


| QW-482 WELDING PROCEDURE SPECIFICATION (WPS AS PER ASME SECTION IX) | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------|---|--|--|---------------|--------|-----------------------|--------|----|-------------------|----|---------------|----|--------------------------|----|--------------------|----|---------------------------|----|--------------|----|-------------------|------|
| Company Name : Gevasol Industries Pvt. Ltd. | | DATE : 15/04/2024 | | | | | | | | | | | | | | | | | | | | | |
| Welding Procedure Specification No: GIPL/WPS/003 | | Rev : 1 | Supporting PQR NO : GIPL/PQR/003 | | | | | | | | | | | | | | | | | | | | |
| Welding Process (es): Laser Beam Welding (Fusion) | | | | | | | | | | | | | | | | | | | | | | | |
| Type(s): LBW Unit Model No. : (ECO PWR JG10SN) | | | Page : 1 of 2 | | | | | | | | | | | | | | | | | | | | |
| Version : 09/2013 | | | | | | | | | | | | | | | | | | | | | | | |
| JOINTS : (QW-402) Joint design: AS PER APPROVED DRAWING Backing (Yes / No): Yes Backing Material (Type): Metal 1. Metal 2. Non-fusing Metal 3. Nonmetallic 4. Others Retainers: NONE | | | | | | | | | | | | | | | | | | | | | | | |
| BASE METALS : (QW-403) P No.:- Gr. No. - To P No. : -- Gr..No. -- <p style="text-align: center;">OR</p> Specification type & grade: ESS Gr.35C270 to Specification type & grade: ECS Gr. 35C270 <p style="text-align: center;">OR</p> Chem. Analysis & Mech. Prop: --- to Chem. Analysis & Mech. Prop: --- | | FILLER METAL : (QW-404) <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> </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 |
| 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 | | | | | | | | | | | | | | | | | | | | | | |
| | Groove | Lap | | | | | | | | | | | | | | | | | | | | | |
| Base Metal thk range (mm.) | NA | Stack of Lamination rings | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Deposited weld metal thickness (Max.)</td> <td style="width: 50%;">Groove: NA</td> </tr> <tr> <td></td> <td>LAP: Lamination Stack</td> </tr> </table> | Deposited weld metal thickness (Max.) | Groove: NA | | LAP: Lamination Stack | | | | | | | | | | | | | | | | |
| Deposited weld metal thickness (Max.) | Groove: NA | | | | | | | | | | | | | | | | | | | | | | |
| | LAP: Lamination Stack | | | | | | | | | | | | | | | | | | | | | | |
| Others: | | Others: <div style="text-align: right;"> Anant Kulkarni CWI 11012521 QC1 EXP. 1/1/2026 </div> | | | | | | | | | | | | | | | | | | | | | |

| QW 482 | | WPS NO: GIPL /WPS/003 | | Page: 2 OF 2 | | | | |
|--|--------------|------------------------------|------------------------------|---|-----------|----------|--------------------------|--------|
| POSITION : (QW-405) Position(s) of Lap : Flat (1G) Welding Progression: NA Position(s) of Fillet: NA | | | | ELECTRICAL CHARACTERISTICS: (QW-409) Pulse Duration : 5.9 ms Frequency : 8 Hz Power : 86 watts | | | | |
| PREHEAT : (QW-406) Preheat Temp (Min.): 10 °C Inter-pass Temp (Max.): 150 °C Max. Preheat Maintenance: NIL | | | | TECHNIQUE : (QW-410) Cleaning Method : Acetone / Ultrasonic cleaning Oscillation : No Angle of Beam : 90 Degree Wash Pass : No 1 Vs 2 side Welding : NA Travel speed : 3 mm /sec | | | | |
| POST WELD HEAT TREATMENT : (QW-407) Temperature Range : NA Time Range: NA | | | | Optical Technique Change : No Multiple or Single pass : Two Passes Type of Equipment : Nd YAG Laser Use of Thermal Process : NA Change in Wavelength : No Spot size change : As required | | | | |
| GAS: (QW-408) | | Gas (es) | % Composition mixture | Flow rate (Lit/min) | | | | |
| Shielding | | NA | NA | NA | | | | |
| Trailing | | NA | NA | NA | | | | |
| | | NA | NA | NA | | | | |
| Others: 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 | 5.9 ms | 8 Hz | 86 watts | 3 mm/sec | |
| Approved by  Anant Kulkarni AWS © CWI 11012521 A E Kulkarni (AWS : CWI) Weld Tech Services <small>EXP: 17/2026</small> | | | | | | | | |

QW 483
PROCEDURE QUALIFICATION RECORD
(PQR)

| | |
|---|-----------------------|
| Procedure Qualification Record No.: GIPL PQR/ 003 WPS No.: GIPL / WPS/003 Rev. : 0 Welding Process(es) : Laser Beam Welding (Fusion) Types (Manual, Semi automatic, Machine): LBW M/c Model (ECO PWR JG10SN) Version : 09/2013 | Date: 15/04/24 |
|---|-----------------------|

JOINTS (QW 406)

BASE METAL (QW-403)
Material Spec.: Carbon steel Grade 35C270
 as per BIS-IS-648
 To
Material Spec.: Carbon steel Grade 35C270
 as per BIS-IS-648
P No.: - To P No.:

Thickness of each Lamination : 0.35 mm Thick
Production Mock Up ID : Arbel
Dia. OD Ø 87.2 X LENGTH 102
Dia. of Prod. Mock up (mm.): 65 mm ID
Others : NA

POST WELD HEAT TREATMENT (QW-407)
Temperature: NA
Time: NA
Others:

| GAS : | Gas (es) | % Composition mixture | Flow rate (LPM) |
|------------------|----------|-----------------------|-----------------|
| QW-408 | | | |
| Shielding | NA | NA | NA |
| Trailing | NA | NA | NA |
| Backing | NA | NA | NA |

| FILLER METAL (QW-404) | LBW (Fusion) |
|------------------------------------|---------------|
| Weld Metal Analysis (A No.) | NA |
| Filler Metal F No | NA |
| Addition of Filler | NA |
| Chemical Composition | NA |
| Cross section | NA |
| Filler Metal Product Form | NA |
| Deposited Weld Metal | Only Fusion |
| Make/ Brand of Filler | NA |

ELECTRICAL CHARACTERISTICS (QW-409)
Pulse Duration : 5.9 ms
Frequency : 8 Hz
Power : 86 watts
Travel Speed : 3 mm / sec.

POSITION (QW-405)
Position : Flat (1G)
Weld Progression: NA
Others:

TECHNIQUE (QW-410)
Angle of Beam : 90 Degree
Change in Wavelength : NA
Change in Oscillation: No
Multi pass or Single Pass : Two passes
Spot size : As required

PREHEAT (QW-405)
Preheat Temp.: 25 °C (Ambient Temp.)
Inter-pass Temp.: 100 °C
Preheat Maintenance: NONE

Wash Pass - No
Use of Thermal Process : NA
Type of Equipment : Nd YAG Laser

| 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 | 5.9 ms | 8 Hz | 86 | 3 | |

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

QW 483 PQR No.: GIPL /PQR/003 (contd.) 2 of 2

TESILE TEST (QW-150) - NA

| Specimen No. | Width (mm.) | Thick (mm.) | Area (mm ²) | Ultimate Total Load (N) | Ultimate Tensile Strength (Mpa) | Min. require d 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 – 03/01
 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

By: MANAGER QC

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


QW-484B WELDING OPERATOR PERFORMANCE QUALIFICATIONS (WOPQ)

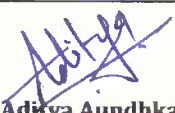
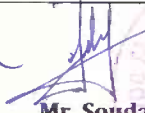
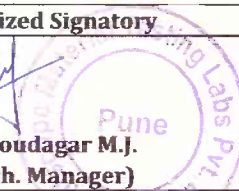
(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)

| | | | |
|---|---|---|--|
| Operator's Name : Paresh Naikude | | Identification No.: WO-1 Coupon Id: GIPL /WPS /003-WOPQ-01 (Arbel) | |
| Test Description | | Date of Welding : 07/04/2024 | |
| Identification of WPS Followed : GIPL /WPS /003 | | 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 | |
| Results | | | |
| Visual Examination of Completed Weld (QW - 302.4): Satisfactory | | | |
| <input type="checkbox"/> Transverse root and face bends[QW - 462.3 (a)]; | | <input type="checkbox"/> Longitudinal Bends[QW - 462.3 (b)]; | |
| <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: NA | Result: | | |
| Qualified by Mechanical Testing | | | |
| Alternative radiographic examination results (QW-191): | | | |
| Fillet Weld - Test(QW-180) : NA | | Length and percent of defects : NIL | |
| Macro Examination(QW -197.1): Satisfactory | | Fillet Size (mm) : NA ___ Concavity/Convexity (mm) : NA | |
| Radiography Test : NA Report No : | | | |
| Film or specimens evaluated by : NA | | Company : -- | |
| Mechanical tests conducted : Matscope Material Testing Lab Laboratory test no.: MD06DN/-03/01 Dated : 13/04/24 | | | |
| Welding Supervised by: Mr. Swapnil Kadam | | | |
| 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: Gevasol Industries Pvt Ltd. | | | |
| Prepared By: |  | Certified By : | |
| Date: 15.04.2024 |  | Anam Kulkarni CWI 11012521 QC1 EXP. 1/1/2026 | |

TEST REPORT

| | | |
|---|---|--------------------------|
| Name : GEVASOL INDUSTRIES PVT LTD | TC NO : MD06DN-03/01 | Date : 13.04.2024 |
| Address : S. No 74+84, Plot No-16, Middle Lane No- 3 & 4, Ramtekdi Industrial Area, Pune- 411028 India | CHALLAN NO : Verbal | Date : 06.04.2024 |
| Contact Person : Mr. Swapnil Kadam | Sample Received Date : | 06.04.2024 |
| Contact Details : +91 9768929218 | Tested Date : | 10.04.2024 |
| | Testing Temperature | 26.1°C |
| Lab ID No : MD06DN-03/01 | Test Method - ASME SEC IX 2023 QW 183(a) | |
| PART 1 & SIZE : Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS | Magnification : 20X | |
| | Testing Group : Mechanical | |
| PART 2 & SIZE : Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS | Subgroup : Metallography Test | |
| | Etching Reagents used : HCL | |
| TYPE OF JOINT: Square, POSITION : 1G, WPS ID NO : GIPL/WPS/003 | | |
| JOINT ID NO : Lamination Stack-Arbel dia OD Ø87.1 X ID Ø 65 | | |
| Machine Model/SR NO : Make - OR LASER MODEL - ECO PWRJG10SN | | |
| OPERATOR NAME: PARESH NAIKUDE, PROCESS : Laser Beam Welding | | |

| | |
|--|---|
| MACRO ETCH TEST : | Test Method : ASME SEC IX 2023 QW 183(a) |
| 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 | |
|---|--|
| Tested By | Authorized Signatory |
|  Mr Aditya Aundhkar (Lab In-charge) |   Mr. Soudagar M.J. (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> | |
| Revsion no:00 Revision date:01.09.2021 | Page 1 of 2 |
| | MAT/F/33 |

TEST REPORT



| | | |
|---|-------------------------------|--------------------------|
| Name : GEVASOL INDUSTRIES PVT LTD | TC NO : MD05DN-05/01 | Date : 13.04.2024 |
| Address : S. No 74+84, Plot No-16, Middle Lane No- 3 & 4, Ramtekdi Industrial Area, Pune, Maharashtra - 411028 India | CHALLAN NO : Verbal | Date : 06.04.2024 |
| Contact Person : Mr. Swapnil Kadam | Sample Received Date : | 06.04.2024 |
| Contact Details : +91 9768929218 | Tested Date : | 10.04.2024 |
| | Testing Temperature | 26.1°C |

| | |
|--|---|
| Lab ID No : MD06DN-03/01 | Test Method - As requested by customer |
| PART 1 & SIZE : Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS | Testing Group : Mechanical |
| PART 2 & SIZE : Eletrical Silicon steel Grade 35C270 as per BIS-IS-648-0.35mm THICKNESS | Group : Mechanical Properties of Metal |
| TYPE OF JOINT: Square, POSITION : 1G, WPS ID NO : GIPL/WPS/003 | |
| JOINT ID NO : Lamination Stack-Arbel dia OD Ø87.1 X ID Ø 65 | |
| Machine Model/SR NO : Make - OR LASER MODEL - ECO PWRJG10SN | |
| OPERATOR NAME: PARESH NAIKUDE, PROCESS : Laser Beam Welding | |

| | |
|---------------------------|--|
| Pull Out Test : | |
| Observed Max Load | 1.529 kN |
| Observed Max Displacement | 9.070 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 for Pull Out Test.

For Matscope Material Testing Labs PVT LTD

| | |
|---|---|
| Tested By | Authorized Signatory |
|  Mr Aditya Aundhkar (Lab In-charge) |  Anant Kulkarni CWI 11012521 QC1 EXP. 1/1/2026 Mr. Soudagar M.J. (Tech. Manager) |

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