WELD PROGRESS*	**NA**	TEMPERATURA *TEMPERATURE*	**NONE**
POSIZIONE SMUSSO *GROOVE POSITIONS*	**FLAT**	TEMPO DI MANTENIMENTO *TIME RANGE*	**NONE**
POS. D'ANGOLO *FILLET POSITION(S)*	**NA**	ALTRO *OTHER*	**NONE**

QW-406 - PRERISCALDO - *PREHEAT*		**QW-408 - GAS**	*GAS TYPE*	%COMPOSIT.	Q.TY lt/min
TEMP. PRERISCALDO *PREHEAT TEMP. MIN.*	**10 °C**	PROTEZ. *SHIELDING*	**ARGON**	**99.99**	**10 - 14**
TEMP. INTERPASS. MAX. *INTERPASS. TEMP. MAX.*	**150 °C**	AGGIUNTIVO *TRAILING*	**NONE**	**NA**	**NA**
MANTENIMENTO *PREHEAT MAINTENANCE*		ROVESCIO *BACKING*	**ARGON**	**99.99**	**9 - 13**

QW-409 - CARATTERISTICHE ELETTRICHE - *ELECTRICAL CHARACTERISTICS*			
CORRENTE C.A. - C.C *CURRENT A.C. - D.C.*	**D.C.**	POLARITA' *POLARITY*	**STRAIGHT + REVERSE**
CAMPO *AMPS RANGE*	**SEE TABLE**	CAMPO VOLTS *VOLTS RANGE*	**SEE TABLE**
TIPO E DIAMETRO ELETTRODO AL TUNGSTENO *TUNGSTEN ELECTRODE SIZE(S) AND TYPE*	**SFA 5.12 AWS EW Th2 DIA 2.4 2% THORIATED**		
CARATT. DELL'ARCO PER GMAW *MODE OF METAL TRANSFER FOR GMAW*	**NA**		
GAMMA DI VELOCITA' ALIMENT. FILO *ELECTRODE WIRE SPEED RANGE*	**NA**		

QW-410 - PROCEDIMENTO - *TECHNIQUE*			
PASSATA STRETTA O LARGA *STRING OR WEAVE BEAD*	**STRING**		
DIMENSIONI UGELLO *ORIFICE OR GAS CUP SIZE*	**8**		
PULIZIA FRA LE PASSATE *INITIAL OR INTERPASS CLEANING*	**BRUSHING - GRINDING**		
METODO DI RIPRESA AL ROVESCIO *METHOD OF BACK GOUGING*	**NONE**		
OSCILLAZIONE *OSCILLATION*	**NONE**	FREQUENZA *FREQUENCY*	**H.F. STARTING**
DISTANZA UGELLO DI CONTATTO - PEZZO *CONTACT TUBE TO WORK DISTANCE*	**NA**		
PASSATA SINGOLA O MULTIPLA (PER LATO) *MULTIPLE OR SINGLE PASS (FOR SIDE)*	**SINGLE GTAW - MULTIPLE SMAW**		
ELETTRODO MULTIPLO O SINGOLO *MULTIPLE OR SINGLE ELECTRODE*	**SINGLE**		
CAMPO VELOCITA' SALDATURA *TRAVEL SPEED (RANGE)*			
MARTELLATURA *PEENING*	**NONE**		

STRATI DI SALDATURA *WELD LAYERS*	PROC. DI SALDATURA *WELDING PROCESS*	METALLO D'APPORTO *FILLER METAL*		CORRENTE *CURRENT*		GAMMA VOLTAGGIO *VOLTS RANGE*	GAMMA DI LAVORO *TRAVEL SPEED RANGE. cm/min*	ALTRO *OTHER KJ/mm*
		CLASSIFICAZIONE *CLASS*	DIAMETRO *DIAMETER*	POLARITA' *POLARITY*	GAMMA AMP. *AMPS RANGE*			
1	GTAW	ER309L	2.4	STRAIGHT	110-120	14-16	8-10	
2	SMAW	E309MoL17	3.2	REVERSE	110-130	22-25	20-60	
3-N	SMAW	E309MoL17	4	REVERSE	140-160	22-25	20-30	

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web site: www.bodycote-mt.com

Report n. RPR N° 68538
issue Rev.0
according to EN 10204, type : 3.1C

T.I.C.I.SRL
Via Garibaldi - Zona PIP
26010 Montodine CR
Italy

Your ref.	Order n.	159	data	22/08/2000
Our ref.	Report n.	68538	data	05/09/2000
	Job n.	30768	data	22/08/2000

Remarks Welding Process : 1 GTAW ø 2.4 - 2÷4 SMAW ø 3.25 - 5÷6 SMAW ø 4
ER309L+E309MoL17

Standard ref. ASME IX ED.98 + 99 ADD - ASME B31.3

This Report is made of n° 6 **pages including this cover plus the following pages**

Test	Pag.	Test	Pag.
Macrographic examination	1	Tensile test	1
Hardness survey	1		
Bend test	1		
Impact test	1		

This Report (RPR) contains tests results on the following materials

Ref.	Identification	Material	DN / THK [mm]	Remarks
27258	Welded Coupon PQR R05-00	A240 Tp310S+A516 Gr.70	6.00	

Laboratory Manager | Customer | Customer | Inspector | Inspector

TCI

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ÜTV 4

Condizioni generali:
1. Il committente si impegna a sottostare alle condizioni generali e tariffe stabilite dal Laboratorio per l'esecuzione delle prove.
2. I risultati delle prove verranno comunicati solo per mezzo di rapporto di prova , salvo diversi accordi contrattuali.
3. Il materiale residuato di prova verrà inviato a rotame dopo 10 giorni della stessa, salvo diversa richiesta scritta del Committente.
4. Il materiale giacente verrà inviato a rotame dopo 3 mesi dal ricevimento, salvo diversa richiesta scritta del Committente.
5. Il pagamento delle prove dovrà essere effettuato al ritiro del rapporto di prova , salvo diversi accordi contrattuali.

This test certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory

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Report n. RPR N° 68538

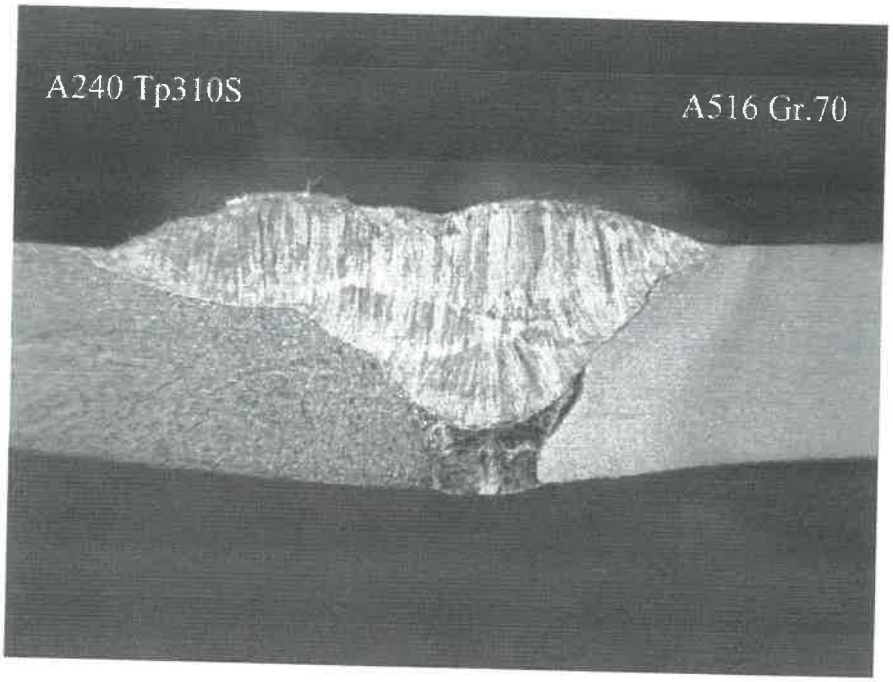
Equipment n.

PHOTOGRAPHIC DOCUMENTATION

Test Ref.	Laboratory	Client
258_1	1	R05-00

Etching : 75% HCl 25% HNO3

Magnification : x 5



R05-00

M1

Standard ref. ASME IX ED.98 + 99 ADD.

Remarks

Operator	Customer	Customer	Inspector	Inspector
	TICI			

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UTV 4

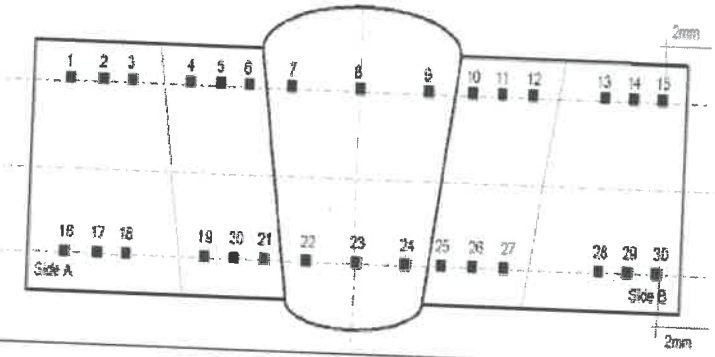
8 5 SET 2000

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Report n. RPR N° 68538

Equipment n.	HARDNESS TEST
8	



R05/00
M1

Method.	HV 10
Point #	Value
258_1 #1	164.0
258_1 #2	169.0
258_1 #3	171.0
258_1 #4	188.0
258_1 #5	186.0
258_1 #6	187.0
258_1 #7	214.0
258_1 #8	222.0
258_1 #9	218.0
258_1 #10	214.0
258_1 #11	206.0
258_1 #12	202.0
258_1 #13	177.0
258_1 #14	176.0
258_1 #15	177.0
258_1 #16	164.0
258_1 #17	164.0
258_1 #18	161.0
258_1 #19	195.0
258_1 #20	194.0

Method.	HV 10
Point #	Value
258_1 #21	191.0
258_1 #22	205.0
258_1 #23	196.0
258_1 #24	177.0
258_1 #25	209.0
258_1 #26	203.0
258_1 #27	182.0
258_1 #28	171.0
258_1 #29	166.0
258_1 #30	175.0

Method.	-
Point #	Value

Method.	-
Point #	Value

Method.	-
Point #	Value

Standard ref. ASME IX ED.98 + 99 ADD.

Remarks SIDE-A: SS
SIDE-B: CS

Operator | Customer | Customer | Inspector | Inspector

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Report n. RPR N° 68538
issue Rev.0

Equipment n. 0088/01

BEND TEST

Test Ref. Lab.	Test Ref. Client	T Test °C	Posizione Position	Dimensioni Dimensions mm			Mandrino Jig mm	oc Deg.	Esito Results	Note Remarks	Rif. Ref.
258_1	PI1	R05-00	+20	Root Bend	38.00	x 6.00	4Thk.	180	OK		
258_2	PI1	R05-00	+20	Face Bend	38.00	x 6.00	4Thk.	180	OK		
258_3	PI1	R05-00	+20	Root Bend	38.00	x 6.00	4Thk.	180	OK		
258_4	PI1	R05-00	+20	Face Bend	38.00	x 6.00	4Thk.	180	OK		

Standard ref. ASME IX ED. 98 + 99 ADD.

Remarks

Operator | Customer | Customer | Inspector | Inspector

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UTV 4 05 SET 2000

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Equipment n. 10

IMPACT TEST

Test Ref. Lab.	Test Ref. Client	T Test °C	Posizione Position	Dimensioni Dimensions mm			Intaglio Notch	Richiesti Required	A Single 8		>=0.38	B Single 8		>=0.38	C Single 8		>=0.38	10	
									Valore Value J	Shear %	Lateral E.	Valore Value J	Shear %	Lateral E.	Valore Value J	Shear %	Lateral E.	Media Average J	Rif. Ref.
258_1	R05-00	-45	BM (Side 310S)	10	x	5.00	KV		72.3		1.75	68.9		1.58	72.8		1.44	71.3	
258_2	R05-00	-45	BM (Side Gr.70)	10	x	5.00	KV		25.4		1.02	26.1		1.12	24.8		1.07	25.4	
258_3	R05-00	-45	HAZ (Side 310S)	10	x	5.00	KV		25.0		0.64	29.7		0.99	29.8		0.87	28.2	
258_4	R05-00	-45	HAZ (Side Gr.70)	10	x	5.00	KV		25.2		0.78	22.2		0.73	20.1		0.70	22.5	
258_5	R05-00	-45	WM	10	x	5.00	KV		28.1		0.92	28.1		1.00	28.1		0.97	28.1	

Standard ref. ASME IX ED.98 + 99 ADD. ASME B31.3

Remarks (REQUIRED FOR Dim. 10x10 Single = 16 J , Average = 20 J)

Operator Customer Customer Inspector Inspector

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TIG

UTV 0543 S.r.l. 2000

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Report n. RPR N° 68538
issue Rev.0

Equipment n. 2

TENSILE TEST

Test Ref. Lab.	Test Ref. Client	T Test °C	Posizione Position	Dimensioni Dimensions mm			Sezione Section mm²	Lo L1 mm	Lt L2 mm	Re N/mm²	Rp 0.2% N/mm²	Rp 0.5% N/mm²	Rp 1% N/mm²	E	Rm N/mm²	At %	Z %	Rif. Ref.
Richiesti Required		A516													>=515			
		A240													485÷620			
268_1	R06-00	+20	T	18.8	x	5.80	109.04			-	-	-	-		582	-		*
268_2	R06-00	+20	T	18.8	x	5.80	109.04			-	-	-	-		587	-		*

Standard ref. ASME IX ED.98 + 99 ADD.

Remarks Broken out of weld A516 Gr.70 side.

Operator Customer Customer Inspector Inspector

Bodycote MATERIALS TESTING S.r.l.

UTV 4 05 SET 2000

This page is binded to references n. 68538 (job 30768) whose details are indicated on the cover

Welding Procedure Qualification Record Form (WPQR)

Welding procedure qualification - Test certificate

Manufacturer's WPQR No.:	**EN-R02/14**	Reference No.: **WPQR 14002** - File No.: **Z0492434**
Manufacturer:	**TICI S.R.L.**	Examiner or examining body: **DNV-GL-B.A. ITALIA S.r.l.**
Address:	**VIA DELL'ARTIGIANATO 6 MONTODINE (CR)**	
Code / Testing Standard:	**EN 15614-1**	
Date of Welding:	**03/07/2014**	

Range of qualification

Welding process(es):	**141 + 135 (ISO 4063)**
Type of joint and weld:	**BW, FW, ss, bs (141, 135) - nb, mb, sl (141) - mb, ml (135)**
Parent material group(s) and sub group(s):	**EN 15608 Gr. 1 - Covers the equal or lower specified yield strength steels of the same group**
Parent Material Tickness (mm) Butt Welds:	**7 ÷ 28**
Parent Material Tickness (mm) Fillet Welds:	**7 ÷ 16,8**
Weld Metal Thickness (mm) Butt Welds:	**1,4 ÷ 2,6 (141)** **3 ÷ 24 (135)**
Throat Thickness (mm):	**1,5 ÷ 3 (141)** **ALL (135)**
Single run / Multi run:	**SINGLE RUN (141)** **MULTI RUN (135)**
Outside Pipe Diameter (mm):	**> 150 mm (PA, PC ROTATED) - > 500 mm (OTHER POSITIONS)**
Filler Material Designation:	**EN ISO 636-A W42 4 W2Si1 (141)** **EN ISO 14341-A G 42 4 M G3Si1 (135)**
Filler Material Make:	**N.A.**
Filler Material Size:	**ALL, WITHIN HEAT INPUT LIMITS BELOW**
Designation of Shielding Gas / Flux:	**I1 (141) (ISO 14175)** **AR-CO2 M21 (135) (ISO 14175)**
Designation of Backing Gas:	**N.A.**
Type of Welding Current and Polarity:	**DCEN (141)** **DCEP (135)**
Mode of Metal Transfer:	**PULSED ARC**
Heat Input:	**MAX 2 kJ/mm WITH IMPACT TESTING (141)** **MIN 0,9 kJ/mm WITH HARDNESS TESTING (141)** **MAX 0,9 kJ/mm WITH IMPACT TESTING (135)** **MIN 0,5 kJ/mm WITH IMPACT TESTING (135)**
Welding Positions:	**ALL EXCEPT FOR PG AND J-L045**
Preheat Temperature:	**MIN 20 °C**
Interpass Temperature:	**MAX 150 °C**
Post-Heating:	**N.A.**
Post-Weld Heat-Treatment:	**N.A.**
Other Information:	**NONE**

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

DET NORSKE VERITAS 1864
This document is accepted by DET NORSKE VERITAS ITALIA SRL Notified Body 0496 for 97/23/EC (PED)
Date: 21/7/14

TICI S.R.L. - MONTODINE (CR)
Location

29/07/2014
Date of Issue

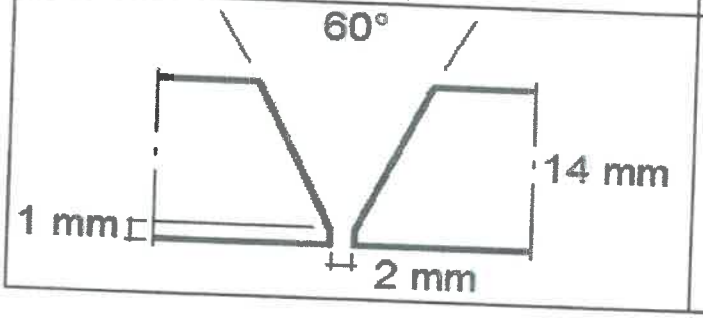
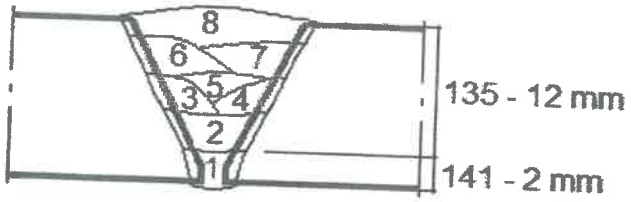
E. MASTANTUONO

Record of weld test

Location: **VIA DELL'ARTIGIANATO 6 MONTODINE (CR)**
Manufacturer's pWPS No.: **EN-02-14**
Manufacturer's WPQR No.: **EN-R02/14**
Manufacturer: **TICI S.R.L.**
Welder's Name: **BIANCHESSI OMAR - OB**
Mode of Metal Transfer: **PULSED SEMI-AUTOMATIC (135)**
Joint Type and Weld:
BW, P, ss (141, 135) - nb, sl (141) - mb, ml (135)

Examiner or examining body: **DNV-GL-B.A. ITALIA S.r.l.**
Reference No.: **WPQR 14002** - File No.: **Z0492434**
Method of Preparation and Cleaning: **BRUSHING GRINDING**
Parent Material Specification: **EN 15608 Gr.1.2 EN 10028-3 P275NH**
Material Thickness (mm): **14**
Outside Pipe Diameter (mm): **N.A.**
Welding Position: **PA**

Weld Preparation Details (Sketch):

Joint Design	Welding Sequences
	

Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input EN 1011-1 (kJ/mm) (*)	Metal transfer
1	141	2,4	144 - 146	11 - 13	DCEN	N.A.	0,7 - 0,8	1,2 - 1,6	N.A.
2 ÷ 8	135	1	208 - 210	27 - 29	DCEP	130 - 330	6,6 - 6,7	0,7	PULSED

(*) EN 1011-1 : $Q=k*(V*A/speed)*10^{-3}$ - k = 0,6 (141), 0,8 (135)

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 SIDERGAS (141)**
EN ISO 14341-A G 42 4 M G3Si1
SAF-FRO FILCORD-C (135)

Any Special Baking or Drying: **NONE**

Gas/Flux: Shielding: (ISO 14175) **I1 (141) nozzle 8 mm**
AR-CO2 M21 (135) nozzle 14 mm
Backing: **N.A.**

Gas Flow Rate: Shielding: **13 lt/min (141)**
15 lt/min (135)
Backing: **N.A.**

Tungsten Electrode Type/Size: **EN 26848 2,4 mm Tbi M3 WG-La15 (141)**

Details of Back Gouging/Backing: **N.A.**

Preheat Temperature: **20 °C**

Interpass Temperature: **150 °C**

Post-Heating: **N.A.**

Post-Weld Heat Treatment: **N.A.**

(Time, Temperature, Method : **N.A.**

Heating and Cooling Rates): **N.A.**

Other information, e.g.:

Weaving (maximum width of run): **N.A.**

Oscillation : amplitude, frequency, dwell time: **N.A.**

Pulse welding details: **SEMI-AUTOMATIC**

Distance contact tube/work piece: **N.A.**

Plasma welding details: **N.A.**

Torch angle: **75°**

A. MARZI - 29/07/2014
TICI S.R.L. - MONTODINE (CR)
Manufacturer
(name, signature, date)

This document is accepted by DET NORSKE VERITAS Notified Body 0496 for 97/23/EC (PED)
Date: 2/9/14 Signature:

E. MASTANTUONO

Test results

Manufacturer's WPQR No.: **EN-R02/14**
Visual: **FBR CONTROL - VT 186/14B**
Penetrant: **FBR CONTROL - PT 285/14B**
Tensile Tests: **EXOVA - 180005**

Examiner or examining body: **DNV-GL-B.A. ITALIA S.r.l.**
Reference No.: **WPQR 14002** - File No.: **Z0492434**
Radiography: **FBR CONTROL - RT 260/14B**
Ultrasonic: **NONE**
Temperature: **20 °C**

Type/No.	Re N/mm²	Rm N/mm²	A % on	Z %	Fracture Location	Remarks
Requirement		415 ÷ 550				
223.TR1.01 / T		481			OUT OF WELD	
223.TR1.02 / T		483			OUT OF WELD	

Bend Tests — Former Diameter: **40 mm**

Type/No.	Bend Angle	Elongation	Results
223.PI1.01 / SIDE T	180°		NO DEFECT
223.PI1.02 / SIDE T	180°		NO DEFECT
223.PI1.03 / SIDE T	180°		NO DEFECT
223.PI1.04 / SIDE T	180°		NO DEFECT

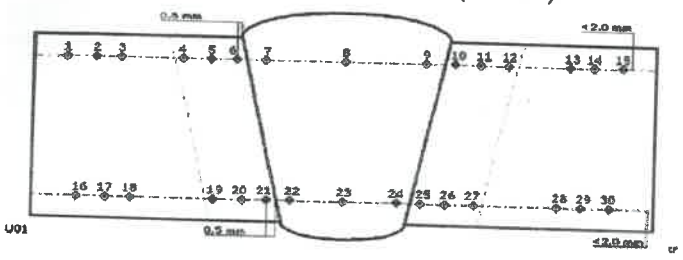
Macroscopic Examination: **EXOVA 180005**

Impact Test — Type: **KV2** — Size: **10 x 10 mm** — Requirement: **27 J**

Notch Location/Direction	Temp. °C	Values 1	2	3	Average	Remarks
223.RE2.01 / WM (1 mm CAP)	-20	143	155	129	142	
223.RE2.02 / HAZ (1 mm CAP)	-20	181	166	228	192	
223.RE2.03 / WM (1 mm ROOT)	-20	148	147	153	149	
223.RE2.04 / HAZ (1 mm ROOT)	-20	238	225	232	232	

Hardness Test (Type/Load): **MAX 380 HV 10**
Parent Metal: **142 - 141 - 144 - 139 - 147 - 146 - 145 - 149 - 146 - 144 - 140 - 142**
HAZ: **177 - 188 - 218 - 195 - 197 - 187 - 158 - 156 - 161 - 152 - 160 - 155**
Weld metal: **203 - 179 - 191 - 145 - 150 - 146**

Location of Measurements (Sketch)



Other Tests: **NONE**
Remarks: **NONE**
Tests Carried out in accordance with the requirements of: **EN 6892-1, EN 5173, EN 148-1, EN 6507-1**
Laboratory Report Reference No.: **EXOVA 180005**
Test results were **ACCEPTABLE**
Tests carried out in presence of: **E. MASTANTUONO NB 0496 DNV-GL - A. MARZI TICI S.R.L.**

DET NORSKE VERITAS 1864
This document is accepted by DET NORSKE VERITAS ITALIA SRL Notified Body 0496 for 97/23/EC (PED)
Date 29/7/14
E. MASTANTUONO

Welding Procedure Specification (Pwps/WPS)

Welding Procedure Specification: **EN-02-14**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **PULSED AUTOMATIC (135)**

Joint Type and Weld Type: **BW, P, ss (141, 135) - nb, sl (141) - mb, ml (135)**

Weld Preparation Details (Sketch)

Method of Preparation and Cleaning: **GRINDING BRUSHING**

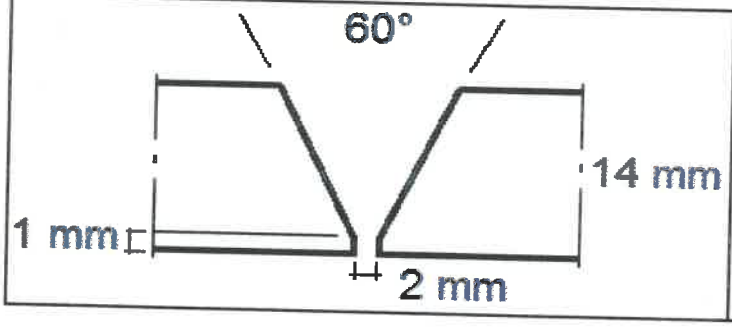
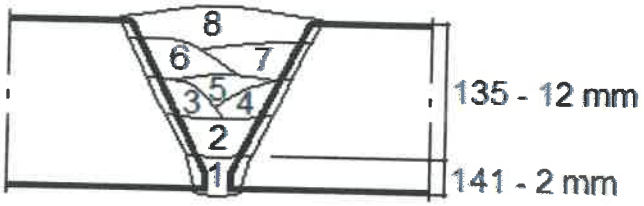
Parent Material Designation: **EN 15608 Gr. 1.1**

EN 10028-3 P275NH

Material thickness (mm): **14**

Outside Diameter (mm): **N.A.**

Welding Position: **PA**

Joint Design	Welding Sequences
	

Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input (EN 1011-1) (kJ/mm)
1	141	2,4	144 - 146	11 - 13	DCEN	N.A.	0,7 - 0,8	1,2 - 1,6
2 ÷ 8	135	1	208 - 210	27 - 29	DCEP	130 - 330	6,6 - 6,7	0,7

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 SIDERGAS (141)**
EN ISO 14341-A G 42 4 M G3Si1
SAF-FRO FILCORD-C (135)

Any Special Baking or Drying: **NONE**

Other information, e.g.:

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: - Shielding: **I1 (141) nozzle 8 mm**
AR-CO2 M21 (135) nozzle 14 mm

Oscillation : amplitude, frequency, dwell time: **N.A.**

- Backing: **N.A.**

Pulse welding details: **SEMI-AUTOMATIC (135)**

Gas Flow Rate - Shielding: **13 lt/min (141)**
15 lt/min (135)

Distance contact tube/work piece: **20 mm (135)**

- Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size: (141) **EN 26848 2,4 mm Tbi M3 WG-La15** Torch angle: **75°**

Details of Back Gouging/Backing: **N.A.**

Preheat Temperature: **20 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

(Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. MARZI - 03/07/2014
TICI S.R.L. - MONTODINE (CR)
Manufacturer
(Name, signature, date)



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Test report n° *EN 10204, type :* **180005** *3.2* **Rev.0**

Client
Cod. 1263

T.I.C.I. SRL
Via Dell 'Artigianato,6
26010 Montodine CR
Italy

Your ref.	Order n.	D.D.T. n.123	data	27/06/2014
Our ref.	Report n.	**180005**	data	**29/07/2014**
	Job n.	58023	data	07/07/2014

Remarks Welding procedure Qualification EN-R02/14
Welding Process : 141+135 - Welder : OB

Project

Client Reference	UNI EN ISO 15614-1:2012
Test standard	UNI EN ISO 6892-1:2009 - UNI EN ISO 5173:2012 - UNI EN ISO 148-1:2011 - UNI EN ISO 6507-1:2006

This Report is made of n° 6 pages including this cover plus the following pages

Test	Pag.
Macrographic examination	1
Hardness test	1
Tensile test	1
Impact test	1
Bend test	1

This Report (RPR) contains tests results on the following material:

Ref.	Identification	Material	DN / Thk [mm]	Remarks
128223	Weld Plate EN-R02/14	ASTM A516 Gr.60	14.00	

Lab Manager | Customer | Inspector | Inspector

Exova s.r.l.
Luca Cantoni

29 JUL 2014

DNV Milan 29 JUL 2014

General conditions:
1. The Customer accepts general conditions and prices fixed by the laboratory to perform the tests.
2. Test results will be communicated only by means of test report except for different contractual agreement.
3. Tests sample will be destroyed 30 days after test except for different written Client request.
4. The spare will be destroyed 90 days after date of receipt for different written Client request.
5. The test results described in the following test report are referring only to the sample mentioned in it.
6. The date of material receivement is the same as the date of job opening. The date of testing is the same as the date of test report, except for different info.
7. The laboratory has examined the material sampled an supplied by the Client in compliance with standard request.

This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory

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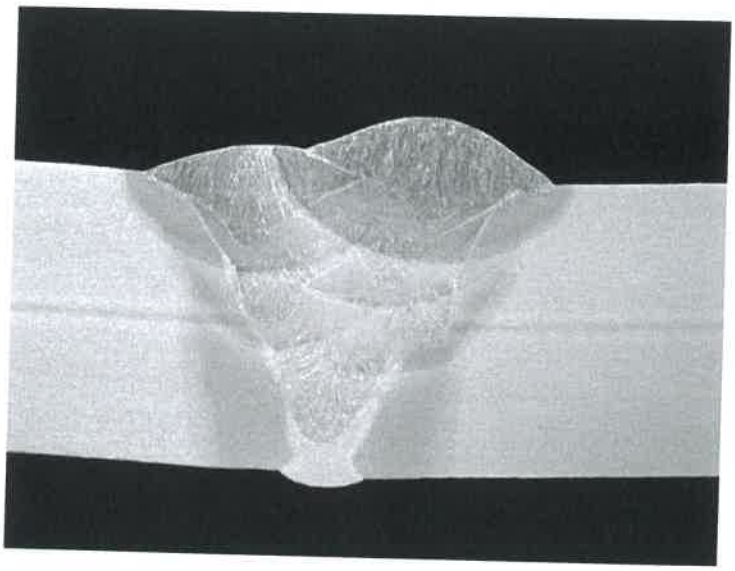
Test report n° 180005 Rev.0

Equipment n.	PHOTOGRAPHIC DOCUMENTATION	Pag. 1 of 1
1436		

Test Ref.	
Laboratory	Client
223.FO01.1	EN-R02/14

Etching : NITAL 3%

Magnification : x 2.5



EN-R02/14

M1

The macrographic examination at 25x of the weld relevant to the subject welding procedure test has shown no defects.

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 17639:2013

Remarks

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
SPE Cristian Piloni			

Exova s.r.l.

29 JUL 2014

DNV Milan

29 JUL 2014

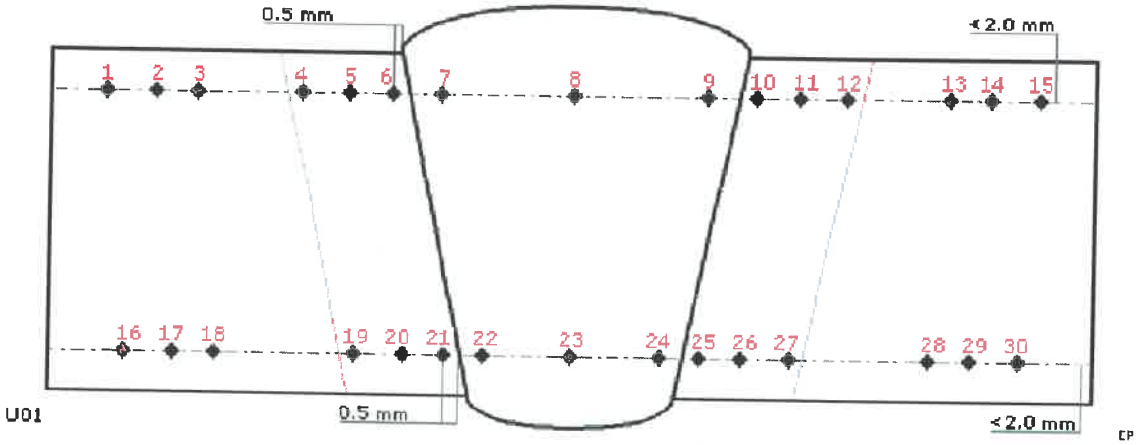
This page is binded to references n. *180005 (job 58023)* *whose details are indicated on the cover*

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Test report n° 180005 Rev.0

Equipment n.	HARDNESS TEST Internal procedure POI-07	Pag. 1 of 1
9		



EN-R02/14
M1

HV 10	
Point #	Value
#1	142
#2	141
#3	144
#4	177
#5	188
#6 Max	218
#7	203
#8	179
#9	191
#10	195
#11	197
#12	187
#13	139
#14	147
#15	146
#16	145
#17	149
#18	146
#19	158
#20	156

HV 10	
Point #	Value
#21	161
#22	145
#23	150
#24	146
#25	152
#26	160
#27	155
#28	144
#29	140
#30	142

-	
Point #	Value

-	
Point #	Value

-	
Point #	Value

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 6507-1:2006

Remarks Required : 380 HV10 Max

Test performed in Crema Laboratory Via della Pierina 9/11

Operator SPE Cristian Pilonl

Customer

Inspector

Inspector

EXOVA S.r.l.

29 JUL 2014

Milan

29 JUL 2014

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Test report n° 180005 Rev.0

Equipment n. 1153

TENSILE TEST

Internal procedure POI-01

Test Ref. Lab.	Client	T Test °C	Posizione *Position*	Dimensioni *Dimensions* mm			Lo mm	Re N/mm²	Rp0.2% N/mm²	Rp0.5% N/mm²	Rt0.2% N/mm²	Rt0.35% N/mm²	Rt0.5% N/mm²	E	Rm N/mm²	A %	Z %	Rif. *Ref.*
Richiesti *Required*															415÷550			
223.TR1.01	EN-R02/14	+20	T Weld	25.00	x	13.60		-	-	-	-	-	-		481	-		#
223.TR1.02	EN-R02/14	+20	T Weld	25.00	x	13.10		-	-	-	-	-	-		483	-		#

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 6892-1:2009

Remarks X = Prismatic - # Broken out of weld

Rp% determined by offset method - A% = determined after fracture - Values rounded to the nearest

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
SPE Luigi Vailati Exova s.r.l.	29 JUL 2014		DNV Milan 29 JUL 2014

This page is binded to references n. *180005 (job 58023)* *whose details are indicated on the cover*

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Test report n° 180005 Rev.0

Exova

Equipment n.	**IMPACT TEST** *Internal procedure POI-02*	Pag. 1 of 1
814		

Nominal machine energy : 450J

Test Ref. Lab.	Test Ref. Client	T Test °C	Posizione Position	Dimensioni Dimensions mm			Intaglio Notch	Richiesti Required	A Single 27 Valore Value J	A Shear %	A Lateral E.	B Single 27 Valore Value J	B Shear %	B Lateral E.	C Single 27 Valore Value J	C Shear %	C Lateral E.	Media Average J	Rif. Ref.
223.RE2.01	EN-R02/14	-20	WM(1mmCAP)	10	x	10.00	KV2		143			155			129			142	
223.RE2.02	EN-R02/14	-20	HAZ (1mmCAP)	10	x	10.00	KV2		181			166			228			192	
223.RE2.03	EN-R02/14	-20	WM(1mmroot)	10	x	10.00	KV2		148			147			153			149	
223.RE2.04	EN-R02/14	-20	HAZ (1mmroot)	10	x	10.00	KV2		238			225			232			232	

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 148-1:2011

Remarks

Test performed in Crema Laboratory Via della Pierina 9/11

Operator — Customer — Inspector — Inspector

Exova s.r.l.

TICI 29 JUL 2014

DNV Milan 29 JUL 2014

This page is binded to references n. *180005 (job 58023)* *whose details are indicated on the cover*

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Test report n° 180005 Rev.0

Equipment n. 1123

BEND TEST

Internal procedure POI-03

Test Ref. Lab.	Test Ref. Client	T Test °C	Tipo Type	Dimensioni Dimensions mm			Mandrino Jig mm	Distanza rulli Distance rollers mm	Angolo angle °	Lo Lo mm	Allungamento Elongation %	Esito Results	Note Remarks	Rif. Ref.
223.PI1.01	EN-R02/14	+20	Side Bend T	10.0	x	14.0	40	66	180			No Defect		
223.PI1.02	EN-R02/14	+20	Side Bend T	10.0	x	14.0	40	66	180			No Defect		
223.PI1.03	EN-R02/14	+20	Side Bend T	10.0	x	14.0	40	66	180			No Defect		
223.PI1.04	EN-R02/14	+20	Side Bend T	10.0	x	14.0	40	66	180			No Defect		

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 5173:2012

Remarks Test method "FORMER"

Test performed in Crema Laboratory Via della Pierina 9/11

Operator: SPE Luigi Vailati, Exova S.r.l.

Customer: TICI, 29 JUL 2014

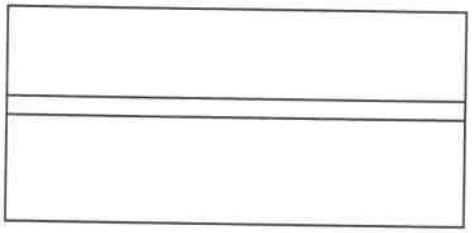
Inspector

Inspector: DNV Milan, 29 JUL 2014

FBR CONTROL TEL.02-9662740 fbrcontrol@gmail.com	CERTIFICATO CONTROLLO RADIOGRAFICO Radiographic Examination Record Page 1 of 2	RT N° 260/14B

CLIENTE – Client EXOVA		ORDINE – Order			COMMESSA – Job 58023	
DESCRIZIONE COMPONENTE ISPEZIONATO – Description of Inspected item QUALIFICA SALDATORE EN-R02/14 OB					IDENTIFICAZIONE - Identification MIF 128223	
MATERIALE – Material grade ASTM A A516°60		TRATTAMENTO T. – H.T. Condition N.A.			RANGE DI SPESSORI – Thk range 14 mm	
PROCED. D'ESAME – Examination Proc. EN ISO 15614-1		SPECIFIC / ACCETABILITY EN ISO 15614-1			MACCHIA FOCALE – Source size 1,5X1,5	
TIPO DI SORGENTE – Isotopo N.A.		TENSIONE – 300 MHF Di ENERGIA – 3mA			DENSITA' – Density 1,8÷4	
TIPO IQI – IQI Type	E.N. X	ASME	ASTM	TIPO DI PENETRAMETRO – Penetrameter type FILO – Wire X FORO – Hole		
PENOMBRA GEOMETRICA – Ug 0,042	POSIZIONE SORGENTE – Source position INTERNA – inside ESTERNA – Outside X			POSIZIONE FILM – Film position INTERNA – inside ESTERNA – Outside X		
POSIZIONE IQI - IQI Position	LATO SORGENTE - Source Side	X		LATO FILM - Film Side		
IDENTIFICAZ. IQI - Identification IQI 10 FE EN	SENSIBILITA' – Sensitività 2%			PELLICOLA – Film brand and designation D7 GEVARET		
DISTANZA SOEGENTE / PEZZO – Piece / Source Distance 700	CARICO CASSETTE- Cassette Loading SINGOLO FILM-Single film X DOPPIO FILM-Double film					
TEMPO DI ESPOSIZIONE – Exposure time 1 min.	TIPO E TEMPO DI SVILUPPO – Type & time of development G128-5 min.					
SCHERMO – Screen FRONT – Frontale 0,05 POSTERIORE – Back 0.10						
NOTE:						

MAPPATURA FILMS - Films Location Sketch



	FBR CONTROL Q.C. Inspector II Level	CLIENTE Client	Inspector
NOME - Name	LEVEL II SNT TC1 A UNI-EN 473 ISO 9712 UT RT MT PT VT		
FIRMA - Signature			
DATA - Date	11/07/2014	29 JUL 2014	

DNV Milan

FBR CONTROL TEL.02-9662740 fbrcontrol@gmail.com	CERTIFICATO CONTROLLO RADIOGRAFICO Radiographic Examination Record Page 2 of 2	RT N°260/14B

IDENTIFICAZIONE PELLICOLA Film Identification			∅	Sp. Thk.	RADIATION THROUGHT 1 - Single W. 2 - Double W. 3 - Panoramic	X RAY Y RAY	DIFETTI Defects	GIUDIZIO Evaluation	OPERATOR Operatore
N° Serie Serial N°	GIUNTO N° Joint N°	Tratto Rad. Film Area							
MIF128223		0-1		14	1	X	P.	ACC.	OB
MIF128223		1-2		14	1	X	P.	ACC.	OB

VALUTAZIONE DEI RISULTATI - Evaluation of RT inspection

ACC - ACCETTABILE - Acceptable	R - RIPARARE - Repair	RS - RIPETERE - Repeated

SALDATURE/Welds		DIFETTI – Defects		FUSIONI/Steel Castings	
P	porosita' - porosity	CR	cricche - cracks	A	Inclusioni di gas-gas porosity
T	tarli –worm hole	W	inclusione wolframio - tungsten inclus.	B	Inclusioni di sabbia e scoria-sand e slag inclusion
SOF	soffiature - porosity	I	Insellamento-Root Concavity	C	Ritiri-shrinkages
SC	inclusione di scoria - slag inclusion	FD	Film Defect	D	Cricche-cracks
MF	mancanza di fusione-lack of fusion			E	Strappi a caldo-hot tears
MP	Mancanz. di penetr.-incom. Penetration			F	Inserti-inserts

GIUDIZIO SULLA PROCEDURA – Evaluation of RT Procedure

APPROVATA - Approved		RIGETTATA – Rejected	
	FBR CONTROL Q.C. Inspector II Level GALLUCCI MASSIMO LEVEL II SNT TC1A UNI-EN 473 ISO 9712 UT RT MT PT VT	CLIENTE Client	Inspector DET NORSKE VERITAS 1864 DNV Milan
NOME - Name		A. MARZI	
FIRMA - Signature	[signature]	[signature]	[signature]
DATA - Date	11/07/2014	29 JUL 2014	

FBR CONTROL Cogliate (MI)	NON DESTRUCTIVE TEST CERTIFICATE FOR VISUAL EXAMINATION	VT N°186/14B

CLIENTE/ Customer:**EXOVA**	COMMESSA/ Job:**58023**
DISEGNO/ Drawing:	ORDINE/ Order:
N°PROGRESSIVO/Progressiv N° :	MATERIALE/Material : **ASTM A516°60**
OBJECT/Oggetto : **QUALIFICA SALDATORE EN-R02/14 MIF128223 OB**	
SURFACE CONDITIONS/Condizioni Superficie :**AS WELDED**	
EXTENT OF SCANNING/Estensione del Controllo : **100% ON WELDING**	
PROCEDURE/Procedura : **EN ISO 15614-1**	
ACCEPT. STD./Criterio Accett. : **EN ISO 15614-1**	

☐ ARTIFICIAL LIGHT/Luce Artificiale	☒ NATURAL LIGHT/Luce naturale	☐ ENDOSCOPE/Endoscopio
TECHNIQUE/Tecnica		
☒ DIRETTO/Direct	☐ TRANSLUCENT/Traslucido	☐ REMOTE/Remoto

SKETCH

RESULTS/Risultati : **SATISFACTORY**

REMARKS/Note :

	OPERATOR - Operatore	CUSTOMER-Cliente	ISPECTOR
NAME-Nome:	GALLUCCI MASSIMO LEVEL II SNT TC1 A UNI EN 473 ISO 9712 UT RT MT PT VT	TM A. MARZI	
SIGNED-Firma:			
DATE-Data:	11/07/2014	29 JUL 2014	DNV Milan

FBR CONTROL TEL-02-9662740 fbrcontrol@gmail,com	N.D.E. CERTIFICATE DYE PENETRANT EXAMINATION	PT 285/14B

CUSTOMER/Cliente: EXOVA			P.O./Ordine:	
JOB N°/Commessa:58023			DRAWING:	
WORK INSTRUCTION:EN ISO 15614-1 Procedura di controllo:			ACCEPTANCE CRITERIA: EN ISO 15614 Criteri di Accettabilità	
EXAMINATION METHOD: Metodo d'esame	VISIBLE CONTRAST COLOR Contrasto di colore visivo	X	FLUORESCENT Fluorescente	
NATURAL LIGHTING: X Luce naturale: ≥ 1000 Lux	ARTIFICIAL LIGHT: Luce artificiale		WOOD LAMP/ lampada di wood:	
SURFACE CONDITION: ASWELDED Condizioni superficie			EXTENT OF INSPECTION: 100% ON WELDING Estensione del controllo	
EXAMINATION PRODUCT: Prodotti utilizzati	TYPE: Tipo		MANUFACTURER: Fabbricante	DESIGNATION: Designazione
CLEANER: PULIZIA	SOLVENT		NDT elite	BC1 BN-B1211127S
PENETRANT: Penetrante	LAVABILE CON ACQUA - Water Washable		NDT elite	K71 B2.P/PLUS BN-12118PS
PENETRANT REMOVER: Rimovente del penetrante	ACQUA - Water			
DEVELOPER: Rilevatore	UMIDO (solvente)- Wet(solvent)		NDT elite	D112A BN-10589WS
PENETRATING APPLICATION: Applicazione penetrante			BRUSH: Pennello	SPRAYING: X Spruzzatura
PENETRATION MIN TIME: 15 min Tempo di penetrazione			CLEANING: Lavaggio	WATER: Acqua X / SOLVENT: Solvente
DRYING: Asciugatura			NATURAL: Naturale	AIR: X Ad aria
DEVELOPER APPLICATION: Applicazione sviluppatore	SPRAYING Spruzzatura	X	MAX CHECKING TIME: : Tempo massimo di lettura:	10'÷30'

NOTE:

MATERIAL INSPECTED DESCRIPTION / Descrizione Materiale Ispezionato: QUALIFICA SALDATORE MIF 128223 EN-R02/14

MATERIAL:A516°60 OB

RESULT SATISFACTORY/ risultato soddisfacente

DATE OF EXAMINATION: 11/07/2014	THIRD PART	CUSTOMERS REPRESENTATIVES:
GALLUCCI MASSIMO LEVEL II SNT TC1 A UNI-EN 473 ISO 9712 UT RT MT PT VT	DNV Milan	29 JUL 2014

Welding Procedure Qualification Record Form (WPQR)

Welding procedure qualification - Test certificate

Manufacturer's WPQR No.:	**EN-R04/15**	Reference No.: **WPQR15008** - File No.: **Z0492434**
Manufacturer:	**TICI S.R.L.**	Examiner or examining body : **DNV-GL-B.A. ITALIA S.r.l.**
Address:	**VIA DELL'ARTIGIANATO 6 MONTODINE (CR)**	
Code / Testing Standard:	**EN 15614-1**	
Date of Welding:	**10/03/2015**	

Range of qualification

Welding process(es):	**141 + 111 (ISO 4063)**
Type of joint and weld:	**BW, FW, BRANCH CONNECTIONS WITH AN ANGLE ≥ 60°, ss, bs (141, 111) - nb, mb, ml (141) - mb, sl (111)**
Parent material group(s) and sub group(s):	**EN 15608 Gr. 8.2 to Gr. 8**
Parent Material Tickness (mm) Butt Welds:	**3 ÷ 12**
Parent Material Tickness (mm) Fillet Welds:	**3 ÷ 7,2**
Weld Metal Thickness (mm) Butt Welds:	**2,1 ÷ 6 (141)** **2,1 ÷ 3,9 (111)**
Throat Thickness (mm):	**ALL (141)** **2,25 ÷ 4,5 (111)**
Single run / Multi run:	**MULTI RUN (141)** **SINGLE RUN (111)**
Outside Pipe Diameter (mm):	**≥ 44,45**
Filler Material Designation:	**EN ISO 14343 25 20 (141)** **EN ISO 3581-A E 25 20 R (111)**
Filler Material Make:	**HAINEK (141) - VOESTALPINE BÖHLER WELDING AVESTA (111)**
Filler Material Size:	**ALL, WITHIN HEAT INPUT LIMITS BELOW**
Designation of Shielding Gas / Flux:	**I1 (141) (ISO 14175)**
Designation of Backing Gas:	**I1 (141) (ISO 14175)**
Type of Welding Current and Polarity:	**DCEN (141)** **DCEP (111)**
Mode of Metal Transfer:	**N.A.**
Heat Input:	**MAX 0,7 kJ/mm (141)** **MIN 0,4 kJ/mm WITH HARDNESS TESTING (141)** **MAX 0,7 kJ/mm (111)** **MIN 0,4 kJ/mm WITH HARDNESS TESTING (111)**
Welding Positions:	**ALL EXCEPT FOR PG AND J-L045**
Preheat Temperature:	**MIN 15 °C**
Interpass Temperature:	**MAX 150 °C**
Post-Heating:	**N.A.**
Post-Weld Heat-Treatment:	**N.A.**
Other Information:	**NONE**

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

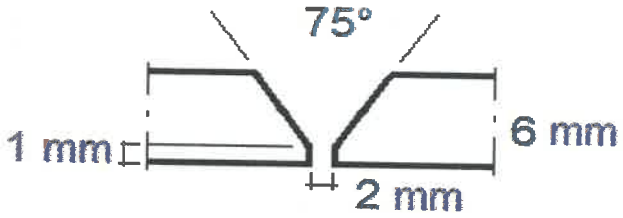
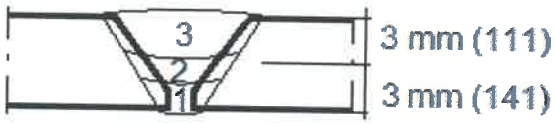
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Notified Body 0496 for 97/23/EC (PED)

TICI S.R.L. - MONTODINE (CR) Location	**02/04/2015** Date of Issue	**E. MASTANTUONO** Examiner or examining body Name, date and signature

Record of weld test

Location: **VIA DELL'ARTIGIANATO 6 MONTODINE (CR)**
Manufacturer's pWPS No.: **EN-04-15**
Manufacturer's WPQR No.: **EN-R04/15**
Manufacturer: **TICI S.R.L.**
Welder's Name: **SOCCINI RICCARDO - RS**
Mode of Metal Transfer: **N.A.**
Joint Type and Weld: **BW, T, ss (141, 111) - nb, ml (141) - mb, sl (111)**
Weld Preparation Details (Sketch):

Examiner or examining body: **DNV-GL-GL-B.A. ITALIA S.r.L.**
Reference No.: **WPQR15008** - File No.: **Z0492434**
Method of Preparation and Cleaning: **BRUSHING, GRINDING**
Parent Material Specification: **EN 15608 Gr.8.2 - ASTM A240 310S**
Material Thickness (mm): **6**
Outside Pipe Diameter (mm): **88,9**
Welding Position: **PA**

Joint Design	Welding Sequences
	

Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input EN 1011-1 (kJ/mm) (*)	Metal transfer
1 - 2	141	2,4	119 - 121	9 - 11	DCEN	N.A.	1,1 - 1,2	0,5 - 0,7	N.A.
3	111	3,2	103 - 105	21 - 23	DCEP	N.A.	2,7 - 2,8	0,6 - 0,7	N.A.

(*) EN 1011-1 : $Q=k*(V*A/speed*10^{-3})$ - k = 0,6 (141), 0,8 (111)

Filler Material Designation and Make: **EN ISO 14343 25 20 HAINEK C216/24 (141)**
EN ISO 3581-A E 25 20 R VOESTALPINE BÖHLER WELDING AVESTA 310 (111)

Any Special Baking or Drying: **NONE**

Gas/Flux: Shielding: **I1 (141) nozzle 8 mm**
Backing: **I1 (141)**

Gas Flow Rate: Shielding: **13 lt/min (141)**
Backing: **15 lt/min (141)**

Tungsten Electrode Type/Size: (141) **EN 26848 2,4 mm Tbi M3 WG-La15**

Details of Back Gouging/Backing: **N.A.**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **N.A.**

Post-Weld Heat Treatment: **N.A.**

(Time, Temperature, Method : **N.A.**

Heating and Cooling Rates): **N.A.**

Other information, e.g.:

Weaving (maximum width of run): **N.A.**

Oscillation : amplitude, frequency, dwell time: **N.A.**

Pulse welding details: **N.A.**

Distance contact tube/work piece: **N.A.**

Plasma welding details: **N.A.**

Torch angle: **75°**

A. MARZI - 02/04/2015
TICI S.R.L. - MONTODINE (CR)
Manufacturer
(name, signature, date)

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E. MASTANTUONO
Examiner or examining body
Name, date and signature

Welding Procedure Specification (pWPS/WPS)

Welding Procedure Specification: **EN-04-15**

WPQR No.: **EN-R04/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW, T, ss (141, 111) - nb, ml (141) - mb, ml (111)**

Weld Preparation Details (Sketch)

Method of Preparation and Cleaning: **GRINDING, BRUSHING**

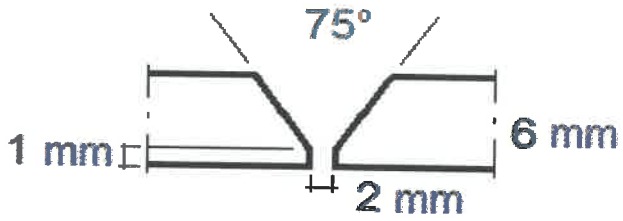
Parent Material Designation: **EN 15608 Gr. 8.2**

ASTM A240 310S

Material thickness (mm): **6**

Outside Diameter (mm): **88,9**

Welding Position: **PA**

Joint Design	Welding Sequences
	

Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input (EN 1011-1) (kJ/mm)
1 - 2	141	2,4	119 - 121	9 - 11	DCEN	N.A.	1,1 - 1,2	0,5 - 0,7
3	111	3,2	103 - 105	21 - 23	DCEP	N.A.	2,7 - 2,8	0,6 - 0,7

Filler Material Designation and Make: **EN ISO 14343 25 20 HAINEK C216/24 (141)**
EN ISO 3581-A E 25 20 R VOESTALPINE
BÖHLER WELDING AVESTA 310 (111)

Other information, e.g.:

Any Special Baking or Drying: **NONE**

Designation Gas/Flux: - Shielding: **I1 (141) nozzle 8 mm**

- Backing: **I1 (141)**

Gas Flow Rate - Shielding: **13 lt/min (141)**

- Backing: **15 lt/min (141)**

Tungsten Electrode Type/Size: **(141) EN 26848 2,4 mm Tbi M3 WG-La15**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

(Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

Weaving (maximum width of run): **N.A.**

Oscillation : amplitude, frequency, dwell time: **N.A.**

Pulse welding details: **N.A.**

Distance contact tube/work piece: **N.A.**

Plasma welding details: **N.A.**

Torch angle: **75°**

A. MARZI - 10/03/2015
TICI S.R.L. - MONTODINE (CR)
Manufacturer
(Name, signature, date)

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Notified Body 0496 for 97/23/EC (PED)
Date: 10/3/15 Sign:
10/3/15

Test results

Manufacturer's WPQR No.: **EN-R04/15**
Visual: **IRTEC SRL - 6457/15**
Penetrant: **IRTEC SRL - 6458/15**
Tensile Tests: **EXOVA - 183850**

Examiner or examining body: **DNV-GL-GL-B.A. ITALIA S.r.L.**
Reference No.: **WPQR15008** - File No.: **Z0492434**
Radiography: **IRTEC SRL - 6456/15**
Ultrasonic: **NONE**
Temperature: **20 °C**

Type/No.	Re N/mm²	Rm N/mm²	A % on	Z %	Fracture Location	Remarks
Requirement		**≥ 515**				
847.TR1.01		**568**			**IN WELD**	
847.TR1.02		**553**			**IN WELD**	

Bend Tests — Former Diameter: **25 mm**

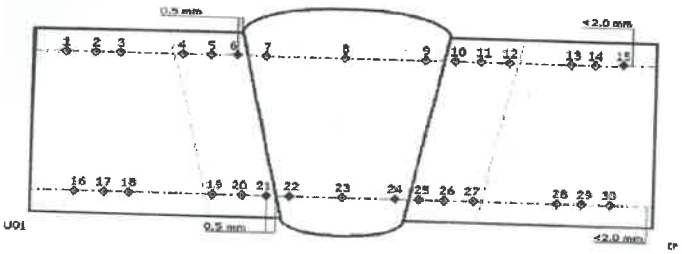
Type/No.	Bend Angle	Elongation	Results
847.PI1.01 FACE	**180°**		**NO DEFECT**
847.PI1.02 FACE	**180°**		**NO DEFECT**
847.PI1.03 ROOT	**180°**		**NO DEFECT**
847.PI1.04 ROOT	**180°**		**NO DEFECT**

Macroscopic Examination: **EXOVA 183850**

Impact Test — Type: — Size: — Requirement:

Notch Location/Direction	Temp. °C	Values 1	2	3	Average	Remarks

Location of Measurements (Sketch)



Hardness Test (Type/Load): **HV10**
Parent Metal: **177 - 170 - 174 - 177 - 172 - 174 - 183 - 185 - 181 - 172 - 177 - 180**
HAZ: **165 - 157 - 150 - 150 - 149 - 162 - 162 - 164 - 159 - 168 - 170 - 167**
Weld metal: **172 - 167 - 174 - 156 - 150 - 164**

Other Tests: **NONE**
Remarks: **NONE**
Tests Carried out in accordance with the requirements of:
Laboratory Report Reference No.: **EXOVA 183850**
Test results were **ACCEPTABLE**
Tests carried out in presence of: **E. MASTANTUONO NB 0496 DNV-GL - A. MARZI TICI S.R.L.**

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E. MASTANTUONO
Examiner or examining body
Name, date and signature

Acciai Speciali Terni S.p.A. con Unico Socio

Viale B. Brin, 218 - 05100 Terni - Italia

11070092

AZIENDA CON SISTEMA DI GESTIONE CERTIFICATO DA IGQ SECONDO ISO 9001

SPECIFICA: ASTM A 240
SPECIFICATION:
ANFORDERUNGEN:

CERTIFICATO DI COLLAUDO EN 10204/3.1
INSPECTION CERTIFICATE
CERTIFICATE DE RECEPTION
ABNAHMEPRÜFZEUGNIS N°

1423973

PAG. 1/ 1

ORDINE 08/07/

CLIENTE: F.LLI PINATO S.N.C DI MARINA E PATR
CUSTOMER: VIALE LOMBARDIA 51/53
CLIENT: BRUGHERIO
BESTELLER: 20861 MB ITALIA

ORDINE CLIENTE N°:
CUSTOMER ORDER N°:
COMMANDE DU CLIENT N°:
BESTELLUNG Nr:

ORDINE INTERNO N°: 8X130556
INTERNAL ORDER N°:
COMMANDE INT. N
WERKS Nr:

C.P.C. INOX SPA
VIA MONZA 1-ZONA INDUSTRIALE
GESSATE
20060 MI ITALIA

AVV. DI SPEDIZ. N°: BP089097
SHIPPING NOTICE N°:
AVIS D'EXPEDITION N°:
VERSANDANZEIGE Nr:

PRODOTTO: STAINLESS STEEL COILS
PRODUCT
PRODUIT:
PRUFGEGENSTAND:

TIPO D'ACCIAIO: 310S
STEEL TYPE:
TYPE D'ACIER:
MARKENBEZEICHNUNG:

TIMBRO DEL PRODUTTORE: Acciai Speciali Terni S.p.A con unico Socio
PRODUCER TRADE MARK:
MARQUE DU PRODUCTEUR:
ZEICHEN DES LIEFERWERKS:

TIMBRO DEL RESPONSABILE INCARICATO:
INSPECTOR STAMP:
MARQUE DU RESPONSABLE CHARGE:
STEMPEL DES WERKSSACHVERSTÄNDIGEN:

COMPOSIZIONE CHIMICA / CHEMICAL COMPOSITION / COMPOSITION CHIMIQUE / CHEMISCHE ZUSAMMENSETZUNG

N° ROTOLO COIL N° N° BOBINE BAND Nr.	N° COLATA HEAT N° N° COULÉE SCHMELZE Nr.	% C	% Mn	% Si	% P	% S	% Cr	% Ni	% Mo	% N	% Ti	% Cu	% Co	%
651860	0439938	.048	1.03	.510	.025	.001	24.09	19.08	.2 0	.024		.240	.190	

TRATT. TERMICO - RICOTTURA DI SOLUBILIZZ.: 1100^C ARIA - ACQUA NEBULIZZATA - ACQUA
HEAT TRATMENT - ANNEALING: AIR - WATER SPRAY - WATER COOLING
TRAITEMENT - THERMIQUE - HYPERTREMPE: AIR - EAU ATOMISEE - EAU
WARMEBEHANDLUNG - ABSCHRECKEN: °C/LUFT - SPRÜHWASSER - WASSER

PROCESSO DI ELABORAZIONE: E + AOD + CC
STEELMAKING PROCESS
PROCEDE D'ELABORATION
ERSCHMELZUNGSART

IL MATERIALE È RESISTENTE ALLA CORROSIONE INTERGRANULARE SECONDO: ASTM A262 E
THE MATERIAL IS RESISTANT TO INTERCRYSTALLINE CORROSION IN DACCORDANCE WITH:
LE MATERIEL EST RESISTANT A LA CORROSION INTERGRANULAIR SELON:
DIE OBENGENANNTE SCHMELZE IST BESTÄNDIG GEGEN INTERKRISTALLINE KORROSION GEMÄSS:

RISULTATI DELLE PROVE / TEST RESULTS / RESULTATS DES ESSAIS / ERGEBNIS DER PRÜFUNGEN (1 N/mm² = 1 M Pa)

N° COLLO PACKAGE N° N° COLIS KISTEN Nr.	N° ROTOLO COIL N° N° BOBINE BAND Nr.	DIMENSIONI DIMENSIONS ABMESSUNGEN mm	N° PEZZI PIECES N° N° PIECES STÜCKZAHL	FINITURA FINISH FINITION AUSFÜHRG	PESO WEIGHT POIDS GEWICHT Kg.	PRELIEVO (1)	SENSO (2)	TRAZIONE / TENSILE / TRACTION / ZUGVERSUCH Rp 0,2% N/mm²	Rp 1% N/mm²	Rm N/mm²	A % Lo = 2"	A % Lo = 80	A % Lo = A5	DUREZZA HARDNESS DURETE HARTE HR B	PIEGA BEND PLIAGE FALTVERSUCH α = 180°	GRANA GRAIN KORN ASTM
CARATTERISTICHE RICHIESTE - REQUIRED CHARACTERISTICS - CARACTERISTIQUES REQUISES - ANFORDERUNGEN								≥ 205	≥	>515	≥ 40	≥	≥	≤ 95	≤	
C84939	651860	6.00X1020.0	1	1NAC	17750	T	T	2[illegible]2		590	49.5			80.0		
C84939						C	T	2[illegible]5		597	49.1			80.0		

COPIA CONFORME ALL'ORIGINALE F.lli PINATO

COMPLIES WITH PD 2000/53/EC

Acciai Speciali Terni S.p.A.
con Unico Socio
FIRMA DEL RESPONSABILE INCARICATO
INSPECTOR SIGNATURE
SIGNATURE DU RESPONSABLE CHARGÉ
UNTERSCHRIFT DES WERKSSACHVERSTÄNDIGEN

Certificato emesso automaticamente

TERNI, li 12-03-2014 L. ROTINI

* Accordo tra Governo Italiano, Governi Regionali, Organizzazione Amministrativa Germanica, Organizzazione Austriaca, Organizzazione Svizzera e Organizzazione TÜV per la redazione, la validità e l'accettazione dei rapporti di prova, certificati di verifica e sorveglianza in Materia di Tecniche Controllo e Organizzazione
* Accord entre le Gouvernement Italien, les Gouvernements Régionaux, l'Organisation Administrative Allemande, l'Organisation Autrichienne, l'Organisation Suisse et l'Organisation TÜV pour l'établissement, la validité et l'acceptation des rapports d'essai, des certificats de vérification et de surveillance en matière de techniques de contrôle et d'organisation
* Übereinkommen zwischen der Italienischen Regierung, den Regionalregierungen, der Deutschen Verwaltungsorganisation, der Österreichischen Organisation, der Schweizerischen Organisation und der TÜV-Organisation über die Ausstellung, Gültigkeit und Anerkennung von Prüfberichten, Bescheinigungen über Überprüfungen und Überwachungen auf dem Gebiet der Kontrolltechniken und der Organisation

1) *Sampling* - Location - Ort
T = Testa - Top - Tête - Kopf
C = Coda - Bottom - Pied - Fuss

2) *Sens* - Direction - Richtung
T = Trasversale - Transverse - Traverse - Quer
L = Longitudinale - Longitudinal - Long - Längs

Certifichiamo che i prodotti sopra elencati sono conformi alle prescrizioni dell'ordine
We certify that products listed above comply with order requirements
Nous certifions que les produits ci-dessus énumérés sont conformes aux prescriptions de la commande
Wir bestätigen, dass die Lieferung den Vorschriften der Bestellannahme entspricht

MARCATURE: War - Type
MARKING Heat n° - Coil N°
MARQUAGE: Thickness - Finish
KENNZEICHNUNG:

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Date 12/3/15 Sign

MOD. 2114 - 35855190

HAINEK

HAINEK S.r.l. - Via Del Commercio, 7 - 26013
Crema (CR) - ITALY - Tel. +39 0373 250112
e-mail: info@hainek.com Fax +39 0373 204382

www.hainek.com

P.IVA 01222970194 R.E.A. Cremona n° 152814
Cap. Sociale i.v. € 25500,00

TEST CERTIFICATE

ISPECTION CERTIFICATE
EN 10204
CHEMICAL ANALYSIS ACCORDING TO EN 10204 - 3.1

CUSTOMER
T.I.C.I. S.R.L.
VIA DELL'ARTIGIANATO, 6
26010 MONTODINE

CERTIFICATE N.
20150205/05

DATE
2015/02/05

PRODUCT
HAINEK C216/24
BACCHETTA 310 DIAM. 2,4

BATCH N.
431079

CLASSIFICATION
ASME SECT. II PART C SFA 5.9
EDITION 2013 AWS A 5.9 ER 310
EN ISO 14343:25 20

RIF. NS. DOC. DI TRASPORTO
DDT 525 DEL 04/02/15

CHEMICAL ANALYSIS

C	Mn	Si	S	P	Cr	Ni	Mo	Al	Cu
0,107	1,703	0,401	0,0009	0,016	25,788	20,652	0,086		0,104

Zr	N	Ti	Nb	Cu con riv	V	B	Co	As	Fe
	0,026		0,006				0,051		

I DATI RIPORTATI SONO RICAVATI DA DOCUMENTI DEL PRODUTTORE IN NOSTRO POSSESSO

HAINEK S.R.L.
Quality dep.

DET NORSKE VERITAS * 1864 *
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DET NORSKE VERITAS ITALIA SRL
Notified Body 0496 for 97/23/EC (PED)
Date: ... Sig. ...

NOLEGGIO E VENDITA IMPIANTI PER SALDATURA E POSIZIONATORI - GAS TECNICI - MATERIALI E MACCHINE PER SALDATURA E TAGLIO - POSIZIONATORI A RULLI E A TAVOLA ROTANTE
TORCE E RICAMBI - ASPIRATORI PER FUMI DI SALDATURA - ABRASIVI - ELETTROUTENSILI - PRODOTTI CHIMICI - ANTINFORTUNISTICA - ASSISTENZA E CONSULENZA TECNICA

AIR LIQUIDE LORCH Hypertherm CEPRO KOBELCO TRANSLAS Red-D-Arc Weld Automation LINCOLN ELECTRIC

voestalpine Böhler Welding

voestalpine Böhler Welding Italia S.p.A.
Via Palizzi, 90
I - 20157 MILANO MI
T. +39 02 39017.1
F. +39 02 39017.244
www.voestalpine.com/welding

Certificato 2.2
Test Report 2.2

secondo / as per : EN 10204
No. : No. : 2014-2014185843-900001-003
Rev. 0 Page / Page : 1 / 1

MAINARDI DANILO & C. SRL

S.S.415 KM. 45,955
26012 CASTELLEONE
Italia

Ordine N°	PO no.		del / of	06.05.2014
Ordine N°	Order no.	1014166818		
Bolla di consegna/Pos./Splitt.	Delivery note/pos./splitt	2014185843/000010/900001	del / of	09.05.2014
Oggetto test	Product	elettrodo rivestito / covered electrode		
Denominazione commerciale	Trade name	**AVESTA 310**		
Classificazione norma	Standard designation	AWS A5.4 E310-17		
		EN ISO 3581-A E 25 20 R		
Dimensione	Dimension	SMAW 3,2 x 350 mm		
Colata	Serial no.	05032		
Quantità fornita	Quantity	12,3 KG		

249958
73417
ASFAA02E
0140

Composizione chimica in % del deposito — **Chemical composition in % of the weld metal**

C	Si	Mn	P	S	Cr	Mo	Ni	Cu						
0,103	0,72	2,3	0,015	0,007	26,3	0,08	21,7	0,04						

proprietà meccaniche — **Mechanical properties**

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	444		587	30			typical values

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
20°C		52				typical values

Questo certificate è 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: 13.05.2014

This document is accepted by
DET NORSKE VERITAS ITALIA SRL
Notified Body 0496 for 97/23/EC (PED)
Bonalumi

IRTEC SRL
SISTEMA DI QUALITÀ CERTIFICATO ISO 9001:2008

ISTITUTO DI RICERCHE TECNOLOGICHE E COLLAUDI

20056 TREZZO S/A (MI) - VIA F.SANTI, 3
Tel. 02.90.96.15.41 • 2 - Fax 02.90.96.32.92
E-mail : info@irtecsrl.com Web : www.irtecsrl.com

CERTIFICATO No. CERTIFICATE	6456/15
RIF. REF.	2089/15
DATA DATE	2015-03-26
FOGLIO SHEET	1 DI OF 1

RT TESTING **CONTROLLO RT**

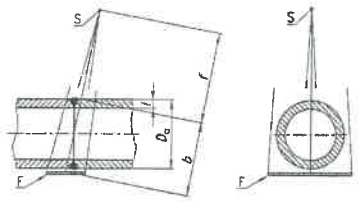
CLIENTE CUSTOMER: T.I.C.I. S.r.l. – Via DELL'ARTIGIANATO,6 – 26010 MONTODINE (CR)	**ENTE DI COLLAUDO :** INSPECTION AGENCY
COMMESSA JOB: ---	
OGGETTO SUBJECT: Radiographic examination of the butt welded test coupon for welder performance and welding procedure qualification Test coupon as per WPS – EN – R04/15/3 – Weldings procedures/process: 141 + 111 BASE MATERIALS : N°.: 1 TUBE A240 310S – HEAT: 0439938 WELDER'S NAME : RICCARDO SOCCINI – STAMP: RS	

STADIO DI LAVORAZIONE WORKING STEP: AFTER WELDING COMPLETION	**SUPERFICIE** SURFACE: AS WELDED
SPECIFICA SPECIFICATION: EN ISO 17636 -1 Cl. B - EN ISO 5817 level B EN ISO 15614 -1 – EN ISO 9606 - 1	**DIMENSIONI** DIMENSIONS
APPARECCHIO EQUIPMENT: **RX** ☑ GILARDONI 300 — 130 **Kv** — 3 **mA**	**Rγ (Ir 192)** ☐ — **Ci**
DIST. FUOCO-FILM SOURCE-FILM DIST.: 800 mm — **DIMENS. FUOCO** SOURCE SIZE: 3 mm	**ESPOSIZIONE** EXPOSURE TIME: 2 **MINUTI** MINUTES: --- **sec.**
SPESSORE NOMINALE SALDATURA NOMINAL WELD THICKNESS: 6 mm	**SPESSORE TOTALE SALDATURA** ACTUAL WELD THICKNESS: 6 mm
DISTANZA OGGETTO (LATO SORGENTE) – FILM SOURCE SIDE OF OBJECT – FILM DISTANCE: 88.9 mm	**DIST. FUOCO-OGGETTO** SOURCE-OBJECT DISTANCE: 711.1 mm ≥ mm
INCERTEZZA GEOMETRICA GEOMETRIC UNSHARPNESS: // mm ≤ //	**SPESSORE ATTRAVERSATO** CROSSED THICKNESS: 12 mm
PELLICOLE FILM TYPE: AGFA D7 ☐ D5 ☐ D4 ☐ — KODAK AA 400 ☐ T200 ☐ MX 125 ☑	**SCHERMI Pb** LEAD SCREENS: **ANT.** FRONT 0.05 mm **POST.** BACK 0.10 mm
PENETRAMETRO PENETRAMETER: W 13 FE ☑ W 6 FE ☐ ASTM 1A ☐	**LATO SORGENTE** SOURCE SIDE ☑ **LATO FILM** FILM SIDE ☐
ESPOSIZIONE EXPOSURE: **FILM SINGOLO** SINGLE FILM ☑ **FILM DOPPIO** DOUBLE FILM ☐	**DENSITÀ** DENSITY: 2,3 ÷ 2,7 — **SENSIBILITÀ** SENSITIVITY: W14
TECNICA DI SVILUPPO FILM PROCESSING: **MANUALE** MANUAL ☐ **AUTOMATICA** AUTOMATIC ☑	**DENS. RICH.** DENS. REQ.: ≥ 2,3 — **SENS. RICH.** SENS. REQ.: W14

6.1.6 Tecnica ellittica (vedere figura 11)

figura 11 Disposizione di ripresa radiografica per esposizione a doppia parete-doppia immagine di pezzi curvi per la valutazione di ambedue le pareti (sorgente e pellicola esterni al pezzo)

Legenda
S Sorgente di radiazioni
F Pellicola



SIGLA MARK	POSIZ. POSIT.	DIFETTI DEFECTS	ESITO RESULT
R04/15/3	A	//	OK
R04/15/3	B	//	OK

LEGENDA OK = BUONO – Good RRX = RIPARARE – Repair NX = RIPETERE FILM – Repeat the exposure

1	Cricche	Cracks	10	Eccesso di penetrazione	Eccess Penetration
2	Cricche di Cratere	Crater Cracks	11	Eccesso localizzato	Local protrusion
3	Pori e Porosità	Porosity	12	Colpi d'arco e spruzzi	Arc strikes and spatters
4	Tarli	Wormholes	13	Slivellamento	Misalignement
5	Inclusioni solide e cavità allungate	Solid inclusions and elongated cavities	14	Insellamento	Root concavity
			15	Sgocciolamento	Burn Through
6	Inclusioni di Rame	Copper Inclusions	16		
7	Incollature	Lack of Fusion	17		
8	Mancanza di penetrazione	Lack of Penetration	18	Difetto film	Process or film defect
9	Incisioni Marginali	Undercuts	/	Nessun difetto	No defect

PROVE ESEGUITE DA Test conducted by	PER IL LABORATORIO For the laboratory	L'ISPETTORE DEL CLIENTE Customer inspector	IL COLLAUDATORE The inspector
F. MENZELLA NDT LEV II SNT - TC - 1A PT: 13/BO/MMA/mp/0200C MT: 13/BO/MMA/mp/0211C RT: 13/BO/MRI/mp/0211C UNI EN ISO 9712:12 65 RX3 REV. 2	SANTARCANGELO VINCENZO EN 473 2° Liv. RT-UT-PT-MT CICPND 2° Liv. RT-UT-PT-MT	02/04/15	1864 DNV Milan

IR TEC SRL
SISTEMA QUALITÀ CERTIFICATO ISO 9001:2008

ISTITUTO DI RICERCHE TECNOLOGICHE E COLLAUDI

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E-mail : info@ irtecsrl.com Web:www.irtecsrl.com

CERTIFICATO No. CERTIFICATE	6458/15
RIF. REF.	2089/15
DATA DATE	2015-03-26
FOGLIO SHEET	1 DI OF 1

PT TESTING **CONTROLLO PT**

CLIENTE CUSTOMER: T.I.C.I. S.r.l. – Via DELL'ARTIGIANATO,6 – 26010 MONTODINE (CR)	**ENTE DI COLLAUDO:** INSPECTION AGENCY

OGGETTO SUBJECT: PENETRANT EXAMINATION OF THE WELD OF TEST COUPON FOR PIPE BUTT WELDER PERFORMANCE AND WELDING PROCEDURE QUALIFICATION AS PER **WPS** – EN – R04/15/3 THK 6
Weldings procedures/process: 141 + 111 – WELDER'S NAME : RICCARDO SOCCINI – STAMP: RS
BASE MATERIALS : N°.: 1 TUBE A240 310S

MATERIALE MATERIAL	HEAT: 0439938	**DIMENSIONI** DIMENSION	
STADIO DI LAVORAZIONE WORKING STEP	AFTER WELDING COMPLETION	**SUPERFICIE** SURFACE	AS WELDED
SPECIFICA SPECIFICATION	EN ISO 3452-1 - EN ISO 5817 level B & C EN ISO 15614-1 – EN ISO 9606-1	**DESIGN. PRODOTTI** PRODUCTS DESIGNATION	ISO 3452-2 II A e Livello2
PULITORE CLEANER	CGM VELNET	**LOTTO** BATCH	317.13 11/2015
PENETRANTE PENETRANT	CGM RED W	**LOTTO** BATCH	S.129.13 05/2015
RIVELATORE DEVELOPER	CGM ROTRIVEL U	**LOTTO** BATCH	S.155.13 06/2015
FLUORESCENTE ☐ FLUORESCENT	**CONTRASTO DI COLORE** ☑ COLOUR CONTRAST		
TEMPERATURA SUPERFICIE SURFACE TEMPERATURE	12°C		
PULITURA DELLA SUPERFICIE SURFACE CLEANING	SOLVENT		
TEMPO ASCIUGATURA (≥ 5 minuti) DRYING TIME	8 MINUTES		
APPLICAZIONE PENETRANTE PENETRANT APPLICATION	SPRAY		
TEMPO DI PENETRAZIONE PENETRATION TIME	20 MINUTES		
ASPORTAZIONE PENETRANTE PENETRANT REMOVAL	WATER & CLOTHES		
TEMPO ASCIUGATURA (≤ 30 minuti) DRYING TIME	10 MINUTES		
APPLICAZIONE RIVELATORE DEVELOPER APPLICATION	SPRAY		
TEMPO DI SVILUPPO DEVELOPING TIME	10 ÷ 30 MINUTES		
ILLUMINAZIONE ILLUMINATION	>1000 lux		

NOTE REMARKS

ESITO RESULT: THE EXAMINED WELD SATISFY THE REQUIREMENTS OF THE CODE

68 LP1 REV. 2

PROVE ESEGUITE DA Test conducted by	PER IL LABORATORIO For the laboratory	L'ISPETTORE DEL CLIENTE Customer inspector	IL COLLAUDATORE The inspector
F. MENZELLA NDT LEV II SNT - TC - 1A PT: 13/BO/MMA/mp/0200C MT: 13/BO/MMA/mp/0211C RT: 13/BO/MR/mp/0211C UNI EN ISO 9712:12	SANTARCANGELO VINCENZO EN 473 2° LIV. RT-UT-PT-MT CICPND 2° LIV. RT-UT-PT-MT	02/04/15	1230-0436

IR TEC SRL
SISTEMA QUALITÀ CERTIFICATO ISO 9001:2008

ISTITUTO DI RICERCHE TECNOLOGICHE E COLLAUDI

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CERTIFICATO No. CERTIFICATE	6457/15
RIF. REF.	2089/15
DATA DATE	2015-03-26
FOGLIO SHEET	1 DI OF 1

VISUAL EXAMINATION **ESAME VISIVO**

CLIENTE CUSTOMER	T.I.C.I. S.r.l. – Via DELL'ARTIGIANATO,6 – 26010 MONTODINE (CR)
ENTE DI COLLAUDO : INSPECTION AGENCY	
COMMESSA JOB	---
OGGETTO OBJECT	VISUAL EXAMINATION OF THE WELD OF TEST COUPON FOR PIPE BUTT WELDER PERFORMANCE AND WELDING PROCEDURE QUALIFICATION AS PER **WPS** – EN – R04/15/3 THK 6 Weldings procedures/process: 141 + 111 BASE MATERIALS : N°.: 1 TUBE A240 310S – HEAT: 0439938 WELDER'S NAME **:** RICCARDO SOCCINI – STAMP: RS
STADIO DI LAVORAZIONE WORKING STEP	AFTER WELDING COMPLETION.
SPECIFICA SPECIFICATION	EN ISO 17637 – EN ISO 15614 - 1 - EN ISO 9606 - 1
ACCETTABILITÀ ACCEPTANCE STANDARD	EN ISO 5817 LEVEL B & C

SUPERFICIE SURFACE

GREZZA ROUGTH	☐	**MOLATA** GROUND	☐
LAVORATA MACHINED	☐	**SPAZZOLATA** BRUSHED	☑
SALDATA WELDED	☐	**LAMINATA** ROLLED	☐
SABBIATA SANDBLASTED	☐	**DECAPATA** PICKLED	☐

ILLUMINAZIONE LIGHTING ≥ 1000 lx

NATURALE DAYLIGHT	☑	**ARTIFICIALE** ARTIFICIAL	☐

NOTE REMARKS	
ESITO RESULT	**SODDISFACENTE** ☑ SATISFACTORY — **NON CONFORME** ☐ NOT CONFORM

74 VTI REV. 0

PROVE ESEGUITE DA Test conducted by	PER IL LABORATORIO For the laboratory	L'ISPETTORE DEL CLIENTE Customer inspector	IL COLLAUDATORE The inspector
SANTARCANGELO VINCENZO EN 473 2° LIV. RT-UT-PT-MT CICPND 2° liv. RT-UT-PT-MT	SANTARCANGELO VINCENZO EN 473 2° LIV. RT-UT-PT-MT CICPND 2° LIV. RT-UT-PT-MT	02/04/15	

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Test report n° 183850 **Rev.0**
EN 10204, type : 3.2

Client
Cod. 1263

T.I.C.I. SRL
Via Dell 'Artigianato,6
26010 Montodine CR
Italy

Your ref.	Order n.	D.D.T. n. 46	data	17/03/2015
Our ref.	Report n.	**183850**	data	**02/04/2015**
	Job n.	59240	data	20/03/2015

Remarks Weld Plate EN-R04/15
Process : 141+111
Welder : RS

Project

Client Reference UNI EN ISO 15614-1:2012
Test standard UNI EN ISO 6892-1:2009 - UNI EN ISO 5173:2012 - UNI EN ISO 6507-1:2006

This Report is made of n° 5 pages including this cover plus the following pages

Test	Pag.
Macrographic examination	1
Hardness test	1
Tensile test at room temperature	1
Bend test	1

This Report (RPR) contains tests results on the following material:

Ref.	Identification	Material	DN / Thk [mm]	Remarks
132847	EN-R04/15	ASTM A240 310S (INOX 310S)		

Lab Manager | Customer | Inspector | Inspector

Exova s.r.l.
Luca Cantoni

02/04/15

NOB 0496
DNV
Milan

General conditions:
1. The Customer accepts general conditions and prices fixed by the laboratory to perform the tests.
2. Test results will be communicated only by means of test report except for different contractual agreement.
3. Tests sample will be destroyed 30 days after test except for different written Client request.
4. The spare will be destroyed 90 days after date of receipt for different written Client request.
5. The test results described in the following test report are referring only to the sample mentioned in it.
6. The date of material receivement is the same as the date of job opening. The date of testing is the same as the date of test report, except for different info.
7. The laboratory has examined the material sampled an supplied by the Client in compliance with standard request.

This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory

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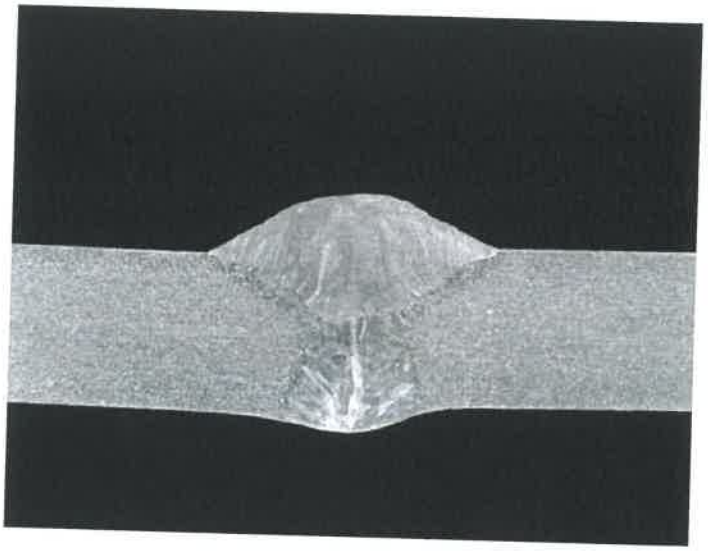
Test report n° 183850 Rev.0

Equipment n.	PHOTOGRAPHIC DOCUMENTATION	Pag. 1 of 1
1871		

Test Ref.	
Laboratory	Client
847.FO01.1	EN-R04/15

Etching : 75% HCl 25% HNO3

Magnification : x 3.5



EN-R04/15

M1 h6

Comments Test specimen has been examined at low magnification (25x) with and without etching.
According to UNI EN ISO 5817:2014, level B and C, the results of this exam don't showed the presence of imperfections or defects in weld metal.

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 17639:2013

Remarks

Operator	Customer	Inspector	Inspector
EXOVA S.r.l. SPE Cristian Pironi	02/04/15		

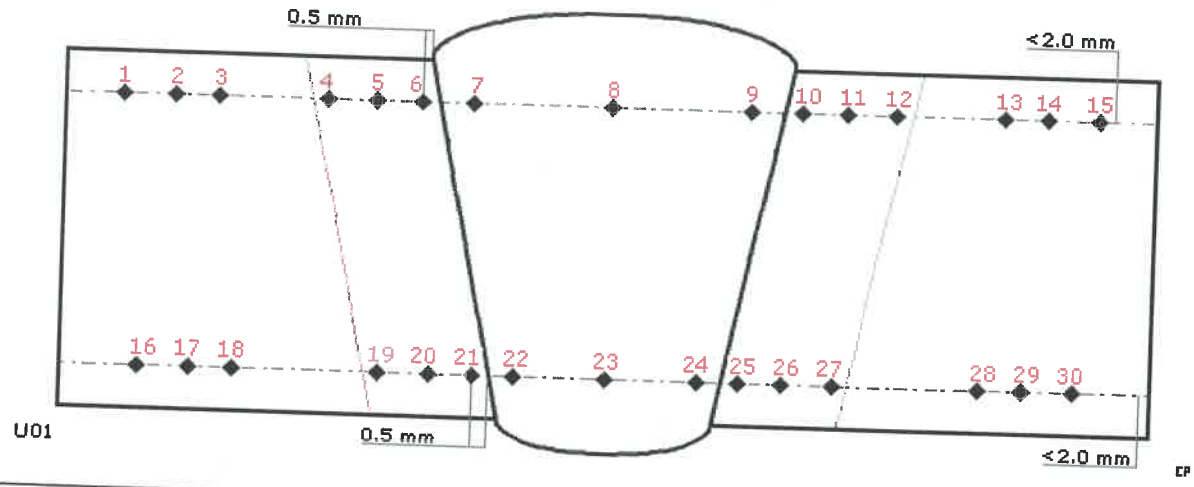
This page is binded to references n. *183850 (job 59240)* *whose details are indicated on the cover*

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Test report n° **183850** **Rev.0**

Equipment n.	**HARDNESS TEST**	Pag. 1 of 1
9	**Internal procedure POI-07**	



EN-R04/15
T M1 h6

HV 10	
Point #	**Value**
#1	177
#2	170
#3	174
#4	165
#5	157
#6	150
#7	172
#8	167
#9	174
#10	150
#11	149
#12	162
#13	177
#14	172
#15	174
#16	183
#17 Max	185
#18	181
#19	162
#20	164

HV 10	
Point #	**Value**
#21	159
#22	156
#23	150
#24	164
#25	168
#26	170
#27	167
#28	172
#29	177
#30	180

-	
Point #	**Value**

-	
Point #	**Value**

-	
Point #	**Value**

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 6507-1:2006

Remarks

Operator	Customer	Inspector	Inspector
SPE Cristian Ritoni	TG		
Exova S.r.l.	02/04/15		DNV 0080486

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Test report n° 183850 Rev.0

Equipment n. 1153

TENSILE TEST

Internal procedure POI-01

Richiesti *Required*												>=515			

Test *Ref.* Lab.	Client	T *Test* °C	Posizione *Position*	Dimensioni *Dimensions* mm			Lo mm	Re N/mm²	Rp0.2% N/mm²	Rp0.5% N/mm²	Rt0.2% N/mm²	Rt0.35% N/mm²	Rt0.5% N/mm²	E	Rm N/mm²	A %	Z %	Rif. *Ref.*
847.TR1.01	EN-R04/15	+20	T Weld h2	12.00	x	5.80		-	-	-	-	-	-		568	-		#
847.TR1.02	EN-R04/15	+20	T Weld h4	12.00	x	5.70		-	-	-	-	-	-		553	-		#

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 6892-1:2009

Remarks X = Prismatic - # Broken in weld

Speed of testing in elastic field ref. method B : R=15MPa/s - after elastic field <= 0.008 Lc/s

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
ISPE LUIGI Vallati Exova s.r.l.	02/04/15		1005004P6

This page is binded to references n. *183850 (job 59240)* *whose details are indicated on the cover*

DNV Milan

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Test report n° 183850 Rev.0

Equipment n. 1123

BEND TEST

Internal procedure POI-03

Test Ref. Lab.	Test Ref. Client	T Test °C	Tipo Type	Dimensioni Dimensions mm			Mandrino Jig mm	Distanza rulli Distance rollers mm	Angolo angle °	Lo Lo mm	Allungamento Elongation %	Esito Results	Note Remarks	Rif. Ref.
847.PI1.01	EN-R04/15	+20	Face Bend T	20.0	x	6.0	25	40	180			No Defect	h2	
847.PI1.02	EN-R04/15	+20	Face Bend T	20.0	x	6.0	25	40	180			No Defect	h4	
847.PI1.03	EN-R04/15	+20	Root Bend T	20.0	x	6.0	25	40	180			No Defect	h2	
847.PI1.04	EN-R04/15	+20	Root Bend T	20.0	x	6.0	25	40	180			No Defect	h4	

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 5173:2012

Remarks Test Method "FORMER"

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
Luigi Vallati Exova s.r.l.	02/04/15		

This page is binded to references n. *183850 (job 59240)* *whose details are indicated on the cover*

Welding Procedure Qualification Record Form (WPQR)

Welding procedure qualification - Test certificate

Manufacturer's WPQR No.:	**EN-R07/15**	Reference No.: **WPQR15010** - File No.: **Z0492434**
Manufacturer:	**TICI S.R.L.**	Examiner or examining body : **DNV-GL-B.A. ITALIA S.r.l.**
Address:	**VIA DELL'ARTIGIANATO 6 MONTODINE (CR)**	
Code / Testing Standard:	**EN 15614-1**	
Date of Welding:	**10/03/2015**	

Range of qualification

Welding process(es):	**121 (ISO 4063)**
Type of joint and weld:	**BW - ss, mb, sl, ml - bs, sl, ml**
Parent material group(s) and sub group(s):	**EN 15608 Gr. 11.1 - Covers the equal or lower specified yield strength steels of the same group**
Parent Material Tickness (mm) Butt Welds:	**7,5 ÷ 30**
Parent Material Tickness (mm) Fillet Welds:	**N.A.**
Weld Metal Thickness (mm) Butt Welds:	**7,5 ÷ 16,5 (1ST SIDE)** **7,5 ÷ 30 (2ND SIDE)**
Throat Thickness (mm):	**N.A.**
Single run / Multi run:	**SINGLE RUN (1ST SIDE) / MULTI RUN (2ND SIDE)**
Outside Pipe Diameter (mm):	**> 150 (PA ROTATED)**
Filler Material Designation:	**EN ISO 14171-A S2Si**
Filler Material Make:	**SIDERGAS**
Filler Material Size:	**ALL, WITHIN HEAT INPUT LIMITS BELOW**
Designation of Shielding Gas / Flux:	**ISO 14174 S A AB 1 56 AC H5**
Designation of Backing Gas:	**N.A.**
Type of Welding Current and Polarity:	**DCEP**
Mode of Metal Transfer:	**N.A.**
Heat Input:	**MAX 0,9 kJ/mm WITH IMPACT TESTING** **MIN 0,4 kJ/mm WITH HARDNESS TESTING**
Welding Positions:	**PA, PA ROTATED**
Preheat Temperature:	**MIN 15 °C**
Interpass Temperature:	**MAX 150 °C**
Post-Heating:	**N.A.**
Post-Weld Heat-Treatment:	**N.A.**
Other Information:	**NONE**

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

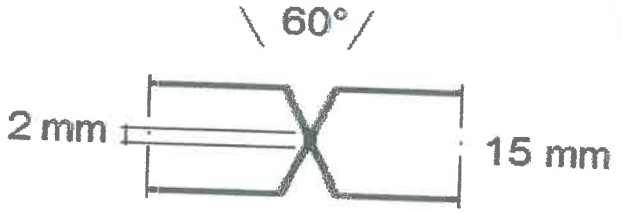
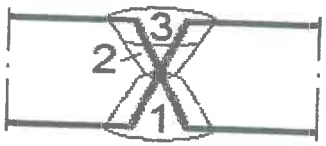
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TICI S.R.L. - MONTODINE (CR) Location	**02/04/2015** Date of Issue	**E. MASTANTUONO** Examiner or examining body Name, date and signature

Record of weld test

Location: **VIA DELL'ARTIGIANATO 6 MONTODINE (CR)**
Manufacturer's pWPS No.: **EN-07-15**
Manufacturer's WPQR No.: **EN-R07/15**
Manufacturer: **TICI S.R.L.**
Welder's Name: **FUSAR BASSINI SIMONE - SF**
Mode of Metal Transfer: **N.A.**
Joint Type and Weld: **BW, P, bs, sl, ml**
Weld Preparation Details (Sketch):

Examiner or examining body: **DNV-GL-GL-B.A. ITALIA S.r.L.**
Reference No.: **WPQR15010** - File No.: **Z0492434**
Method of Preparation and Cleaning: **BRUSHING, GRINDING**
Parent Material Specification: **EN 15608 Gr.11.1/2**
ASME SA 516 GR.70
Material Thickness (mm): **15**
Outside Pipe Diameter (mm): **N.A.**
Welding Position: **PA**

Joint Design	Welding Sequences
	

Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input EN 1011-1 (kJ/mm) (*)	Metal transfer
1	121	2	399 - 401	29 - 31	DCEP	N.A.	18 - 19	0,6 - 0,7	N.A.
2	121	2	399 - 401	29 - 31	DCEP	N.A.	15 - 16	0,6- 0,7	N.A.
3	121	2	399 - 401	29 - 31	DCEP	N.A.	18 - 19	0,6- 0,7	N.A.

(*) EN 1011-1 : $Q=k*(V*A/speed*10^{-3})$ - k = 1 (121)

Filler Material Designation and Make: **EN ISO 14171-A S2Si SIDERGAS S2Si SAW**

Any Special Baking or Drying: **NONE**
Gas/Flux: Shielding: **ISO 14174 S A AB 1 56 AC H5 FL61-4-25VCI FLUX LINCOLN**
Backing: **N.A.**
Gas Flow Rate Shielding: **N.A.**
Backing: **N.A.**
Tungsten Electrode Type/Size: **N.A.**
Details of Back Gouging/Backing: **BY GRINDING**
Preheat Temperature: **15 °C**
Interpass Temperature: **150 °C**
Post-Heating: **N.A.**
Post-Weld Heat Treatment: **N.A.**
(Time, Temperature, Method : **N.A.**
Heating and Cooling Rates): **N.A.**

Other information, e.g.:
Weaving (maximum width of run): **N.A.**
Oscillation : amplitude, frequency, dwell time: **N.A.**
Pulse welding details: **N.A.**
Distance contact tube/work piece: **N.A.**
Plasma welding details: **N.A.**
Torch angle: **N.A.**

A. MARZI - 02/04/2015
TICI S.R.L. - MONTODINE (CR)
Manufacturer
(name, signature, date)

This document is accepted by DET NORSKE VERITAS ITALIA SRL Notified Body 0496 for 97/23/EC (PED)

E. MASTANTUONO
Examiner or examining body
Name, date and signature

Welding Procedure Specification (pWPS/WPS)

Welding Procedure Specification: **EN-07-15**

WPQR No.: **EN-R07/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW, P, bs, sl,ml**

Method of Preparation and Cleaning: **GRINDING, BRUSHING**

Parent Material Designation: **EN 15608 Gr. 11.1**

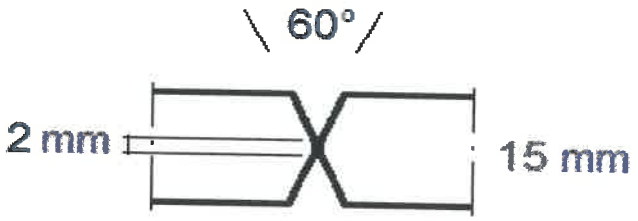
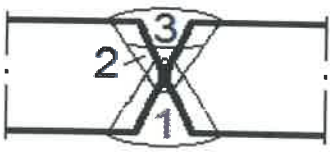
ASME SA516 GR. 70

Material thickness (mm): **15**

Outside Diameter (mm): **N.A.**

Welding Position: **PA**

Weld Preparation Details (Sketch)

Joint Design	Welding Sequences
	

Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input (EN 1011-1) (kJ/mm)
1	121	2	399 - 401	29 - 31	DCEP	N.A.	18 - 19	0,6 - 0,7
2	121	2	399 - 401	29 - 31	DCEP	N.A.	15 - 16	0,6- 0,7
3	121	2	399 - 401	29 - 31	DCEP	N.A.	18 - 19	0,6- 0,7

Filler Material Designation and Make: **EN ISO 14171-A S2Si SIDERGAS S2Si SAW**

Any Special Baking or Drying: **NONE**

Designation Gas/Flux: **ISO 14174 SAAB156ACH5 FL61-4-25VCI FLUX LINCOLN**

Gas Flow Rate
- Backing: **N.A.**
- Shielding: **N.A.**
- Backing: **N.A.**

Tungsten Electrode Type/Size: **N.A.**

Details of Back Gouging/Backing: **BY GRINDING**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

(Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

Other information, e.g.:

Weaving (maximum width of run): **N.A.**

Oscillation : amplitude, frequency, dwell time: **N.A.**

Pulse welding details: **N.A.**

Distance contact tube/work piece: **N.A.**

Plasma welding details: **N.A.**

Torch angle: **N.A.**

A. MARZI - 10/03/2015
TICI S.R.L. - MONTODINE (CR)
Manufacturer
(Name, signature, date)

DET NORSKE VERITAS 1864
This document is accepted by
DET NORSKE VERITAS ITALIA SRL
Notified Body 0496 for 97/23/EC (PED)
Date 10/3/15 Sign:

Test results

Manufacturer's WPQR No.: **EN-R07/15**
Visual: **IRTEC SRL - 6464/15**
Penetrant: **IRTEC SRL - 6463/15**
Tensile Tests: **EXOVA - 183852**

Examiner or examining body: **DNV-GL-GL-B.A. ITALIA S.r.L.**
Reference No.: **WPQR15010** - File No.: **Z0492434**
Radiography: **IRTEC SRL - 6462/15**
Ultrasonic: **NONE**
Temperature: **20 °C**

Type/No.	Re N/mm²	Rm N/mm²	A % on	Z %	Fracture Location	Remarks
Requirement		**485 ÷ 620**				
849.TR1.01		**499**			**OUT OF WELD**	
849.TR1.02		**501**			**OUT OF WELD**	

Bend Tests — Former Diameter: **40 mm**

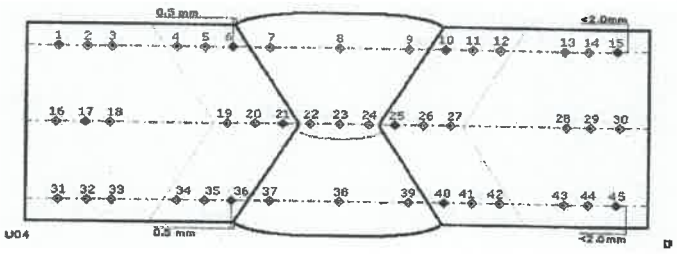
Type/No.	Bend Angle	Elongation	Results
849.PI1.01 SIDE	**180°**		**NO DEFECT**
849.PI1.02 SIDE	**180°**		**NO DEFECT**
849.PI1.03 SIDE	**180°**		**NO DEFECT**
849.PI1.04 SIDE	**180°**		**NO DEFECT**

Macroscopic Examination: **EXOVA 183852**

Impact Test — Type: **KV2** — Size: **10 x 10 mm** — Requirement: **27 J**

Notch Location/Direction	Temp. °C	Values 1	2	3	Average	Remarks
849.RE2.01 / VHT0/2	**-20**	**96**	**65**	**43**	**68**	
849.RE2.02 / VHT1/2	**-20**	**175**	**170**	**160**	**168**	

Location of Measurements (Sketch)



Hardness Test (Type/Load): **HV10**

Parent Metal: **150 - 151 - 149 - 148 - 151 - 153 - 147 - 150 - 151 - 158 - 155 - 156 - 165 - 157 - 159 - 160 - 158 - 157**

HAZ: **173 - 182 - 183 - 185 - 172 - 164 - 173 - 178 - 181 - 173 - 169 - 167 - 169 - 183 - 186 - 191 - 181 - 174**

Weld metal: **186 - 178 - 177 - 169 - 158 - 167 - 190 - 183 - 185**

Other Tests: **NONE**
Remarks: **NONE**
Tests Carried out in accordance with the requirements of:
Laboratory Report Reference No.: **EXOVA 183852**
Test results were **ACCEPTABLE**
Tests carried out in presence of: **E. MASTANTUONO NB 0496 DNV-GL - A. MARZI TICI S.R.L.**

This document is accepted by DET NORSKE VERITAS ITALIA SRL Notified Body 0496 for 97/23/EC (PED)

E. MASTANTUONO
Examiner or examining body
Name, date and signature

Corus UK Limited A1
Corus Construction & Industrial
P.O. Box 1, Scunthorpe,
North Lincolnshire, DN16 1BP
Telephone: 01724 404040
Fax: 402353 Telex: 52601

INSPECTION CERTIFICATE A2

In Accordance with: DIN.50049/EN10204 3.1B

Date: 26/10/01 Z1

Cert No.: SPLA/01/00491668/1 A3

Customer A6

MANNI SIDERURGICA SPA

VIA AUGUSTO RIGHI 7 (ZAI)
37135 VERONA
VERONA ITALY

Inspection: ROYAL & SUNALLIANCE ENG A11

Corus Ref. No.: 62078/ 5 A8

Works Order/Item No: 50/ 129/ 5 A9

Customers Order No.: AM1B000598 A7

Specification/Product: ASME 98/ ASTM SC (S)A516/M-90 70/485(A20/S5) B1.1B

Plate 10000 X 2500 X 15.00mm Piece Weight 2943.8Kg
"N"- Normalised

B6/A10 DIMS/AM1B000598/ MANNI 3 REV 0/70/485/ FE510.2KW/P355NH MOZZECANE

L=Longitudinal T=Transverse Z=Through Thickness S=Sub-Surface M=Mid-Thickness Q=Quarter-Thickness TH=Third-Thickness BS=Bottom Surface A=Supply Condition N=Normalised SR=Stress Relieved SA=Strain Aged

B10 Quantity	B9 Cast/Heat No	B7 Piece No	C99 Test Piece No.	C2 Direction	B5 Test Condition	C11 Yield Stress Re N/MM2	C12 Tensile Strength Rm	C14 Re/Rm %	C13 Elong% A Lo= 200	C2 Direction	C1 Position	R5 Test Condition	Charry Impact E23 10x10x2mmV Units Joules	C49	C41	C42	C43 Av.
		Specification Min				262	485		17				20 Av/ 16 Ind @ -46C				
		Specification Max					620										
1	69275	FM758/ 2		T		372	530		25	L	0		-46C	82	113	108	101
				T		373	530		25	L	0		-46C	106	102	95	101

Steelmaking Process: B.O.S. C70

Other Tests C58 C59

ANALYSIS % C1 C2		C	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	Nb	N	Sn	Ti	V	Cr+Mo+Ni+Cu	CEV
Specification	Min		.15	0.85														
	Max	.27	.40	1.20	.035	.035	0.200	.120	.400	.020	.400	.020				.030		
Cast/Heat		.19	.37	1.16	.010	.006	0.014	.002	.020	.032	.009	.017	.006	.001	.002	.002	1.000	
Specification	Min																0.045	.39
	Max																	

Plate(s) and tests normalised at 890-930 deg.C for a minimum of 1.5 minutes per millimetre of thickness.
Surface Inspected.

This document is accepted by DET NORSKE VERITAS ITALIA SRL Notified Body 0496 for 97/23/EC (PED)
Date 10/5/5 Signature

On behalf of Corus UK Limited, the manufacturer
These results are certified by Corus UK Limited and comply with the requirements of the Product Description

Z1

M.D.Haylett, Test House Manager, Scunthorpe A2 H0214

All enquiries in relation to Certificates issued by Corus UK Limited will receive attention as expeditiously as is consistent with a Corus UK Limited policy of quality assurance. Whilst a reasonable degree of watermarking should ensure that the copier is a true and accurate reproduction of the original.

FILO (FE)

Sidergas

certified Quality Management System complying with the requirements of UNI EN ISO 9001:2008.

SIDERGAS SPA.
Cap. Soc. 1.000.000 € i.v. - C.F. e P. IVA IT00226230233 www.sidergas.com - e-mail: info@sidergas.com
SEDE LEGALE/CORPORATE: Viale Rimembranza, 17 - 37015 S. AMBROGIO VALP.LLA (VR) - ITALY
SEDE OPERATIVA/PLANT: Via Tombelolo, 82/A - 37020 DOLCE' (VR) - ITALY

PRODUCT CERTIFICATE (conforms to EN 10204)
Certificato di Prodotto/Certificat de Produit

NrLotto/Release N°	N° DDT/ Deliv. Note No.	NrFattura/Invoice N°	RQC	Nr. Cert./Cert. No.	Data Cert./Cert. Date
15/00041	000114/D		Marco Martinelli	000117	19/01/2015
Data Ord./Order Date	Data DDT/Deliv.Note Date	DataFattura/Invoice Date	Cliente/Purchaser		
09/01/2015	19/01/2015		HAINEK SRL		

Nr. Ordine Acq. / P.O. No.	Nr. Container/Container No.	Destinatario/Consignee
10-22-70 DEL 09.01.15		
Nr. Sigillo Vettore/Seal N°	Nr. Sigillo/Seal N° Sidergas	
Vettore/Shipping Agent: VENTURINI ALFREDO & C. S.N.C.		Via del Commercio, 7 26013 CREMA (CR)
Nave/Vessel:	Data Spedizione/Shipping date: 19/01/2015	

SIDERGAS S.P.A.

CE

0036 - 06
0036 - CPR - S019
EN ISO 13479:2004

ANALISI CHIMICA DEL FILO/CHEMICAL COMPOSITION OF THE WIRE
in accordo a/according to EN 10204 3.1

Nr.Colata/ Batch No.	Normativa/ Standard:	Classificazione/ Classification:	Codice/P. Number Des.ne/Description	Analisi Chimica/Chemical analysis: % p/p/wt.-%						
230614	AWS A5.17 EN ISO 14171-A	EM12K S2Si	Codice: OCASIRS20K0250 Cod. cliente: Tipo filo: SIDERGAS S2SI SAW Diam. (mm): 2.00 Peso (Kg): 25 Finitura: RAMATO Imballo: K-415 Avvolgimento: SSS	C	Mn	Si	S	P	Cu*	Mo
				0,0910	1,0030	0,2780	0,0050	0,0110	0,0230	0,0070
				Ni	Cr	N	Ti	V	Al	Zr
				0,0120	0,0200	0,0041	0,0000	0,0020	0,0020	0,0000
				B	As	Sn	Ca			
				0,0000	0,0015	0,0020	0,0000			

Note/Remarks:

Cu*: Cu di colata/Cu of heat. A questo valore deve essere addizionato l'eventuale rivestimento in rame del filo compreso tipicamente tra 0,5 e 0,15%.
To this value has to be added the copper coating on the wire, if present, typically within the range 0,05 - 0,15%.

CARATTERISTICHE MECCANICHE DEL METALLO SALDATO / MECHANICAL PROPERTIES OF ALL-WELD METAL
in accordo a/according to EN 10204 2.2

Resistenza a trazione / Tensile Strength:		Snervamento (0,2%)/ Yeld Strength (0,2%)		Allungamento / Elongation:	Resilienza / IMPACT TEST (KV)		
					Temperatura/Temp.	media (J) / average (Lb x Ft.)	
500	(MPa)	420	(MPa)	22,00 (%)	-40°C -40°F	90	67
72.465	(PSI)	60.871	(PSI)		-51°C -59°F	60	44
					-73°C -99°F	47	35

Note/Remarks:

Additional Information: Il valore tipico per HDM per il filo SIDERGAS S2SI SAW è < 5ml / 100g.
Comb. Filo e Flusso/Wire and Flux Combinatio Valori tipici ottenuti in combinazione con il flusso EN ISO 14171 SA AB 1 67 AC H5.

Note Certificato / Certificate Remarks:

DET NORSKE VERITAS 1864

This document is accepted by
DET NORSKE VERITAS ITALIA SRL
Notified Body 0496 for 97/23/EC (PED)
Date: 20/1/15 Signature:

- This certificate is produced elecrtonically and is valid without segnature

- We certify that the filler is made in Italy by SIDERGAS SPA according to above nomatives and to order prescriptions, and in compliance with a certified ISO 9001 Quality Assurance System

FLUSSO (FE)

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS®

Product	860
Item (Flux)	FX860-25
Lot/batch	F1FX140239
Customer	HAINEK SRL VIA DEL COMMERCIO, 7 26013 CREMA Italy
Product Line	Flux
Item (Wire)	FL61-4-25VCI
Lot/Batch	F1SW14O272
Classification	AWS A5.17/A5.17M :F6A2-EL12 F7A4-EM12K F7A2-EA1/EA2-A2 ISO 14174 : S A AB 1 56 AC H5

Chemical analysis (%) — According to EN10204:2004 3.1

Weld Metal:	C	Si	Mn	P	S
	0.05	0.29	1.24	0.03	0.01

Wire:	C	Si	Mn	P	S
	0.12	0.23	1.02	0.01	0.01

Mechanical tests, all weld metal — According to EN10204:2004

Additional information
Other tests — According to EN10204:2004

Remarks

DET NORSKE VERITAS IRQA
This document is accepted by
DET NORSKE VERITAS ITALIA SRL
Notified Body 0496 for 97/23/EC (PED)
Date: Signature:

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

Company	Printed by	Function	Date	Cert. No.
LINCOLN ELECTRIC ITALIA srl	A. Barone	PM consumables	22/10/2014	99120882

Registered office:
VIA F.LLI CANEPA 8
16010 SERRA RICCO', GE
Italy

Telephone: 010/754111
Fax: 010/7541150

certificateV10.0

IRTEC SRL
SISTEMA DI QUALITÀ CERTIFICATO ISO 9001:2008

ISTITUTO DI RICERCHE TECNOLOGICHE E COLLAUDI

20056 TREZZO S/A (MI) - VIA F.SANTI, 3
Tel. 02.90.96.15.41 • 2 - Fax 02.90.96.32.92
E-mail : info@irtecsrl.com Web : www.irtecsrl.com

CERTIFICATO No. CERTIFICATE	6462/15
RIF. REF.	2089/15
DATA DATE	2015-03-26
FOGLIO SHEET	1 DI OF 1

RT TESTING **CONTROLLO RT**

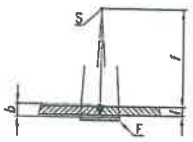
CLIENTE CUSTOMER T.I.C.I. S.r.l. – Via DELL'ARTIGIANATO,6 – 26010 MONTODINE (CR)	**ENTE DI COLLAUDO :** INSPECTION AGENCY
COMMESSA JOB —	
OGGETTO SUBJECT Radiographic examination of the butt welded test coupon for welder performance and welding procedure qualification Test coupon as per WPS – EN – R07/15 N°.: 1 – Weldings procedures/process: 121 BASE MATERIALS : PLATE A516 Gr.70 – HEAT: G9275 WELDER'S NAME : SIMONE FUSAR BASSINI – STAMP: SF	

STADIO DI LAVORAZIONE WORKING STEP AFTER WELDING COMPLETION	**SUPERFICIE** SURFACE AS WELDED
SPECIFICA SPECIFICATION EN ISO 17636 -1 Cl. B - EN ISO 5817 level B EN ISO 15614 -1 – EN ISO 9606 - 1	**DIMENSIONI** DIMENSIONS
APPARECCHIO EQUIPMENT **RX** ☑ GILARDONI 300 130 Kv 3 mA	**Ry (Ir 192)** ☐ Ci
DIST. FUOCO-FILM SOURCE-FILM DIST. 800 mm — **DIMENS. FUOCO** SOURCE SIZE 3 mm	**ESPOSIZIONE** EXPOSURE TIME 2 **MINUTI** MINUTES --- sec.
SPESSORE NOMINALE SALDATURA NOMINAL WELD THICKNESS 15 mm	**SPESSORE TOTALE SALDATURA** ACTUAL WELD THICKNESS 15 mm
DISTANZA OGGETTO (LATO SORGENTE) – FILM SOURCE SIDE OF OBJECT – FILM DISTANCE 15 mm	**DIST. FUOCO-OGGETTO** SOURCE-OBJECT DISTANCE 785 mm ≥ mm
INCERTEZZA GEOMETRICA GEOMETRIC UNSHARPNESS // mm ≤ //	**SPESSORE ATTRAVERSATO** CROSSED THICKNESS 15 mm
PELLICOLE FILM TYPE AGFA D7 ☐ D5 ☐ D4 ☐ KODAK AA 400 ☐ T200 ☐ MX 125 ☑	**SCHERMI Pb** LEAD SCREENS **ANT.** FRONT 0.05 mm **POST.** BACK 0.10 mm
PENETRAMETRO PENETRAMETER W 10 FE ☑ W 6 FE ☐ ASTM 1A ☐	**LATO SORGENTE** SOURCE SIDE ☑ **LATO FILM** FILM SIDE ☐
ESPOSIZIONE EXPOSURE **FILM SINGOLO** ☑ SINGLE FILM **FILM DOPPIO** ☐ DOUBLE FILM	**DENSITÀ** DENSITY 2,3 ÷ 2,7 — **SENSIBILITÀ** SENSITIVITY W13
TECNICA DI SVILUPPO FILM PROCESSING **MANUALE** ☐ MANUAL **AUTOMATICA** ☑ AUTOMATIC	**DENS. RICH.** DENS. REQ. ≥ 2,3 — **SENS. RICH.** SENS. REQ. W13

6.1.2 Sorgente di radiazioni posta di fronte al pezzo e pellicola posta dal lato opposto (vedere figura 1)

figura 1 Disposizione di ripresa radiografica per pezzi piani ed esposizione a parete singola (vedere 3 per *f, b, l*)

Legenda
S Sorgente di radiazioni
F Pellicola



SIGLA MARK	POSIZ. POSIT.	DIFETTI DEFECTS	ESITO RESULT
R07/15/1	1 – 2	//	OK

LEGENDA OK = BUONO – Good RRX = RIPARARE – Repair NX = RIPETERE FILM – Repeat the exposure

1	Cricche	Cracks
2	Cricche di Cratere	Crater Cracks
3	Pori e Porosità	Porosity
4	Tarli	Wormholes
5	Inclusioni solide e cavità allungate	Solid inclusions and elongated cavities
6	Inclusioni di Rame	Copper Inclusions
7	Incollature	Lack of Fusion
8	Mancanza di penetrazione	Lack of Penetration
9	Incisioni Marginali	Undercuts
10	Eccesso di penetrazione	Eccess Penetration
11	Eccesso localizzato	Local protrusion
12	Colpi d'arco e spruzzi	Arc strikes and spatters
13	Slivellamento	Misalignement
14	Insellamento	Root concavity
15	Sgocciolamento	Burn Through
16		
17		
18	Difetto film	Process or film defect
/	Nessun difetto	No defect

PROVE ESEGUITE DA Test conducted by	PER IL LABORATORIO For the laboratory	L'ISPETTORE DEL CLIENTE Customer inspector	IL COLLAUDATORE The inspector
F. MENZELLA NDT LEV II SNT - TC - 1A PT: 13/BO/MMA/mp/0200C MT: 13/BO/MMA/mp/0211C RT: 13/BO/MR/mp/0211C UNI EN ISO 9712:12 69 RX3 REV. 2	SANTARCANGELO VINCENZO EN 473 2° LIV. RT-UT-PT-MT CICPND 2° LIV. RT-UT-PT-MT	TIG 02/04/15	186A DNV

IR TEC SRL
SISTEMA QUALITÀ CERTIFICATO ISO 9001:2008

ISTITUTO DI RICERCHE TECNOLOGICHE E COLLAUDI

20056 TREZZO S/A (MI) - VIA F.SANTI, 3
Tel. 02.90.96.15.41 • 2 - Fax 02.90.96.32.92
E-mail : info@ irtecsrl.com Web:www.irtecsrl.com

CERTIFICATO No. CERTIFICATE	6463/15
RIF. REF.	2089/15
DATA DATE	2015-03-25
FOGLIO SHEET	1 DI OF 1

PT TESTING **CONTROLLO PT**

CLIENTE CUSTOMER	T.I.C.I. S.r.l. – Via DELL'ARTIGIANATO,6 – 26010 MONTODINE (CR)
ENTE DI COLLAUDO: INSPECTION AGENCY	
OGGETTO SUBJECT	PENETRANT EXAMINATION OF THE WELD OF TEST COUPON FOR PLATE BUTT WELDER PERFORMANCE AND WELDING PROCEDURE QUALIFICATION AS PER **WPS** – EN – R07/15 Weldings procedures/process: 121 – WELDER'S NAME : SIMONE FUSAR BASSINI – STAMP: SF BASE MATERIALS : PLATE A516 Gr.70 – HEAT: G9275
MATERIALE MATERIAL	HEAT: G9275
DIMENSIONI DIMENSION	
STADIO DI LAVORAZIONE WORKING STEP	AFTER WELDING COMPLETION
SUPERFICIE SURFACE	AS WELDED
SPECIFICA SPECIFICATION	EN ISO 3452-1 - EN ISO 5817 level B & C EN ISO 15614-1 – EN ISO 9606-1
DESIGN. PRODOTTI PRODUCTS DESIGNATION	ISO 3452-2 II A e Livello2

PULITORE CLEANER	CGM VELNET	**LOTTO** BATCH	317.13 11/2015
PENETRANTE PENETRANT	CGM RED W	**LOTTO** BATCH	S.129.13 05/2015
RIVELATORE DEVELOPER	CGM ROTRIVEL U	**LOTTO** BATCH	S.155.13 06/2015
FLUORESCENTE ☐ FLUORESCENT		**CONTRASTO DI COLORE** ☑ COLOUR CONTRAST	
TEMPERATURA SUPERFICIE SURFACE TEMPERATURE	12°C		
PULITURA DELLA SUPERFICIE SURFACE CLEANING	SOLVENT		
TEMPO ASCIUGATURA (≥ 5 minuti) DRYING TIME	8 MINUTES		
APPLICAZIONE PENETRANTE PENETRANT APPLICATION	SPRAY		
TEMPO DI PENETRAZIONE PENETRATION TIME	20 MINUTES		
ASPORTAZIONE PENETRANTE PENETRANT REMOVAL	WATER & CLOTHES		
TEMPO ASCIUGATURA (≤ 30 minuti) DRYING TIME	10 MINUTES		
APPLICAZIONE RIVELATORE DEVELOPER APPLICATION	SPRAY		
TEMPO DI SVILUPPO DEVELOPING TIME	10 ÷ 30 MINUTES		
ILLUMINAZIONE ILLUMINATION	>1000 lux		

NOTE REMARKS	WELDER'S NAME :
ESITO RESULT	THE EXAMINED WELD SATISFY THE REQUIREMENTS OF THE CODE

68 LPI REV. 2

PROVE ESEGUITE DA Test conducted by	PER IL LABORATORIO For the laboratory	L'ISPETTORE DEL CLIENTE Customer inspector	IL COLLAUDATORE The inspector
F. MENZELLA NDT LEV II SNT - TC - 1A PT: 13/BO/MMA/mp/0200C MT: 13/BO/MMA/mp/0211C RT: 13/BO/MR/mp/0211C UNI EN ISO 9712:12	SANTARCANGELO LORENZO EN 473 2° Liv. RT-UT-PT-MT CICPND 2° Liv. RT-UT-PT-MT	02/04/15	1864 RINA Milan

IR TEC SRL
SISTEMA QUALITÀ CERTIFICATO ISO 9001:2008

ISTITUTO DI RICERCHE TECNOLOGICHE E COLLAUDI

20056 TREZZO S/A (MI) - VIA F.SANTI, 3
Tel. 02.90.96.15.41 • 2 - Fax 02.90.96.32.92
E-mail : info@ irtecsrl.com Web:www.irtecsrl.com

CERTIFICATO No. CERTIFICATE	6464/15
RIF. REF.	2089/15
DATA DATE	2015-03-25
FOGLIO SHEET	1 DI OF 1

VISUAL EXAMINATION ESAME VISIVO

CLIENTE CUSTOMER	T.I.C.I. S.r.l. – Via DELL'ARTIGIANATO,6 – 26010 MONTODINE (CR)
ENTE DI COLLAUDO : INSPECTION AGENCY	
COMMESSA JOB	---
OGGETTO OBJECT	VISUAL EXAMINATION OF THE WELD OF TEST COUPON FOR PLATE BUTT WELDER PERFORMANCE AND WELDING PROCEDURE QUALIFICATION AS PER WPS – EN – R07/15 Weldings procedures/process: 121 BASE MATERIALS : PLATE A516 Gr.70 – HEAT: G9275 WELDER'S NAME : SIMONE FUSAR BASSINI – STAMP: SF
STADIO DI LAVORAZIONE WORKING STEP	AFTER WELDING COMPLETION.
SPECIFICA SPECIFICATION	EN ISO 17637 – EN ISO 15614 - 1 - EN ISO 9606 - 1
ACCETTABILITÀ ACCEPTANCE STANDARD	EN ISO 5817 LEVEL B & C

SUPERFICIE SURFACE

GREZZA ROUGTH	☐	**MOLATA** GROUND	☐
LAVORATA MACHINED	☐	**SPAZZOLATA** BRUSHED	☑
SALDATA WELDED	☐	**LAMINATA** ROLLED	☐
SABBIATA SANDBLASTED	☐	**DECAPATA** PICKLED	☐

ILLUMINAZIONE LIGHTING	≥ 1000 lx		
NATURALE DAYLIGHT	☑	**ARTIFICIALE** ARTIFICIAL	☐

NOTE REMARKS		
ESITO RESULT	**SODDISFACENTE** ☑ SATISFACTORY	**NON CONFORME** ☐ NOT CONFORM

74 VT1 REV. 0

PROVE ESEGUITE DA Test conducted by	PER IL LABORATORIO For the laboratory	L'ISPETTORE DEL CLIENTE Customer inspector	IL COLLAUDATORE The inspector
SANTARCANGELO VINCENZO EN 473 2° Liv. RT-UT-PT-MT CICPND 2° Liv. RT-UT-PT-MT	SANTARCANGELO VINCENZO EN 473 2° Liv. RT-UT-PT-MT CICPND 2° Liv. RT-UT-PT-MT	TIG 02/04/15	Milan

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Via della Pierina 9/11
26013 Crema (CR)
Italy

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Test report n° *EN 10204, type :* **183852** *3.2* **Rev.0**

Client
Cod. 1263

T.I.C.I. SRL
Via Dell 'Artigianato,6
26010 Montodine CR
Italy

Your ref.	Order n.	D.D.T. n. 46	data	17/03/2015
Our ref.	Report n.	**183852**	data	**02/04/2015**
	Job n.	59240	data	20/03/2015

Remarks Weld Plate EN-R07/15
Process : 121
Welder : SF

Project

Client Reference	UNI EN ISO 15614-1:2012
Test standard	UNI EN ISO 6892-1:2009 - UNI EN ISO 5173:2012 - UNI EN ISO 148-1:2011 - UNI EN ISO 6507-1:2006

This Report is made of n° 6 pages including this cover plus the following page:

Test	Pag.
Macrographic examination	1
Hardness test	1
Tensile test at room temperature	1
Impact test	1
Bend test	1

This Report (RPR) contains tests results on the following material:

Ref.	Identification	Material	DN / Thk [mm]	Remarks
132849	EN-R07/15	ASTM A516 Gr.70		

Lab Manager	Customer	Inspector	Inspector
Exova S.r.l. Luca Cantoni	02/04/15		N0500496 DNV Milan

General conditions:
1. The Customer accepts general conditions and prices fixed by the laboratory to perform the tests.
2. Test results will be communicated only by means of test report except for different contractual agreement.
3. Tests sample will be destroyed 30 days after test except for different written Client request.
4. The spare will be destroyed 90 days after date of receipt for different written Client request.
5. The test results described in the following test report are referring only to the sample mentioned in it.
6. The date of material receivement is the same as the date of job opening. The date of testing is the same as the date of test report, except for different info.
7. The laboratory has examined the material sampled an supplied by the Client in compliance with standard request.

This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory

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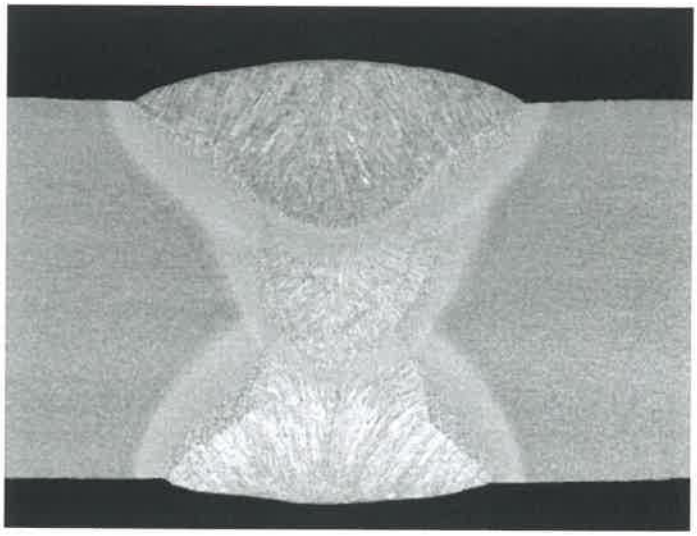
Test report n° 183852 Rev.0

Equipment n.	PHOTOGRAPHIC DOCUMENTATION	Pag. 1 of 1
1871		

Test Ref.	
Laboratory	Client
849.FO01.1	EN-R07/15

Etching : NITAL 3%

Magnification : x 3



EN-R07/15

M1

Comments Test specimen has been examined at low magnification (25x) with and without etching.
According to UNI EN ISO 5817:2014, level B and C, the results of this exam don't showed the presence of imperfections or defects in weld metal.

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 17639:2013

Remarks

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
EXOVA S.r.l. SPE Cristian Piloni	02/04/15		01/12/04/15

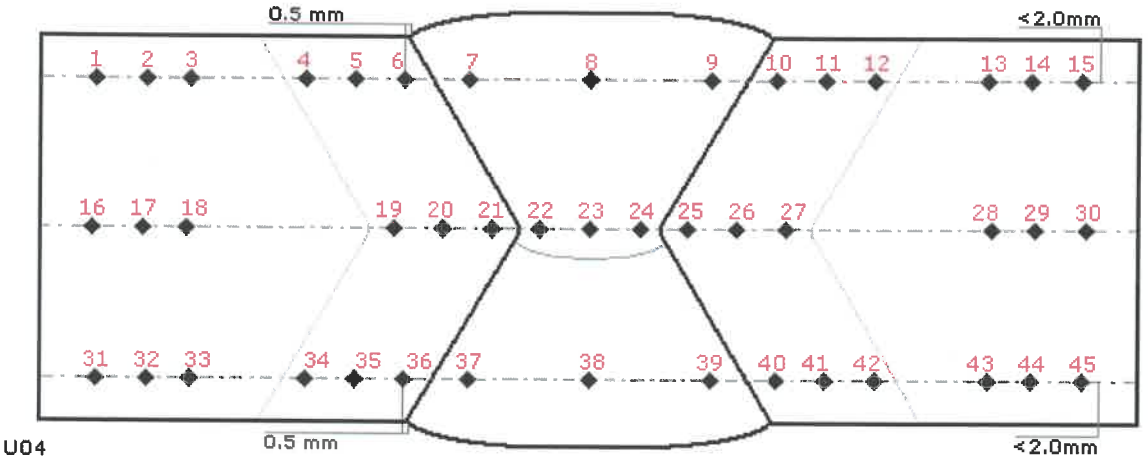
This page is binded to references n. *183852 (job 59240)* *whose details are indicated on the cover*

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Test report n° 183852 Rev.0

Equipment n.	HARDNESS TEST	Pag. 1 of 1
9	Internal procedure POI-07	



EN-R07/15
M1

HV 10		HV 10		HV 10		-		-	
Point #	Value	Point #	Value	Point #	Value	Point #	Value	Point #	Value
#1	150	#21	181	#41	181	-	-	-	-
#2	151	#22	169	#42	174	-	-	-	-
#3	149	#23	158	#43	160	-	-	-	-
#4	173	#24	167	#44	158	-	-	-	-
#5	182	#25	173	#45	157	-	-	-	-
#6	185	#26	169	-	-	-	-	-	-
#7	186	#27	167	-	-	-	-	-	-
#8	178	#28	158	-	-	-	-	-	-
#9	177	#29	155	-	-	-	-	-	-
#10	185	#30	156	-	-	-	-	-	-
#11	172	#31	165	-	-	-	-	-	-
#12	164	#32	157	-	-	-	-	-	-
#13	148	#33	159	-	-	-	-	-	-
#14	151	#34	169	-	-	-	-	-	-
#15	153	#35	183	-	-	-	-	-	-
#16	147	#36	186	-	-	-	-	-	-
#17	150	#37	190	-	-	-	-	-	-
#18	151	#38	183	-	-	-	-	-	-
#19	173	#39	185	-	-	-	-	-	-
#20	178	#40 Max	191	-	-	-	-	-	-

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 6507-1:2006

Remarks

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
SPE Cristian Pisoni Exova S.r.l.	TCP 02/04/15		1486

DNV Milan

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Test report n° 183852 Rev.0

Equipment n. 1153

TENSILE TEST

Internal procedure POI-01

Richiesti *Required*												485÷620					

Test *Ref.* Lab.	Client	T *Test* °C	Posizione *Position*	Dimensioni *Dimensions* mm			Lo mm	Re N/mm²	Rp0.2% N/mm²	Rp0.5% N/mm²	Rt0.2% N/mm²	Rt0.35% N/mm²	Rt0.5% N/mm²	E	Rm N/mm²	A %	Z %	Rif. *Ref.*
849.TR1.01	EN-R07/15	+20	T Weld	25.00	x	15.00		-	-	-	-	-	-		499	-		#
849.TR1.02	EN-R07/15	+20	T Weld	25.00	x	15.20		-	-	-	-	-	-		501	-		#

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 6892-1:2009

Remarks X = Prismatic - # Broken out of weld

Speed of testing in elastic field ref. method B : R=15MPa/s - after elastic field <= 0.008 Lc/s

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
SPE Luigi Vallati Exova s.r.l.	02/04/15		

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Test report n° 183852 Rev.0

Equipment n. 814

IMPACT TEST

Internal procedure POI-02

Nominal machine energy : 450J

Test Ref. Lab.	Test Ref. Client	T Test °C	Posizione Position	Dimensioni Dimensions mm			Intaglio Notch	Richiesti Required	A Single Valore Value J	A Single Shear %	A Single Lateral E.	B Single Valore Value J	B Single Shear %	B Single Lateral E.	C Single Valore Value J	C Single Shear %	C Single Lateral E.	Media Average J	Rif. Ref.
																		27	
849.RE2.01	EN-R07/15	-20	VWT0/2	10	x	10.00	KV2		96			65			43			68	
849.RE2.02	EN-R07/15	-20	VHT1/2	10	x	10.00	KV2		175			170			160			168	

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 148-1:2011

Remarks

Test performed in Crema Laboratory Via della Pierina 9/11

Operator Customer Inspector 2° Inspector

Exova S.r.l. 02/04/15 DNV Milan

This page is binded to references n. *183852 (job 59240)* *whose details are indicated on the cover*

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Test report n° 183852 Rev.0

Equipment n. 1123

BEND TEST

Internal procedure POI-03

Test Ref. Lab.	Test Ref. Client	T Test °C	Tipo Type	Dimensioni Dimensions mm				Mandrino Jig mm	Distanza rulli Distance rollers mm	Angolo angle °	Lo Lo mm	Allungamento Elongation %	Esito Results	Note Remarks	Rif. Ref.
849.PI1.01	EN-R07/15	+20	Side Bend T		10.0	x	15.0	40	66	180			No Defect		
849.PI1.02	EN-R07/15	+20	Side Bend T		10.0	x	15.0	40	66	180			No Defect		
849.PI1.03	EN-R07/15	+20	Side Bend T		10.0	x	15.0	40	66	180			No Defect		
849.PI1.04	EN-R07/15	+20	Side Bend T		10.0	x	15.0	40	66	180			No Defect		

Standard ref. UNI EN ISO 15614-1:2012 - UNI EN ISO 5173:2012

Remarks Test method "FORMER"

Test performed in Crema Laboratory Via della Pierina 9/11

Operator	Customer	Inspector	Inspector
Exova S.r.l.	02/04/15		0496N060

T.I.C.I. S.r.l. Via Garibaldi - Zona PIP 26010 Montodine (CR)	WELDING OPERATOR PERFORMANCE QUALIFICATIONS (WPQ)	QUALITY CONTROL SERVICE
(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)		

Welders name	Denti Giovanni	Stamp No.	
Welding process used	GTAW + SMAW	Type	MANUAL
Identification of WPS followed by welder during welding of test coupon			05-00
Base material(s) welded	A516 Gr.70 + A240 TP310S	Thickness	6 mm

Manual or Semiautomatic Variables for Each Process (QW-350)	Actual value	Range Qualified
Backing (metal, weld metal, welded from both sides, flux, etc.)(QW-402)	Weld metal for SMAW	Same
	None for GTAW	None/Yes
ASME P-No. To ASME P-No. (QW-403)	1 to 8	Same
■ Plate ☐ Pipe (enter diameter pipe)		2.5" & over
Filler metal specification (SFA) - Classification (QW-404)		
Filler metal F-No.	6 + 5	Same
Consumable insert for GTAW or PAW	None	Same
Weld deposit thickness for each welding process	2 + 4 mm	4+8 mm
Welding position (1G, 5G, etc.)(QW-405)	1G	Flat
Progression (uphill / downhill)	NA	NA
Backing gas for GTAW, PAW, or GMAW ; Fuel gas for OFW (QW-408)	Yes	Same
GMAW transfer mode (QW-409)	NA	NA
GTAW welding current type / polarity	Direct/Straight	Same
Machine Welding Variables for the Process Used (QW-360)		
Direct / Remote control		
Automatic voltage control (GTAW)		
Automatic joint tracking		
Weld position (1G, 5G, etc.)		
Consumable insert		
Backing (metal, weld metal, welded from both sides, flux, etc.)		

Guided Bend Test Result

Guided Bend Test Type	☐ QW-462.2 (side) Results	☒ QW-462.3(a) (Trans R & F) Type	☐ QW-462.3(b)(Long R & F) Results
ROOT		SATISFACTORY	
FACE		SATISFACTORY	

Visual examination results (QW-302.4)	SATISFACTORY
Radiographic test results (QW-304 and QW-305)	

(For alternative qualification of groove welds by radiography)

Fillet weld - Fracture test				Lenght and percent of defects					in.
Macro test fusion		Fillet leg size		in. X		in.			in.

Welding test conducted by		TICI S.r.l.	
Mechanical test conducted by	BODYCOTE	Laboratory test No.	68538

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

Organization	T.I.C.I. S.r.l. Via Garibaldi - Zona PIP 26010 MONTODINE (CR) Tel.+Fax 0373-242255
Date : 05/09/00	By :

CERTIFICATO PROVA DI QUALIFICAZIONE OPERATORE DI SALDATURA
WELDER OPERATOR APPROVAL TEST CERTIFICATE – WAC14732 - UNI EN 14732

ACCREDIA
PRS N° 082 C

Certificato n° / Certificate No.	**ICIM – WACo – 026696 – 00**
Fabbricante / *Manufacturer*	T.I.C.I. S.r.l.
Indirizzo / *Address*	Via Dell'Artigianato, 6 - 26010 - MONTODINE (CR)
Procedura di Saldatura del Fabbricante n° / *Manufacturer Welding Procedure WPS n°*	EN-01-20
Nome dell'Operatore di Saldatura / *Welding Operator's Name*	**SOCCINI Riccardo**
Metodo di Identificazione / *Identification method*	C. I. AT 6715537 Stamp. N. RS
Data e luogo di nascita / *Date and Place of Birth*	07/09/1979 Treviglio (BG) / Italia
Datore di lavoro / *Employer*	T.I.C.I. S.R.L.
Codice/Norma di esame / *Code/Testing Standard*	UNI EN ISO 14732:2013 ☒ ICIM S.p.A. è ON per Direttiva 2014/68/UE – No. Bo. 0425. La presente qualifica soddisfa la direttiva 2014/68/UE- All. I - 3.1.2

Foto / *Photograph*

Conoscenze tecniche / *Job Knowledge*

☐ Accettabile / *Accettable*
☒ Non sottoposta a prova /*Not Tested*

Variabili / ***Variables***	**Dettagli della prova** / ***Welding test details***	**Campo di validità** / ***Range of approval***
Processo di saldatura / *Welding Process*	121	121
Apparecchiatura di saldatura / *Welding equipment*	ESAB LAH 630	Same equipment
Unità di saldatura / *Welding machine*		
Dettagli per la saldatura meccanizzata / ***Details for mechanized welding***	**Dettagli della prova** / ***Welding test details***	**Campo di validità** / ***Range of approval***
Controllo visivo/controllo visivo in remoto / *Visual control/remote visual control*	Direct	Direct
Controllo automatico della lunghezza dell'arco / *Automatic control of arc length*	Without	With & Without
Inseguimento automatico del giunto / *Automatic traking of joint*	Without	With & Without
Posizione di saldatura / *Welding position*	PA	PA
Passata singola/passata multipla / *Single run/Multirun*	Multiple	Single & Multiple
Materiale a supporto / *Back-up material*	With	With
Inserto fusibile / *Fusible insert*	Without	With & Without

0252CM_06_IT

ACCREDIA
PRS N° 082 C

Certificato n°
Certificate No. **ICIM – WACo – 026696 – 00**

Dettagli per la saldatura automatica *Details for automatic welding*	**Dettagli della prova** *Welding test details*	**Campo di validità** *Range of approval*
Sensore del giunto *Joint sensor*	---	---
Sensore di controllo dell'arco *Sensor for arc welding control*	---	---
Tecnica a passata Singola/Multipla *Single run/Multirun technique*	---	---
Tipo unità di saldatura *Type of welding machine*	---	---
Altro *Other*	---	---

Approval based on *Qualificazione basata su*		**Tests result documentation** *Documentazione del risultato delle prove*
Prova di procedura di saldatura secondo il punto 4.1 a *Test of welding procedure according to 4.1 a (UNI EN ISO 15614-1, UNI EN ISO 15614-2)*	☒	ACCEPTABLE IRTEC S.r.l. Report no. RC-0292/23
Prova di saldatura di pre-produzione o di produzione secondo il punto 4.1 b *Test of pre-production welding or production welding according to 4.1 b (UNI EN ISO 15613)*	☐	
Prova di saldatura in conformità alla ISO 9606 secondo il punto 4.1 c *Test of welding as per ISO 9606 requirements according to 4.1 c*	☐	
Prova di produzione o di campionamento della produzione secondo il punto 4.1 d *Test of sample of the production according to 4.1 d*	☐	

Si certifica che l'operatore di saldatura sopra indicato, usando la procedura di saldatura indicata nel presente modulo, ha soddisfatto i requisiti descritti dalle norme applicate.

We certify that the welding operator identified above, using the welding procedure given in the present form, has satisfied the requirements described from the applied standards.

Data di saldatura *Date of welding*	Validità della qualificazione fino al *Validity of qualification until*	Esaminatore *Examiner*
24/03/2023	23/03/2029	LAZZARIN MARCO – ICIM Welding Inspector

Data di delibera *Date of approval*	**Approvatore** *Manager*
26/05/2023	*Vincenzo Delacqua* Rappresentante Direzione / Management Representative **ICIM S.p.A.**

Conferma della validità da parte del Fabbricante (semestrale)
Confirmation of the validity by Manufacturer (6 month)

Posizione/Titolo *Position/title*	Firma *Signature*	Data *Date*
RGQ/CQ		25.09.2023
RGQ/CQ		18.03.2024
RGQ/CQ		18.09.2024

Posizione/Titolo *Position/title*	Firma *Signature*	Data *Date*

Riconvalida della qualificazione da parte dell'Esaminatore (triennale)
Revalidation for qualification by Examiner (every 3 years)

Posizione/Titolo *Position/title*	Firma *Signature*	Data *Date*

Posizione/Titolo *Position/title*	Firma *Signature*	Data *Date*

0252CM_06_IT

Welding Procedure Specification (pWPS/WPS)

Welding Procedure Specification: **EN-01-20**

WPQR No.: **EN-R01/14 + EN-R07/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW, P, ss (141, 111, 121) - nb, sl (141) - mb, ml (111)**

Weld Preparation Details (Sketch)

Method of Preparation and Cleaning: **GRINDING BRUSHING**

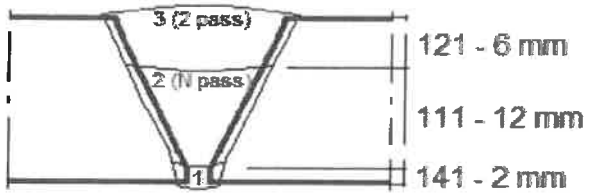
Parent Material Designation: **EN 15608 Gr. 1**

Material thickness (mm): **20**

Outside Diameter (mm): **N.A.**

Welding Position: **PA**

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input (EN 1011-1) (kJ/mm)
1	141	2,4	144 - 146	11 - 13	DCEN	N.A.	0,7 - 0,8	1,2 - 1,6
2 (N pass)	111	3,25	111 - 113	23 - 25	DCEP	N.A.	2,4 - 2,5	0,8 - 0,9
		4	146 - 148	22 - 24	DCEP	N.A.	3,0 - 3,1	0,8 - 0,9
3 (2 pass)	121	2	399 - 401	29 - 31	DCEP	N.A.	15 - 16	0,6- 0,7
			399 - 401	29 - 31	DCEP	N.A.	18 - 19	0,6- 0,7

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**
EN ISO 2560-A E 42 5 B 32 H5 (111)
EN ISO 14171-A S2Si

Other information, e.g.:

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: - Shielding: **I1 (141) nozzle 8 mm ISO 14174 SAAB156ACH5 (121)**

Oscillation : amplitude, frequency, dwell time: **N.A.**

- Backing: **N.A.**

Pulse welding details: **N.A.**

Gas Flow Rate - Shielding: **10-13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

- Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size: **(141) EN 26848 2,4 mm Tbi M3 WG-La15** Torch angle: **75°**

Details of Back Gouging/Backing: **N.A.**

Preheat Temperature: **20 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

(Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. MARZI - 25/09/2020
TICI S.R.L. - MONTODINE (CR)

T.I.C.I. S.R.L.
Via dell'Artigianato,6 - 26010 Montodine - CR
Tel: 0373 - 242256 Fax: 0373 - 655260
ticisrl1@virgilio.it – www.ticisrl.com
P. I. V. A. IT 00962060190

CERTIFICATO PROVA DI QUALIFICAZIONE DEL SALDATORE
WELDER APPROVAL TEST CERTIFICATE - UNI EN ISO 9606-1

PRS N° 082 C

Certificato n° Certificate No.	**ICIM – WAC – 026683 – 00**
Fabbricante *Manufacturer*	T.I.C.I. S.r.l.
Indirizzo *Address*	Via Dell'Artigianato, 6 - 26010 - MONTODINE (CR)
Procedura di Saldatura del Fabbricante n° *Manufacturer Welding Procedure WPS n°*	EN-02-20
Nome del Saldatore *Welder's Name*	**SOCCINI Riccardo**
Metodo di Identificazione *Identification method*	C. I. AT 6715537 Stamp. N. RS
Data e luogo di nascita *Date and Place of Birth*	07/09/1979 Treviglio (BG) / Italia
Datore di lavoro *Employer*	T.I.C.I. S.R.L.
Codice/Norma di esame *Code/Testing Standard*	UNI EN ISO 9606-1:2017; Schema ICIM 0248CS; ☒ ICIM S.p.A. è ON per Direttiva 2014/68/UE – No. Bo. 0425. La presente qualifica soddisfa la direttiva 2014/68/UE- All. I - 3.1.2

Prova supplementare di saldatura ad angolo
Supplementary fillet weld test
☐ Sì/*Yes* ☒ No

Conoscenze tecniche
Job Knowledge
☐ Accettabile / *Acceptable*
☒ Non sottoposta a prova / *Not Tested*

Variabili ***Variables***	**Dettagli della prova** ***Welding test details***	**Campo di validità** ***Range of approval***
Processo di saldatura *Welding Process*	141 135	141, 142, 143, 145 135, 138
Modalità di trasferimento *Transfer Mode*	Spray Arc	All, excluded Short Arc
Tipo di prodotto *Product Type – Plate (P) or Pipe (T)*	P	P – T
Tipo di saldatura *Type of weld*	BW	BW
Gruppo del materiale base e sottogruppo *Parent Material Group(s) and Sub Group(s)*	1 / 1.1	—
Materiale d'apporto designazione *Filler material designation*	141= ISO 636-A: W 42 4 2Si 135=EN ISO 14341-A: G 46 4 M21 4Si1	S, M
Gruppo materiale d'apporto *Filler material group*	FM1	FM1, FM2
Gas di protezione *Shielding gas*	141=ISO 14175 I1 (Ar 99,99%) 135=ISO 14175 M21 (Ar 82% + CO_2 18%)	—
Ausiliari *Auxiliaries (e.g. backing gas)*	—	—
Tipologia di corrente e polarità *Type of Current and Polarity*	DCEN DCEP	—
Spess. del materiale (mm) *Material Thickness (mm)*	14	—
Spessore del materiale depositato (mm) *Deposited Thickness (mm)*	141 = 2 135 = 12	2 to 4 3 to 24
Diametro esterno del tubo (mm) *Pipe outside diameter (mm)*	—	≥ 500 in fixed position ≥ 75 in rotating position
Posizione di saldatura *Welding positions*	PA	PA
Dettagli della saldatura *Weld details*	141= ss nb 135= ss mb	ss nb – ss mb – bs – ss gb – ss fb ss mb – bs
Strati multipli/strato singolo *Multy-layer / single layer*	ml	—
Altro *Other*	—	—

0251CM_09_IT

CERTIFICATO PROVA DI QUALIFICAZIONE DEL SALDATORE
WELDER APPROVAL TEST CERTIFICATE - UNI EN ISO 9606-1

ACCREDIA

PRS N° 082 C

Certificato n°
Certificate No. **ICIM – WAC – 026683 – 00**

Tipo di test *Type of test*	**Eseguite e Accettate** *Performed and Acceptable*	**Non testate** *Not tested*
Esame visivo *Visual testing (UNI EN ISO 17637)*	ACCEPTABLE ELEMENT MATERIALS TECHNOLOGY MILAN S.r.l. Report no. RPR288-1E1R1A23	
Esame radiografico *Radiographic testing (UNI EN ISO 17636)* o, se applicabile / *or, if applicable* **Esame ultrasonoro** *Ultrasonic testing (UNI EN ISO 17640)*		X X
Prova di piegatura *Bend test (UNI EN ISO 5173)* o, se applicabile / *or, if applicable* **Prova di trazione con intaglio** *Notch tensile test*	ACCEPTABLE ELEMENT MATERIALS TECHNOLOGY MILAN S.r.l. Report no. RPR288-1E1R1A23	X
Prova di frattura *Fracture test (UNI EN ISO 9017)* o, se applicabile / *or, if applicable* **Esame macrografico** *Macroscopic examination (UNI EN ISO 17639)* o, se applicabile / *or, if applicable*		X X

Si certifica che il saldatore sopra indicato, usando la procedura di saldatura indicata nel presente modulo, ha soddisfatto i requisiti descritti dalle norme applicate con la seguente Designazione:
We certify that the welder identified above, using the welding procedure given in the present form, has satisfied the requirements described from the applied standards with the following Designation:

UNI EN ISO 9606-1:2017 – 141 – P – BW – FM1 – S – s2 – PA – ss nb – ml
UNI EN ISO 9606-1:2017 – 135 – S – P – BW – FM1 – S – s12 – PA – ss mb – ml

Luogo di saldatura *Place of welding*	Data di saldatura *Date of welding*	Esaminatore *Examiner*
Montodine (CR)	24/03/2023	LAZZARIN Marco – Welding Inspector

Data di delibera *Date of approval*	**Approvatore** *Manager*
26/05/2023	*Vincenzo Delacqua* Rappresentante Direzione / Management Representative ICIM S.p.A.

Rivalidazione dopo 3 anni *Revalidation after 3 years*	Valido fino al *Valid until*	Rivalidazione dopo 2 anni *Revalidation after 2 years*	Valido fino al *Valid until*	Rivalidazione dopo 6 mesi *Revalidation after 6 months*	Valido fino al *Valid until*
9.3 a)	23/03/2026	**9.3 b)**		**9.3 c)**	

Applicabile esclusivamente per rivalidazione secondo paragrafi 9.3 b) oppure paragrafo 9.3 c)
Applicable for Revalidation according to sub-clause 9.3 b) or sub-clause 9.3 c)
Per la rivalidazione della qualifica da parte dell'ente di esame, per i successivi 2 anni si prega di fare riferimento all'allegato 0085CM
For the revalidation of the qualification by examining body for the following 2 years please refer to the attachment 0085CM
Conferma della validità da parte del datore di lavoro/coordinatore della saldatura/ente di esame, per i successivi 6 mesi
Confirmation of the validity by employer/welding coordinator/examining body for the following 6 months

Data *Date*	Firma *Signature*	Posizione o Titolo *Position or Title*
25.09.2023	Marco Dan	RGQ/CQ
18.03.2024	Marco Dan	RGQ/CQ
18.09.2024	Marco Dan	RGQ/CQ

0251CM_09_IT

Welding Procedure Specification (pWPS/WPS)

Welding Procedure Specification: **EN-02-20**

WPQR No.: **EN-R02/14**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **PULSED AUTOMATIC (135)**

Joint Type and Weld Type: **BW, P, ss (141, 135) - nb, sl (141) - mb, ml (135)**

Weld Preparation Details (Sketch)

Method of Preparation and Cleaning: **GRINDING BRUSHING**

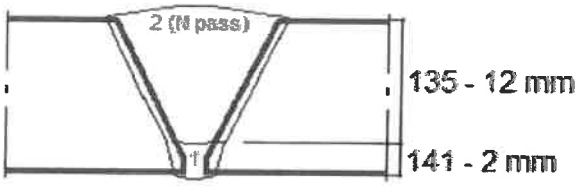
Parent Material Designation: **EN 15608 Gr. 1**

Material thickness (mm): **14**

Outside Diameter (mm): **N.A.**

Welding Position: **PA**

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input (EN 1011-1) (kJ/mm)
1	**141**	**2,4**	**144 - 146**	**11 - 13**	**DCEN**	**N.A.**	**0,7 - 0,8**	**1,2 - 1,6**
2 (N pass)	**135**	**1**	**208 - 210**	**27 - 29**	**DCEP**	**130 - 330**	**6,6 - 6,7**	**0,7**

Filler Material Designation and Make: **EN ISO 636-A W42 4 W2Si1 (141)**
EN ISO 14341-A G 42 4 M G3Si1 (135)

Other information, e.g.:

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: - Shielding: **I1 (141) nozzle 8 mm**
AR-CO2 M21 (135) nozzle 14 mm

Oscillation : amplitude, frequency, dwell time: **N.A.**

- Backing: **N.A.**

Pulse welding details: **SEMI-AUTOMATIC (135)**

Gas Flow Rate - Shielding: **10-13 lt/min (141)**
10-15 lt/min (135)

Distance contact tube/work piece: **20 mm (135)**

- Backing: **N.A.**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size: **(141) EN 26848 2,4 mm Tbi M3 WG-La15**

Torch angle: **75°**

Details of Back Gouging/Backing: **N.A.**

Preheat Temperature: **20 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

(Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. MARZI - 25/09/2020
TICI S.R.L. - MONTODINE (CR)

T.I.C.I. S.R.L.

CERTIFICATO PROVA DI QUALIFICAZIONE DEL SALDATORE
WELDER APPROVAL TEST CERTIFICATE - UNI EN ISO 9606-1

ACCREDIA
PRS N° 082 C

Certificato n° Certificate No.	**ICIM – WAC – 026692 - 00**
Fabbricante *Manufacturer*	T.I.C.I. S.r.l.
Indirizzo *Address*	Via Dell'Artigianato, 6 - 26010 - MONTODINE (CR)
Procedura di Saldatura del Fabbricante n° *Manufacturer Welding Procedure WPS n°*	EN-08-20
Nome del Saldatore *Welder's Name*	**SOCCINI Riccardo**
Metodo di Identificazione *Identification method*	C. I. AT 6715537 Stamp. N. RS
Data e luogo di nascita *Date and Place of Birth*	07/09/1979 Treviglio (BG) / Italia
Datore di lavoro *Employer*	T.I.C.I. S.R.L.
Codice/Norma di esame *Code/Testing Standard*	UNI EN ISO 9606-1:2017; Schema ICIM 0248CS; ☒ ICIM S.p.A. è ON per Direttiva 2014/68/UE – No. Bo. 0425. La presente qualifica soddisfa la direttiva 2014/68/UE- All. I - 3.1.2

Prova supplementare di saldatura ad angolo
Supplementary fillet weld test
☐ Sì/*Yes* ☒ No

Conoscenze tecniche
Job Knowledge
☐ Accettabile / *Acceptable*
☒ Non sottoposta a prova / *Not Tested*

Variabili ***Variables***	**Dettagli della prova** ***Welding test details***	**Campo di validità** ***Range of approval***
Processo di saldatura *Welding Process*	141 111	**141, 142, 143, 145** 111
Modalità di trasferimento *Transfer Mode*	N.A.	---
Tipo di prodotto *Product Type – Plate (P) or Pipe (T)*	T	P – T – Branch Connection ≥ 60°
Tipo di saldatura *Type of weld*	BW	BW
Gruppo del materiale base e sottogruppo *Parent Material Group(s) and Sub Group(s)*	8 / 8.1	---
Materiale d'apporto designazione *Filler material designation*	141= EN ISO 14343-A: W 19 12 3 L Si 111= EN ISO 3581-A: E 19 12 3 L R 3 2	S, M A, RA, RB, RC, RR, R
Gruppo materiale d'apporto *Filler material group*	FM5	FM5
Gas di protezione *Shielding gas*	ISO 14175 I1 Ar 99,99%	---
Ausiliari *Auxiliaries (e.g. backing gas)*	ISO 14175 I1 Ar 99,99%	---
Tipologia di corrente e polarità *Type of Current and Polarity*	141 = DCEN 111 = DCEP	---
Spess. del materiale (mm) *Material Thickness (mm)*	5,54	---
Spessore del materiale depositato (mm) *Deposited Thickness (mm)*	141 = 2 111 = 3,54	2 to 4 3 to 7,08
Diametro esterno del tubo (mm) *Pipe outside diameter (mm)*	60,3	≥ 30,15
Posizione di saldatura *Welding positions*	PA	PA
Dettagli della saldatura *Weld details*	141 = ss gb 111 = ss mb	ss mb – bs – ss gb ss mb, bs
Strati multipli/strato singolo *Multy-layer / single layer*	ml	---
Altro *Other*	---	---

0251CM_09_IT

ICIM

CERTIFICATO PROVA DI QUALIFICAZIONE DEL SALDATORE
WELDER APPROVAL TEST CERTIFICATE - UNI EN ISO 9606-1

ACCREDIA

PRS N° 082 C

Certificato n°
Certificate No. **ICIM – WAC – 026692 - 00**

Tipo di test *Type of test*	**Eseguite e Accettate** *Performed and Acceptable*	**Non testate** *Not tested*
Esame visivo *Visual testing (UNI EN ISO 17637)*	ACCEPTABLE IRTEC S.r.l. Report no. RC-0095/23	
Esame radiografico *Radiographic testing (UNI EN ISO 17636)* o, se applicabile / *or, if applicable* **Esame ultrasonoro** *Ultrasonic testing (UNI EN ISO 17640)*	ACCEPTABLE IRTEC S.r.l. Report no. RC-0300/23	X
Prova di piegatura *Bend test (UNI EN ISO 5173)* o, se applicabile / *or, if applicable* **Prova di trazione con intaglio** *Notch tensile test*		X
Prova di frattura *Fracture test (UNI EN ISO 9017)* o, se applicabile / *or, if applicable* **Esame macrografico** *Macroscopic examination (UNI EN ISO 17639)* o, se applicabile / *or, if applicable*		X

Si certifica che il saldatore sopra indicato, usando la procedura di saldatura indicata nel presente modulo, ha soddisfatto i requisiti descritti dalle norme applicate con la seguente Designazione:

We certify that the welder identified above, using the welding procedure given in the present form, has satisfied the requirements described from the applied standards with the following Designation:

1) UNI EN ISO 9606-1: 2017 – 141 – T – BW – FM5 – S – D60,3 – s2 – PA – ss gb – ml
2) UNI EN ISO 9606-1: 2017 – 111 – T – BW – FM5 – R – D60,3 – s3,54 – PA – ss mb – ml

Luogo di saldatura *Place of welding*	Data di saldatura *Date of welding*	Esaminatore *Examiner*
Montodine (CR)	24/03/2023	LAZZARIN MARCO - Welding Inspector

Data di delibera *Date of approval*	**Approvatore** *Manager*
26/05/2026	*Vincenzo De Acqua* Rappresentante Direzione / Management Representative ICIM S.p.A.

Rivalidazione dopo 3 anni *Revalidation after 3 years*	Valido fino al *Valid until*	Rivalidazione dopo 2 anni *Revalidation after 2 years*	Valido fino al *Valid until*	Rivalidazione dopo 6 mesi *Revalidation after 6 months*	Valido fino al *Valid until*
9.3 a)	23/03/2026	**9.3 b)**		**9.3 c)**	

Applicabile esclusivamente per rivalidazione secondo paragrafi 9.3 b) oppure paragrafo 9.3 c)

Applicable for Revalidation according to sub-clause 9.3 b) or sub-clause 9.3 c)

Per la rivalidazione della qualifica da parte dell'ente di esame, per i successivi 2 anni si prega di fare riferimento all'allegato XXXXX

For the revalidation of the qualification by examining body for the following 2 years please refer to the attachment XXXX

Conferma della validità da parte del datore di lavoro/coordinatore della saldatura/ente di esame, per i successivi 6 mesi

Confirmation of the validity by employer/welding coordinator/examining body for the following 6 months

Data *Date*	Firma *Signature*	Posizione o Titolo *Position or Title*
25.09.2023	Nota Dari	RGQ/CQ
18.03.2024	Nota Dari	RGQ/CQ
18.09.2024	Nota Dari	RGQ/CQ

0251CM_09_IT

Welding Procedure Specification (pWPS/WPS)

Welding Procedure Specification: **EN-08-20**

WPQR No.: **EN-R04/15**

Manufacturer: **TICI S.R.L. - MONTODINE (CR)**

Mode of metal transfer: **N.A.**

Joint Type and Weld Type: **BW, T, ss (141, 111) - nb, ml (141) - mb, ml (111)**

Weld Preparation Details (Sketch)

Method of Preparation and Cleaning: **GRINDING, BRUSHING**

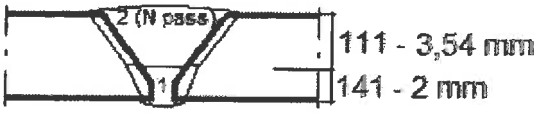
Parent Material Designation: **EN 15608 Gr. 8**

Material thickness (mm): **5,54**

Outside Diameter (mm): **60,3**

Welding Position: **PA**

Joint Design



Welding Details

Run	Welding Process	Size of Filler Material (mm)	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed (mm/sec)	Run out length/Travel Speed (mm/sec)	Heat input (EN 1011-1) (kJ/mm)
1	141	2,4	119 - 121	9 - 11	DCEN	N.A.	1,1 - 1,2	0,5 - 0,7
2 (N pass)	111	3,2	103 - 105	21 - 23	DCEP	N.A.	2,7 - 2,8	0,6 - 0,7

Filler Material Designation and Make: **EN ISO 14343-A 19 9 L**
EN ISO 3581-A E 19 9 L R 1 2

Other information, e.g.:

Any Special Baking or Drying: **NONE**

Weaving (maximum width of run): **N.A.**

Designation Gas/Flux: - Shielding: **I1 (141) nozzle 8 mm**

Oscillation : amplitude, frequency, dwell time: **N.A.**

- Backing: **I1 (141)**

Pulse welding details: **N.A.**

Gas Flow Rate - Shielding: **10-13 lt/min (141)**

Distance contact tube/work piece: **N.A.**

- Backing: **10-15 lt/min (141)**

Plasma welding details: **N.A.**

Tungsten Electrode Type/Size: **(141) EN 26848 2,4 mm Tbi M3 WG-La15** Torch angle: **75°**

Details of Back Gouging/Backing: **NONE**

Preheat Temperature: **15 °C**

Interpass Temperature: **150 °C**

Post-Heating: **NONE**

Pre-heat maintenance temperature **NONE**

Post-Weld Heat-Treatment and/or Ageing: **NONE**

(Time, Temperature, Method: **N.A.**

Heating and Cooling Rates): **N.A.**

A. MARZI - 25/09/2020
TICI S.R.L. - MONTODINE (CR)

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