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WELDING CERTIFICATION

WELDING PROCEDURE APPROVAL
WELDER'S CERTIFICATION OF CONFORMITY



Quality is not an act, it's a habit.





WELDING CERTIFICATION WELDING PROCEDURE APPROVAL & WELDER'S CERTIFICATION OF CONFORMITY

This pertains to all manufacturers whose products include welded parts, with the purpose of ensuring the quality and security of the construction, the projects and the employees. Meanwhile, the approval of the welding procedure and the certification of conformity comprise an obligatory demand of all the European Directives that pertain to machinery and equipment construction.

The welding process that a manufacturer uses, must be evaluated through conducting a series of tests/ checks to ensure the quality and the safety of the products according to the EN 16514 European Standard.





Certificate No : TH-024/02

TÜV Hellas Order No. : 02.01.209

PAGE 1

WELDING PROCEDURE ACCEPTANCE RECORD (WPAR)

Manufacturer : MEVACO S.A.
Manufacturer Order No :

Inspection Authority : TÜV Hellas (RWTÜV) S.A.
Location : THESSALONIKI


TEST REPORT

Date of welding : 29/11/2002
Code/Testing Standard : EN 288-3
Welding process : 135 Automatic, single run
Parent metal(s) : Group 1 (DC04, EN 10130)
Parent metal thickness [mm] : 2,5
Welding position : PB (Pipe rotating)
Joint type : Pipe fillet weld (IFW)
Relevant WPS-No. : MEVACO02
Outside diameter [mm] : 390 mm
Welding current : 250-260 A/DC(+)
Joint form [sketch] : As per relevant WPS
Filler metal type : EN 440 : G3 Si 1 (Base Welding Wire/ERLIKON SA)
Shielding gas : Corgon 18 (82% Ar, 18% CO₂)/
8-10 l/min
Flux / Auxiliaries : %
Preheating : Min 10 °C
Post weld heat treatment : %
Other information :
1. Wire feed speed = 13 m/min
2. Travel speed = 71 cm/min

It is certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code / testing standard indicated above. The requirements are fulfilled.

Location
THESSALONIKI

Date of issue
16.12.2002


The Inspector / Expert of TÜV Hellas (RWTÜV) S.A.
P. CHATZIFOTIADIS





Certificate No : TH-024/02

TUV Hellas Order No. : 02.01.209

WELDING PROCEDURE ACCEPTANCE RECORD (WPAR)

Manufacturer : MEVACO S.A.
Manufacturer Order No :

Inspection Authority : TÜV Hellas (RWTÜV) S.A.
Location : THESSALONIKI

RANGE OF APPROVAL

Code/Testing Standard : EN 288-3 Relevant WPS-No. : MEVACO 02
Welding process : 135 Automatic, single run
Parent metal(s) : Group 1
Thickness of parent metal : 2,5 to 5,0 mm Outside diameter : $\varnothing \geq 195$ mm
Welding position : All
Joint type : PFW/TFW
Welding current : DC(+)
Filler metal type : Filler metals in the same group of tensile properties or with the same nominal chemical composition
Shielding gas : Gas with the same nominal composition
Flux / Auxiliaries : %
Preheating : Min 10 °C
Post weld heat treatment : %
Other information : %

Major modifications of the conditions laid down require a supplementary test. The validity of the requirements depends upon code or testing standard above.



Location : THESSALONIKI
Date of issue : 16.12.2002

The Inspector/Expert of TÜV Hellas (RWTÜV) S.A.
P. CHATZIFOTIADIS



Certificate No : TH-024/02

TUV Hellas Order No. : 02.01.209

WELDING PROCEDURE ACCEPTANCE RECORD (WPAR)

Manufacturer : MEVACOSA.
 Manufacturer Order No :

Inspection Authority : TÜV Hellas (RWTÜV) S.A.
 Location : THESSALONIKI

TEST RESULTS

NONDESTRUCTIVE TESTING

TEST METHOD	REQUIREMENTS	RESULT/ ATTACHMENT / SHEET
VISUAL EXAMINATION	EN 970 / EN 25817	ACCEPTABLE
RADIOGRAPHIC EXAMINATION	%	%
ULTRASONIC EXAMINATION	%	%
PENETRANT EXAMINATION	EN 571-1 / EN 1289	ACCEPTABLE
MAGNETIC PARTICLE TEST	%	%

TENSILE TEST

Specimen No Area	Dimensions [mm]	Test temperature °C	ReH/Rp1,0 /Rp0,2 N/mm ²	R _m N/mm ²	L _o [mm]	A %	Z %	Fracture position	Appearance of fracture/ Remarks

BEND TESTS

Root pass in tensile zone (R), Cover pass in tensile zone (F) Side bend test (SB)

Specimen No Area	Dimensions [mm]	Appearance of fracture Remarks	Bending angle [Grad]	Specimen Nr. Area	Bending angle [Grad]	Appearance of fracture Remarks:	Bending Elong.	
							L _o [mm]	[%]

IMPACT TESTS

Specimen type :

Specimen No. Area	Dimensions mm	Test temperature	Notch position	Values			Mean Value J/J/cm ²	Appearance of fracture Requirements:
				J / J/cm ²				

WELD METAL ANALYSIS (%)

Specimen No. Area	C	Si	Mn	P	S	Cr	Ni	Mo		

HARDNESS TESTS : %

FRACTURE TESTS : %

MACROSTRUCTURE : ACCEPTABLE

MICROSTRUCTURE : %

REMARKS : 1. LIQUID PENETRANT TEST REPORT : GATS Report No. T02.081.PT.001
 2. MACRO TEST REPORT : GATS Report No. T02.081.MACRO.001

Location : THESSALONIKI

Date of issue : 16.12.2002

The Inspector / Expert of TÜV Hellas (RWTÜV) S.A.
 P. CHATZIFOTIADIS





Certificate No : TH-023/02

TUV Hellas Order No. : 02.01.209

WELDING PROCEDURE ACCEPTANCE RECORD (WPAR)

Manufacturer	: MEVACO S.A.	Inspection Authority	: TÜV Hellas (RWTÜV) S.A.
Manufacturer Order No	:	Location	: THESSALONIKI

TEST REPORT


Date of welding	: 29/11/2002		
Code/Testing Standard	: EN 288-3	Relevant WPS-No.	: MEVACO 01
Welding process	: 135 Automatic, single run		
Parent metal(s)	: Group 1 (DC04, EN 10130)		
Parent metal thickness [mm]	: 2,5	Outside diameter [mm]	: -
Welding position	: PA	Welding current	: 160-165 A/DC(+)
Joint type	: Plate square butt weld (PBW)	Joint form [sketch]	: As per relevant WPS

Filler metal type	: EN 440 : G3 Si 1 (Base Welding Wire/ERLIKON SA)
Shielding gas	: Corgon 18 (82% Ar, 18% CO ₂)/ 8-10 l/min
Flux / Auxiliaries	: %
Preheating	: Min 10 °C
Post weld heat treatment	: %
Other information	: 1. Wire feed speed = 8 m/min 2. Travel speed = 35 cm/min

It is certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code / testing standard indicated above. The requirements are fulfilled.

Location	Date of issue
THESSALONIKI	16.12.2002

[Signature]
The Inspector / Expert of TÜV Hellas (RWTÜV) S.A.
P. CHATZIFOTIADIS





Certificate No : TH-023/02

TUV Hellas Order No. : 02.01.209

PAGE 2

WELDING PROCEDURE ACCEPTANCE RECORD (WPAR)

Manufacturer : MEVACO S.A.
Manufacturer Order No :

Inspection Authority : TÜV Hellas (RWTÜV) S.A.
Location : THESSALONIKI

RANGE OF APPROVAL

Code/Testing Standard	: EN288-3	Relevant WPS-No.	: MEVACO01
Welding process	: 135 Automatic, single run		
Parent metal(s)	: Group 1		
Thickness of parent metal	: 2,0 to 2,8 mm	Outside diameter [mm]	: $\varnothing > 500$ mm
Welding position	: All		
Joint type	: PBW ss/mb, ss/nb, bs/gg, bs/ng / PFW / TBW ss/mb, ss/nb /TFW / T-butt welds in plate ss/bs		
Welding current	: DC(+)		
Filler metal type	: Filler metals in the same group of tensile properties or with the same nominal chemical composition		
Shielding gas	: Gas with the same nominal composition		
Flux / Auxiliaries	: %		
Preheating	: Min 10 °C		
Post weld heat treatment	: %		
Other information	: %		

Major modifications of the conditions laid down require a supplementary test. The validity of the requirements depends upon code or testing standard above.



Location

Date of issue

The Inspector / Expert of TÜV Hellas (RWTÜV) S.A.

THESSALONIKI

16.12.2002

P.CHATZIFOTIADIS



Certificate No : TH-023/02

TUV Hellas Order No. : 02.01.209

WELDING PROCEDURE ACCEPTANCE RECORD (WPAR)

Manufacturer : MEVACO S.A.

Inspection Authority : TÜV Hellas (RWTÜV) S.A.

Manufacturer Order No :

Location : THESSALONIKI

TEST RESULTS

NON DESTRUCTIVE TESTING

TEST METHOD	REQUIREMENTS	RESULT/ ATTACHMENT / SHEET
VISUAL EXAMINATION	EN 970 / EN 25817	ACCEPTABLE
RADIOGRAPHIC EXAMINATION	EN 1435 / EN 25817	ACCEPTABLE
ULTRASONIC EXAMINATION	%	%
PENETRANT EXAMINATION	EN 571-1 / EN 1289	ACCEPTABLE
MAGNETIC PARTICLE TEST	%	%

TENSILE TEST

Specimen No Area	Dimensions [mm]	Test temperature °C	ReH/Rp1,0 /Rp0,2 N/mm ²	R _m N/mm ²	L ₀ [mm]	A %	Z %	Fracture position	Appearance of fracture/ Remarks
1	23×24,2		293	347				BM	ACCEPTABLE
2	24×24,2		300	352				BM	ACCEPTABLE

BEND TESTS

Root pass in tensile zone (R), Cover pass in tensile zone (F) Side bend test (SB)

Specimen No Area	Dimensions [mm]	Appearance of fracture Remarks	Bending angle [Grad]	Specimen Nr. Area	Bending angle [Grad]	Appearance of fracture Remarks:	Bending Elong	
							L ₀ [mm]	[%]
FBB 1	2,5×20	ACCEPTABLE	120°					
FBB 2	2,5×20	ACCEPTABLE	120°					
RBB 1	2,5×20	ACCEPTABLE	120°					
RBB 2	2,5×20	ACCEPTABLE	120°					

IMPACT TESTS

Specimen type :

Specimen No. Area	Dimensions mm	Test temperature	Notch position	Values J / J/cm ²	Mean Value J / J/cm ²	Appearance of fracture Requirements:

WELD METAL ANALYSIS (%)

Specimen No. Area	C	Si	Mn	P	S	Cr	Ni	Mo		

HARDNESS TESTS : %

FRACTURE TESTS : %

MACROSTRUCTURE : ACCEPTABLE

MICROSTRUCTURE : %

- REMARKS :
1. RADIOGRAPHIC REPORT : GATS Report No. T.02.081.RT002
 2. LIQUID PENETRANT TEST REPORT : GATS Report No. T02.081.PT.001
 3. TENSILE TEST CERTIFICATE : GATS Report No. T02.081.001
 4. BEND TEST REPORT : GATS Report No. T02.081.BT.001
 5. MACRO TEST REPORT : GATS Report No. T02.081.MACRO.002

Location : THESSALONIKI

Date of issue : 16.12.2002

The Inspector / Expert of TÜV Hellas (RWTÜV) S.A.

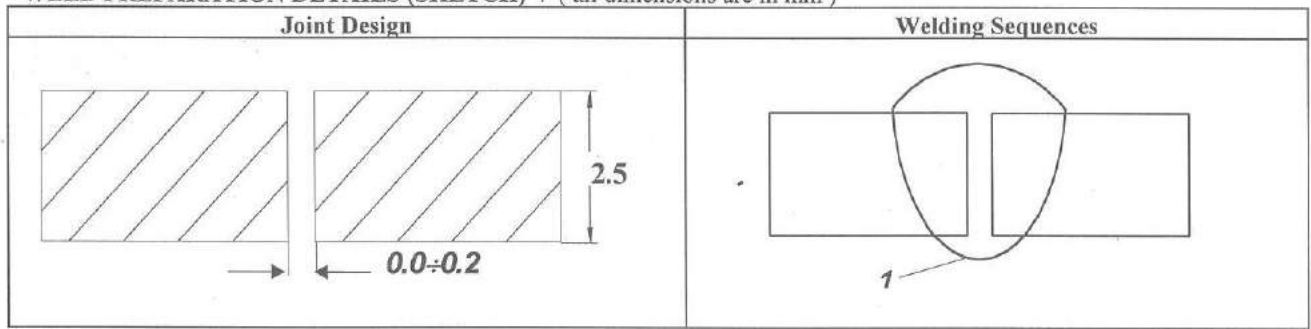
P.CHATZIFOTIADIS



Manufacturer's welding procedure specification (WPS)

Location	: THESSALONIKI	Examiner or test body	: TÜV HELLAS S.A.
WPS Reference No	: MEVACO 01	Parent Material	: DC 04, EN 10130
WPAR No	: %	Material Thickness (mm)	: 2,5 mm
Manufacturer	: MEVACO S.A.	Outside Diameter (mm)	: %
Welder's Name	: %	Welding Position	: PA
Welding Process	: 135 Automatic	Joint Type	: Plate square butt weld (PBW)
Code Testing Std	: EN 288-2	Method of Preparation and Cleaning	: %

WELD PREPARATION DETAILS (SKETCH)*: (all dimensions are in mm)



WELDING DETAILS

Run	Process	Size of Filler Metal	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed	Travel Speed *
1	135	1,0	160 – 165	%	DC (+)	8 m/min	35 cm/min

Filler Metal Classification and trade name : EN 440 : G3 Si 1 / ERLIKON S.A. BASE WELDING WIRE
 Any Special Baking or Drying : %

Gas Flux : shielding : Corgon 18 (82 % Ar, 18 %CO₂)
 backing : %
 Gas Flow Rate : shielding : 8-10 LIT / MIN
 backing : %
 Tungsten Electrode Type/Size : %
 Details of Back Gouging/Backing : %

Other information* : %
 Torch angle : %
 Pulse welding details : %
 Stand off distance : %
 Plasma welding details : %
 Oscillation : amplitude, frequency, dwell time : %

Preheat Temperature : min 10° C
 Interpass Temperature : %
 Post-Weld heat treatment and/or Ageing : %
 Time, Temperature, Method : %
 Heating and Cooling Rates* : %



TUV HELLAS (RWTUV) S.A.
P. CHATZIFOTIADIS
 INSPECTOR

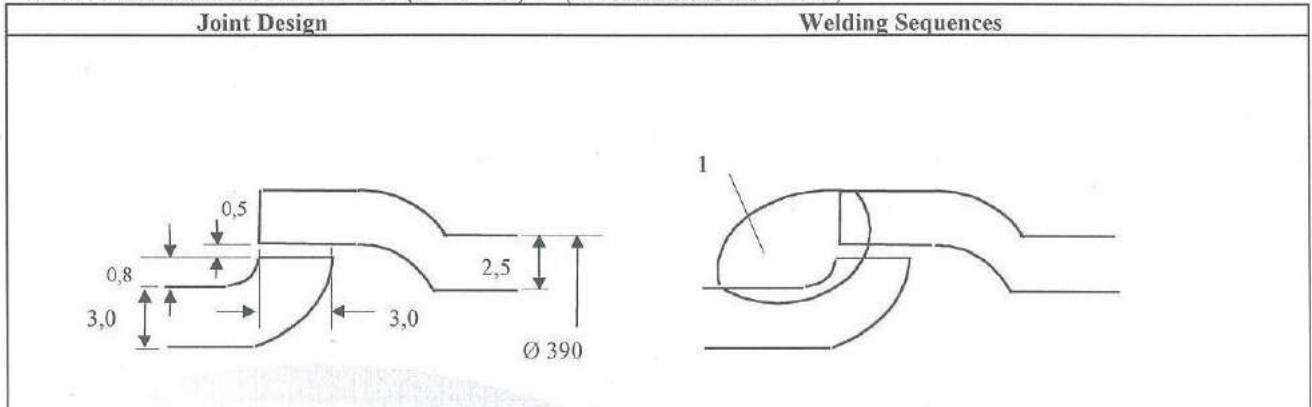
Manufacturer
 Name, date and signature

*If required

Manufacturer's welding procedure specification (WPS)

Location	: THESSALONIKI	Examiner or test body	: TÜV HELLAS S.A.
WPS Reference No	: MEVACO 02	Parent Material	: DC 04, EN 10130
WPAR No	: %	Material Thickness (mm)	: 2,5 mm / 3,0 mm
Manufacturer	: MEVACO S.A.	Outside Diameter (mm)	: 390 mm
Welder's Name	: %	Welding Position	: PB (pipe rotating)
Welding Process	: 135 Automatic	Joint Type	: Pipe fillet weld (TFW)
Code Testing Std	: EN 288-2	Method of Preparation and Cleaning	: %

WELD PREPARATION DETAILS (SKETCH)*: (all dimensions are in mm)



WELDING DETAILS

Run	Process	Size of Filler Metal	Current A	Voltage V	Type of current/ Polarity	Wire Feed Speed	Travel Speed *
1	135	1,0	250 – 260	%	DC (+)	13 m/min	71 cm/min

Filler Metal Classification and trade name : EN 440 : G3 Si 1 / ERLIKON S.A. BASE WELDING WIRE
 Any Special Baking of Drying : %

Gas Flux : shielding : Corgon 18 (82 % Ar, 18 %CO₂)
 backing : %
 Gas Flow Rate : shielding : 8-10 LIT / MIN
 backing : %
 Tungsten Electrode Type/Size : %
 Details of Back Gouging/Backing : %

Other information* : %
 Torch angle : %
 Pulse welding details : %
 Stand off distance : %
 Plasma welding details : %
 Oscillation : amplitude, frequency, dwell time : %

Preheat Temperature : min 10° C
 Interpass Temperature : %
 Post-Weld heat treatment and/or Ageing : %
 Time, Temperature, Method : %
 Heating and Cooling Rates* : %

Manufacturer
 Name, date and signature



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*If required