

<b>QW-482</b> <b>WELDING PROCEDURE SPECIFICATION</b> <b>(WPS AS PER ASME SECTION IX )</b>																									
<b>Company Name : Gevasol Industries Pvt. Ltd.</b>		<b>DATE : 15/04/2024</b>																							
<b>Welding Procedure Specification No: GIPL/WPS/006    Rev : 1</b>		<b>Supporting PQR NO : GIPL/PQR/006</b>																							
<b>Welding Process (es): Laser Beam Welding ( Fusion )</b>																									
<b>Type(s): LBW Unit Model No. : ( ECO PWR JG10SN)</b> <b>Version : 09/2013</b>		<b>Page : 1 of 2</b>																							
<b>JOINTS : (QW-402)</b> <b>Joint design: AS PER APPROVED DRAWING</b> <b>Backing (Yes / No): Yes</b> <b>Backing Material (Type): Metal</b> 1. Metal                            2. Non-fusing Metal 3. Nonmetallic                    4. Others <b>Retainers:                            NONE</b>																									
<b>BASE METALS : (QW-403)</b> <b>P No.: -    Gr. No. -    To    P No. : --    Gr..No. --</b>  <p style="text-align: center;">OR</p> <b>Specification type &amp; grade: ESS Gr.35C270</b> <b>to Specification type &amp; grade: ECS Gr. 35C270</b> <p style="text-align: center;">OR</p> <b>Chem. Analysis &amp; Mech. Prop: ---</b> <b>to Chem. Analysis &amp; Mech. Prop: ---</b>		<b>FILLER METAL : (QW-404)</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">PROCESS</th> <th style="width: 50%;">LBW ( Fusion)</th> </tr> </thead> <tbody> <tr><td>F. No.</td><td>NA</td></tr> <tr><td>A. No.</td><td>NA</td></tr> <tr><td>Chem. Composition</td><td>NA</td></tr> <tr><td>Cross section</td><td>NA</td></tr> <tr><td>Addition of filler metal</td><td>NA</td></tr> <tr><td>Method of addition</td><td>NA</td></tr> <tr><td>Filler Metal Product Form</td><td>NA</td></tr> <tr><td>Make / brand</td><td>NA</td></tr> <tr><td>Consumable insert</td><td>NONE</td></tr> <tr><td>Deposited weld metal thickness (Max.)</td><td>Groove: NA  LAP: Lamination Stack</td></tr> </tbody> </table>		PROCESS	LBW ( Fusion)	F. No.	NA	A. No.	NA	Chem. Composition	NA	Cross section	NA	Addition of filler metal	NA	Method of addition	NA	Filler Metal Product Form	NA	Make / brand	NA	Consumable insert	NONE	Deposited weld metal thickness (Max.)	Groove: NA  LAP: Lamination Stack
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	<b>Groove</b>	<b>Lap</b>																							
<b>Base Metal thk range (mm.)</b>	NA	Stack of Lamination rings																							
<b>Others:</b>		<b>Others:</b>  <div style="text-align: right;"> <b>Anant Kulkarni</b>            CWI 11012521         </div>																							

QW 482		WPS NO: GIPL /WPS/006			Page: 2 OF 2		
<b>POSITION :</b> (QW-405) <b>Position(s) of Lap :</b> Flat ( 1G ) <b>Welding Progression:</b> NA <b>Position(s) of Fillet:</b> NA				<b>ELECTRICAL CHARACTERISTICS:</b> (QW-409)  <b>Pulse Duration :</b> 6 ms  <b>Frequency :</b> 5 Hz  <b>Power :</b> 50 watts			
<b>PREHEAT :</b> (QW-406) <b>Preheat Temp (Min.):</b> 10 °C				<b>TECHNIQUE :</b> (QW-410) <b>Cleaning Method :</b> Acetone / Ultrasonic cleaning <b>Oscillation :</b> No <b>Angle of Beam :</b> 90 Degree			
<b>Inter-pass Temp (Max.):</b> 150 °C Max. Preheat Maintenance: NIL				<b>Wash Pass :</b> No <b>1 Vs 2 side Welding :</b> NA <b>Travel speed :</b> 3 mm /sec			
<b>POST WELD HEAT TREATMENT :</b> (QW-407) <b>Temperature Range :</b> NA				<b>Optical Technique Change :</b> No <b>Multiple or Single pass :</b> Two Passes <b>Type of Equipment :</b> Nd YAG Laser <b>Use of Thermal Process :</b> NA <b>Change in Wavelength :</b> No <b>Spot size change :</b> As required			
<b>Time Range:</b> NA							
<b>GAS:</b> (QW-408)	<b>Gas</b> (es)	<b>%</b> <b>Composition</b> <b>mixture</b>	<b>Flow rate</b> (Lit/min)				
<b>Shielding</b>	NA	NA	NA				
<b>Trailing</b>	NA	NA	NA				
<b>Others:</b> Clean the joint area on either side of the joint by wire brushing to remove rust & dirt oil grease & other materials detrimental to welding to be removed by solvents.							

Weld Layer(s)	Process (es)	Filler material		Pulse Duration	Frequency	Power	Travel speed in mm / sec	Remark
		Class	Dia (mm.)					
Two Passes	LBW Fusion	NA	NA	6 ms	5 Hz	50 watts	3 mm/sec	

**Approved by**  
 Anant Kulkarni  
 CWI 11012521  
 QC1 EXP. 1/1/2026  
**A E Kulkarni (AWS : CWI)**  
**Weld Tech Services**

**QW 483**  
**PROCEDURE QUALIFICATION RECORD**  
**(PQR)**

<b>Procedure Qualification Record No.:</b> GIPL PQR/ 006 <b>WPS No.:</b> GIPL / WPS/006 Rev. : 0 <b>Welding Process(es) :</b> Laser Beam Welding (Fusion) <b>Types (Manual, Semi automatic, Machine):</b> LBW M/c Model ( ECO PWR JG10SN) <span style="float: right;"><b>Version : 09/2013</b></span>	<b>Date:</b> 15/04/24
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**JOINTS (QW 406)**

<b>BASE METAL (QW-403)</b> <b>Material Spec.:</b> Carbon steel Grade 35C270 as per BIS-IS-648 <p style="text-align: center;">To</p> <b>Material Spec.:</b> Carbon steel Grade 35C270 as per BIS-IS-648 <b>P No.:</b> - <b>To</b> <b>P No.:</b> - <b>Thickness of each Lamination :</b> 0.35 mm Thick <b>Production Mock Up ID :</b> Sharkan <b>Dia. OD 73.5 X LENGTH 24 mm</b> <b>Dia. of Prod. Mock up (mm.):</b> 30 mm ID <b>Others :</b> NA	<b>POST WELD HEAT TREATMENT (QW-407)</b> <b>Temperature:</b> NA  <b>Time:</b> NA <b>Others:</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 15%;">GAS :</th> <th style="width: 15%;">Gas (es)</th> <th style="width: 35%;">% Composition mixture</th> <th style="width: 35%;">Flow rate (LPM)</th> </tr> </thead> <tbody> <tr> <td>QW-408</td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Shielding</b></td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td><b>Trailing</b></td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td><b>Backing</b></td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table>	GAS :	Gas (es)	% Composition mixture	Flow rate (LPM)	QW-408				<b>Shielding</b>	NA	NA	NA	<b>Trailing</b>	NA	NA	NA	<b>Backing</b>	NA	NA	NA
GAS :	Gas (es)	% Composition mixture	Flow rate (LPM)																		
QW-408																					
<b>Shielding</b>	NA	NA	NA																		
<b>Trailing</b>	NA	NA	NA																		
<b>Backing</b>	NA	NA	NA																		

<b>FILLER METAL (QW-404)</b>	<b>LBW ( Fusion)</b>	<b>ELECTRICAL CHARACTERISTICS (QW-409)</b>
<b>Weld Metal Analysis (A No.)</b>	NA	<b>Pulse Duration :</b> 6 ms <b>Frequency :</b> 5 Hz
<b>Filler Metal F No</b>	NA	<b>Power :</b> 50 watts
<b>Addition of Filler</b>	NA	<b>Travel Speed :</b> 3 mm / sec.
<b>Chemical Composition</b>	NA	
<b>Cross section</b>	NA	
<b>Filler Metal Product Form</b>	NA	
<b>Deposited Weld Metal</b>	Only Fusion	
<b>Make/ Brand of Filler</b>	NA	

<b>POSITION (QW-405)</b> <b>Position :</b> Flat ( 1G ) <b>Weld Progression:</b> NA <b>Others:</b>	<b>TECHNIQUE (QW-410)</b> <b>Angle of Beam :</b> 90 Degree <b>Change in Wavelength :</b> NA <b>Change in Oscillation:</b> No <b>Multi pass or Single Pass :</b> Two passes <b>Spot size :</b> As required
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<b>PREHEAT (QW-405)</b> <b>Preheat Temp.:</b> 25 ° C ( Ambient Temp.) <b>Inter-pass Temp.:</b> 100 °C <b>Preheat Maintenance:</b> NONE	<b>Wash Pass -</b> No <b>Use of Thermal Process:</b> NA <b>Type of Equipment:</b> Nd YAG Laser
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Weld Layer(s)	Process (es)	Filler material		Pulse Duration	Frequency	Power In Watts	Travel speed range (mm./ Sec.)	Remarks
		Class	Dia (mm.)					
1st Pass - Forward 2nd Pass- Reverse	LBW Fusion	NA	NA	6 ms	5 Hz	50	3	

**Anant Kulkarni**  
CWJ 11012521  
QC1 EXP. 1/1/2026

**QW 483** PQR No.: **GIPL /PQR/006** (contd.) 2 of 2

**TESILE TEST (QW-150) - NA**

Specimen No.	Width (mm.)	Thick (mm.)	Area (mm <sup>2</sup> )	Ultimate Total Load (N)	Ultimate Tensile Strength (Mpa)	Min. required UTS (Mpa)	Type of failure & Location

**GUIDED BEND TESTS (QW-160) - NA**

Type and Figure No.	Results

**TOUGHNESS TESTS (QW-170) - NA**

Notch Type	Test Temp.	Notch Location	Specimen Number	Impact Values (Joules)	Min. required (Joules)	Lateral Shear (%)	Exp. (Mils)	Drop Weight	
								Break	No Break

**PULL OUT TEST**

**Result: Satisfactory**

**MACRO TEST ( QW 197.1)**

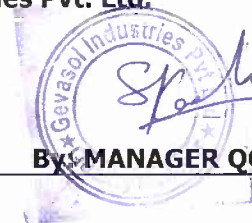
**Test Result of Production Mock Up Macro Specimen : Satisfactory**

Operator's Name: Paresh Naikude T. No.: WO1 Stamp No.: GIPL/PN/WOPQ-01  
 Test Conducted by: Gevasol Industries Pvt. Ltd. By : Matscope Material Testing Labs Pvt Ltd.  
 Lab Test No. : MD06DN – 03/04  
 Test Witnessed by : Mr. A. E. Kulkarni (AWS :CWI DT : 13/04 /2024  
 Weld Tech Services



**We certify that the statements in this record are correct and that the test welds were prepared & tested in accordance with the requirement of section IX of ASME BOILER AND PRESSURE VESSEL CODE.**

**Manufacturer: M/S Gevasol Industries Pvt. Ltd.**

**15/04/2024**



**Anant Kulkarni**  
 CWI 11012521  
 QC1 EXP. 1/1/2026

<b>QW-484B WELDING OPERATOR PERFORMANCE QUALIFICATIONS (WOPQ)</b>		
(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)		
Operator's Name : Paresh Naikude	Identification No.: WO-1 Coupon Id: GIPL /WPS /006-WOPQ-01 (Sharkan)	
Test Description		Date of Welding : 07/04/2024
Identification of WPS Followed : GIPL /WPS /006	Rev. : 1	<input checked="" type="checkbox"/> Test Coupon <input type="checkbox"/> Production Weld
Specification of Base Metal(s) : Carbon Steel Grade 35C270 as per BIS-IS-648 to : Carbon steel Grade 35C270 as per BS -IS -648	Thickness : 0.35 mm of Lamination	
Testing Variables and Qualification Limits		
Welding Variables(QW-350)	Actual Values	Range Qualified
Welding Process(es)	LBW FUSION	LBW FUSION
Type (ie; manual,semi-automatic, Machine) used	M/c No.( ECO PWR JG10SN )	M/c No.( ECO PWR JG10SN )
Backing ( metal , weld metal )	with	with
<input type="checkbox"/> Plate <input type="checkbox"/> Pipe (enter diameter if pipe or tube)	Lamination To Lamination (entire stack)	Lamination To Lamination (entire stack)
Base Metal P-Number to P-Number	Carbon steel Grade 35C270	Carbon steel Grade 35C270
Filler metal or electrode specification(s) (SFA) (Info. Only)	NA	NA
Filler metal or electrode Classification(s) (Info Only)	NA	NA
Filler (With / Without)	NA	NA
Filler Metal F - Number(s)	NA	NA
Consumable Insert	None	None
Filler Metal Product Form (solid/metal or flux cored/powder)	NA	NA
Deposit thickness for each process		
Process :---GTAW Fusion -----3 layers minimum - No	0.35 mm thk Lamination stack	0.35 mm thk Lamination stack
Position(s)	1G	Flat
Direct or Remote Visual Control	Direct	Direct
Automatic arc voltage control ( GTAW )	No	NA
Automatic joint tracking	No	NA
Single or multiple passes	Two passes	Two passes
<b>Results</b>		
Visual Examination of Completed Weld (QW - 302.4): <b>Satisfactory</b>		
<input type="checkbox"/> Transverse root and face bends[QW - 462.3 (a)]; <input type="checkbox"/> Longitudinal Bends[QW - 462.3 (b)]; <input checked="" type="checkbox"/> Toe Bends[QW-462.2];		
<input type="checkbox"/> Pipe bend specimen, corrosion-resistant overlay [(QW-462.5(c); <input type="checkbox"/> Plate bend specimen, corrosion resistant - overlay[(QW -462.5(d)];		
<input type="checkbox"/> Pipe Specimen, Macro test for fusion[(QW -462.5(b)]; <input type="checkbox"/> Plate Specimen, Macro test for fusion[(QW -462.5(e)]		
<input type="checkbox"/> Type of Test: <b>NA</b>	Result:	
<b>Qualified by Mechanical Testing</b>		
Alternative radiographic examination results (QW-191):		
Fillet Weld - Test(QW-180) : NA Length and percent of defects : <b>NIL</b>		
Macro Examination(QW -197.1): <b>-Satisfactory</b> Fillet Size (mm) : NA Concavity/Convexity (mm) : NA		
Radiography Test : NA Report No :		
Film or specimens evaluated by : NA Company : --		
Mechanical tests conducted : <b>Matscope Material Testing Lab</b> Laboratory test no.: MD06DN/-03/04 Dated : 13/04/24		
Welding Supervised by: <b>Mr. Swapnil Kadam</b>		
We certify that the statement in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME BOILER AND PRESSURE VESSEL CODE.		
Organization: <b>Gevasol Industries Pvt Ltd.</b>		
Prepared By:		Certified By :
Date: 15.04.2024	 <b>Anant Kulkarni</b> CWI 11012521 QC1 EXP. 1/1/2026	

### TEST REPORT

<b>Name :</b> GEVASOL INDUSTRIES PVT LTD	<b>TC NO :</b> MD06DN-03/04	<b>Date :</b> 13.04.2024
<b>Address :</b> S. No 74+84, Plot No-16, Middle Lane No- 3 & 4, Ramtekdi Industrial Area, Pune- 411028 India	<b>CHALLAN NO :</b> Verbal	<b>Date :</b> 06.04.2024
<b>Contact Person :</b> Mr. Swapnil Kadam	<b>Sample Received Date :</b>	06.04.2024
<b>Contact Details :</b> +91 9768929218	<b>Tested Date :</b>	10.04.2024
	<b>Testing Temperature</b>	26.1°C
<b>Lab ID No :</b> MD06DN-03/04		
<b>Test Method -</b> ASME SEC IX 2023 QW 183(a)		
<b>PART 1 &amp; SIZE :</b> Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS	<b>Magnification :</b> 20X	
	<b>Testing Group :</b> Mechanical	
<b>PART 2 &amp; SIZE :</b> Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS	<b>Subgroup :</b> Metallography Test	
	<b>Etching Reagents used :</b> HCL	
<b>TYPE OF JOINT:</b> Square, <b>POSITION :</b> 1G, <b>WPS ID NO :</b> GIPL/WPS/006		
<b>JOINT ID NO :</b> Lamination Stack-Sharkan DIA OD $\varnothing$ 73.50 X ID $\varnothing$ 30		
<b>Machine Model/SR NO :</b> Make - OR LASER MODEL - ECO PWRJG10SN		
<b>OPERATOR NAME:</b> PARESH NAIKUDE, <b>PROCESS :</b> Laser Beam Welding		

<b>MACRO ETCH TEST :</b>	<b>Test Method :</b> ASME SEC IX 2023 QW 183(a)
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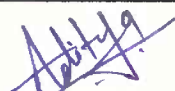
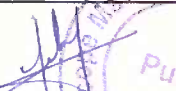
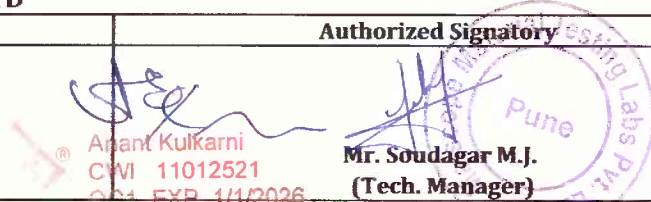
**IMAGE**



**OBSERVATION:-**

Visual examination of the cross sections of the weld metal does not show any cracks or flaws

**For Matscope Material Testing Labs PVT LTD**

<b>Tested By</b>	<b>Authorized Signatory</b>	
 <b>Mr Aditya Aundhkar</b> (Lab In-charge)	 <b>Mr. Soudagar M.J.</b> (Tech. Manager)	
		
<small>NOTE : 1) This report is for sample drawn and submitted by customer. 2) This report is non NABL. 3) Matscope is going under NABL process and will receive in months time. 4) This report shall not be reproduced, except in full, without our written permission. 5) Test samples are retained by the lab for 3 months. 6) Matscope Material testing labs pvt ltd has made best effort to provide reliable and accurate information, liability of Matscope Material testing labs pvt ltd is limited to the value of testing charges billed for the respective samples and Matscope material testing labs pvt ltd is not responsible for any financial liability due to any act of omission or error.</small>		
Revision no:00 Revision date:01.09.2021	Page 1 of 2	MAT/F/33

## TEST REPORT


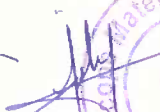
<b>Name :</b> GEVASOL INDUSTRIES PVT LTD	<b>TC NO :</b> MD05DN-05/04	<b>Date :</b> 13.04.2024
<b>Address :</b> S. No 74+84, Plot No-16, Middle Lane No- 3 & 4, Ramtekdi Industrial Area, Pune, Maharashtra - 411028 India	<b>CHALLAN NO :</b> Verbal	<b>Date :</b> 06.04.2024
<b>Contact Person :</b> Mr. Swapnil Kadam	<b>Sample Received Date :</b>	06.04.2024
<b>Contact Details :</b> +91 9768929218	<b>Tested Date :</b>	10.04.2024
	<b>Testing Temperature</b>	26.1°C

<b>Lab ID No :</b> MD06DN-03/04	<b>Test Method -</b> As requested by customer
<b>PART 1 &amp; SIZE :</b> Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS	<b>Testing Group :</b> Mechanical
<b>PART 2 &amp; SIZE :</b> Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS	<b>Group :</b> Mechanical Properties of Metal
<b>TYPE OF JOINT:</b> Square, <b>POSITION :</b> 1G, <b>WPS ID NO :</b> GIPL/WPS/006	
<b>JOINT ID NO :</b> Lamination Stack-Sharkan DIA OD Ø 73.50 X ID Ø30	
<b>Machine Model/SR NO :</b> Make - OR LASER MODEL - ECO PWRJG10SN	
<b>OPERATOR NAME:</b> PARESH NAIKUDE, <b>PROCESS :</b> Laser Beam Welding	

<b>Pull Out Test :</b>	
Observed Max Load	1.696 kN
Observed Max Displacement	8.80 mm
Remark:	Sample tested for Pull Out Test and found to be broken at weld. No deformation at observed at Parent Metal

**Note :** Sample clamped in 4-5 Laminations instead of single lamination for Pull Out Test.

### For Matscope Material Testing Labs PVT LTD

<b>Tested By</b>	<b>Authorized Signatory</b>
 <b>Mr Aditya Aundhkar</b> (Lab In-charge)	 <b>Mr. Soudagar M.J.</b> (Tech. Manager)

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