

BHARAT HEAVY ELECTRICALS LIMITED
RANIPET – 632 406
QUALITY ASSURANCE

WT: SAGA: UF Membrane: 312
Dt. 24-11-2021

Item Name	Indent No	Indent Dt.	PGMA	Technical Specification/Drawing
Pressurized UF membranes module & accessories	RWT11113	30.10.2021	WT022	WT022 ROS: 6326, REV: 00. DT:23.10.2021

Sl No.	Item/ Sub system Name	Quantity	Supplier QP will be reviewed by BHEL and same shall be submitted to Customer (WBPDCL) for their review and approval.
1	UF Membranes and Accessories.	One Set	
2	UF SKID along with Modules		
OEM (ORIGINAL EQUIPMENT MANUFACTURER) SEAL AND SIGN WITH DATE.			

Quality Requirements for the tender: -

- All the items shall be inspected at Manufacturer works as per Customer/ Customer Consultant (WBPDCL/DCPL) approved QP and Drawing/ approved datasheet by Customer/ Customer representative and BHEL/BHEL AIA.
- Vendor shall submit detailed Quality Plan as per attached format (Typical checks for membranes are available in the attached QP for incorporating in Supplier QP for all the items involved in this system. Vendor QP will be reviewed by BHEL and submitted to Customer for their review.
- Annexure 'Q' shall be dully filled by the bidders.
- Painting shall be as per Customer approved painting scheme.
- Packing of items shall be as per BHEL Engg Approved Packing Drawing/Packing Specifications.
- BHEL Authorized representatives shall have the right to witness the necessary inspection and testing of goods mentioned in the PO. The supplier shall inform BHEL in advance about the readiness of the goods for inspection and testing. Inspection / Inspection wavier / approval by BHEL does not absolve Supplier's responsibility for conformity of the specification as per the terms of PO. Material Test Certificates shall be submitted to BHEL.
- Following Inspection Notes applicable during inspection:
 - Latest version of standards & Specification shall be applied.
 - Materials shall be procured in compliance to Functional Technical specification.
 - Gauges and measuring instruments with valid calibration only shall be used.
 - Inspection / Inspection wavier / approval by BHEL does not absolve Supplier's responsibility for conformity of the specification as per the terms of PO.
 - BHEL /BHEL Authorized representatives shall have the right to witness the necessary Inspection and testing of goods mentioned in the PO.
 - In case of Vendor Drawing & Datasheet, it needs approval by BHEL Engineering.
 - This QP shall be read along with relevant PO, BHEL Specification / Approved Drawing/Datasheet.

Annexure Q

	Indent No:	Enquiry no:	
Sl.No	BHEL / Customer Requirements	## Specific confirmations by the manufacturer (Acceptable/Not acceptable)	
1	Quality Plan Requirement: (If SQP is not given & Vendor QP applicable)		
	(i) MQP (Manufacturing Quality Plan) shall be submitted in attached format for BHEL/Customer review & approval. Our SQP/Typical MQP/ MQP Format is attached for guidance & use.		
	(ii) MQP shall invariably cover w.r.t Inward inspection including on Raw material Procurement, In process and Final inspection in elaborated way/details.		
	(iii) Bidder shall also to give specific confirmation that on need basis, their competent officials shall visit to BHEL / customer for finalization of Quality plan including test procedure/methodology during preaward / post award approval / detailed engineering in the event of an order.		
	(iv) No deviation on BHEL/Customer approved MQP/ SQP (In case BHEL SQP is provided) is acceptable.		
	(v) Bidder shall agree to submit all cross referred documents other than codes/standards to BHEL/Customer/Consultant.		
	Important Notes shall be included in MQP : (a) Latest revision of Standard s & Specification shall apply. Only International Standards are applicable. (b) Materials shall be procured in compliance to Functional Technical Specification. (c) Inspection shall be in compliance with Approved Quality Control Procedure for the Product. (d) NDT shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME standard. (e) Gauges and measuring Instruments, with valid calibration only shall be used. (f) Cleaning and Painting of products shall be carried out as per Approved Painting Schedule. (g) Finished Products shall be packed to comply with Approved Packing Schedule. (h) Welding shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME standard.		
2	Domestic / Inland Inspection will be carried out by BHEL/BHEL appointed Third Party Inspection Agency (TPIA) / Customer/Customer Appointed Inspection Agency/Consultant. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentation Diagram / Process Flow Diagram / Single Line Diagram) etc. (as applicable).		
3	Inspection Agency for Foreign Bidders and also for Indian Bidder but importing from Foreign Sources: (1) Any one of the following Third Party Inspection Agency (TPIA) shall be appointed by the bidder and same shall be furnished by the bidder in techno commercial bid itself. (2) The details of TPIA with contact details like Name of the official, Phone no, Email id shall also to be submitted during pre/post award. However cost for such inspection agency shall be borne by the bidder only. Inspection charges for such inspection agency shall be indicated separately so that if BHEL/Customer is undertaking the inspection by on their own , then these charges are non claimable by the bidder. For NTPC Project ensure TPI Approved by NTPC. Refer our QC Procurement email in this regard. List of TPIA 1.M/s Bureau Veritas 2.M/s TUV-Nord 3.M/s TUV-SUD 4.M/s TUV Rheinland 5.M/s Lloyds Register 6.M/s SGS 7.M/s Germanischer Lloyd 8.M/s QUEST 9.M/s Certification Engineers International 10.M/s Intertek 11.M/s IR Class Systems and Solutions 12.M/s DNV 13. M/s Fichtner 14. M/s ABS Inspection Services		


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Sl.No	BHEL / Customer Requirements	## Specific confirmations by the manufacturer (Acceptable/Not acceptable)
4	Stage Inspection during manufacturing Process : Stage Inspection during manufacturing shall be carried out as per approved quality plan and all necessary documents shall be provided for review, verification and clearance for further processing. This inspection call shall be given well in advance (at least 2 weeks before) to TPI/Bidder's own inspection agency to avoid delay in the manufacturing processes.	
5	Inspection before despatch for domestic supplier : Inspection before despatch at supplier's works shall be carried out by BHEL appointed Inspection agency (as in Sl no. 2). Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet .	
6	Inspection at Foreign Source/Supplier: (a) As in sl no: 3. shall be ensured without fail (b) No material / items shall be despatched without getting the written communication from BHEL / Customer inspection carried out by Bidder appointed Third Party Inspection Agency (As per Sl no.3) / Customer/Customer Appointed Inspection Agency/Consultant. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentation Diagram / Process Flow Diagram / Single Line Diagram) etc. (As applicable). Inspection before despatch for Foreign supplier : Inspection before despatch at supplier's works shall be carried out by bidder appointed inspection agencies having international presence at vendors and or vendor's sub vendor works. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet by TPIA mentioned in Sl no: 03 at supplier's cost.	
7	Painting shall be done strictly as per BHEL/Customer approved painting schedule / scheme only. Paint Thickness / Paint shade shall be ensured as per BHEL / Customer approved painting schedule / specification / data sheet etc. No deviation is acceptable unless otherwise accepted by BHEL/Customer in writing. Any conflict if any among BHEL / Customer approved painting schedule / Spec / data sheet etc. shall be brought to the notice of BHEL well in advance before proceeding including the BOI being procured for assy / skid like motors etc.	
8	Specific conformation for document package in the event of an order (2 Hard copies & soft copy in PDF file) is to be given containing the following with proper linkages (i) Index Sheet (ii) MQP/RQP/Endorsement Sheet (As applicable) (iii) TCs identified by BHEL/ Customer for record for "CHP" / "W" and Verification portion ("V") as given in approved QP. (iv) Final inspection report + TC including Chemical + Mechanical + HT + NDT etc. (v) Third party Inspection report + TC (vi) Customer CHP/ MDCC (vii) Type test / Performance Test reports conducted (viii) Type test / Performance Test approval/ clearance obtained from BHEL/Customer (ix) BOM with As Build Drgs with actual make / rating used with BHEL/customer approved drawings.	
9	Packing / Seaworthy Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care transit / handling / transshipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.	
10	Outsourcing of test facilities: Bidder shall ensure all the testing facilities in house. However If any of the test facilities are not available with successful bidder, then bidder shall ensure the same at NABL accredited third party lab / Govt / Govt Lab for major testing such as NDT, Electrical & Mechanical testing.	
11	Important Note: No deviation on the above requirement 01 to 10 is acceptable with respect to Quality Requirement and those offers not meeting these specific customer requirement is liable for rejection and hence the bidder shall submit all the required documentary evidences in the offer itself.	
12	## Necessarily to be filled up by the bidder at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirement being customer specific requirement.	
VENDOR SIGN AND STAMP:		Vendor Name & Address:

560074/2021/BAP-QA_MECH				MANUFACTURING QUALITY PLAN						43				
				Item/subsystem: UF MEMBRANE		QP:No: DSAL : UF001 Rev: 001 Date: 08-06-2018 Page 1 of 1 NTPC MDL No:								
SL NO	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REF DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			
					M	C/N			M	C	N	REMARKS		
1	2	3	4	5	6		7	8	9	D*	** 10		11	

1	RAW MATERIALS													
1.1	Report PES/PVDF Material	Hydrophilic	Major	Documentation check	100%		As per vendor's COA Drg/Data sheet	Specs as per vendor's COA Drg/Data sheet	Data sheet		P	V	V	
2	IN-PROCESS INSPECTION													
2.1	Pressure Decay/ Bubble Test	Fiber leak check	Major	Measurement	100%	1%	As per approved SOP Procedure	Specs as per Test Certificate	Report COC	✓	P	W	W	
2.2	Module Assembled Pressure	Leak at joints/ connections	Major	Measurement	100%	1%	As per approved SOP do	Specs as per Test Certificate	Report COC	✓	P	W	W	
3	FINAL INSPECTION													
3.1	Module Dimension	Module length	Major	Measurement	100%	1%	As per approved Data sheet	As per Approved Data sheet	Report COC	✓	P	W	W	
3.2	Visual Inspection	Cosmetic defects	Major	Visual	100%	1%	As per approved SOP	No physical damage	Report COC	✓	P	W	W	

		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER N: NTPC P: PERFORM W: WITNESS V: VERIFICATION SOP: STANDARD OPERATING PROCEDURE COA: CERTIFICATE OF ANALYSIS COC: CERTIFICATE OF CONFORMANCE		DOC. NO.:	
SUB-SUPPLIER		MAIN-SUPPLIER		FOR NTPC USE	
SIGNATURE				REVIEWED BY	
				APPROVED BY	
				APPROVAL SEAL	

 Ranipet	Painting schedule for APH, ESP, FAN, FGD, Water Treatment and Gates & Damper for 1X660 MW Sagardighi TPP, Extension, Unit-5 (BHEL WO NO: R681, R4W1 & R4W2) Cust. Drg. No.:RP-MQ-445-ESP-E049 Rev 04	Doc No: PS:SAGA:R681 Rev 04 Date: 21/12/2020 <hr/> Page 9 of 13
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SI No	Description / PGMA	Surface preparation	Primer/ DFT in μm	Intermediate DFT	Finish DFT	Total DFT
	<u>Water Treatment</u>		○	○		
25	RODM Structures (WT 220, WT 225,etc)	Blast cleaning to near white metal Sa 2½ (SSPC SP10)	Epoxy resin based Zinc phosphate primer to IS 13238; 100 μm	Epoxy resin based Titanium Dioxide pigmented intermediate coat; 100 μm \triangle	Epoxy based polyamide cured finish paint to IS 14209 (Latest); 75 μm \triangle At Site: Aliphatic acrylic polyurethane paint to IS 13213; 25 μm Smoke grey Shade 692 of IS 5	300 μm \triangle (min)
26	Tools and Equipments (WT023,WT222,WT226,etc)	Power tool cleaning SP3(SSPC) /St-3(SIS) \times	One coats of Red oxide Zinc phosphate primer as per IS 12744 DFT 1x30 =30 μm (min)	NIL	Two coats synthetic enamel as per IS 2932 smoke grey shade 692 of IS 5. DFT 2x30 μm =40 μm (min) 60	90 μm (min)



Ref :INSP:CHK:001/ REV 00
DT:10/08/2020

Inspection document Check List

Inspection documents to be submitted after inspection of the items for getting dispatch clearance. Vendor shall provide documents to the BHEL/BHEL TPIA inspector during inspection and TPIA shall sign all the documents.

The document dossier shall contain following.

SL no.	Documents
1	Unpriced PO COPY.
2	Latest approved specification, datasheet, drawing, P&ID, test procedures, approved painting schedule, Packing etc.
3	Approved QAP.
4	CQIR Report (Disposal code should be Accepted all the offered QTY)
5	<p>As per approved QAP all the inspection documents to be submitted.</p> <p>Indexing of the reports as per QAP and each page wise numbered and correlated to QAP.</p> <p>If more than one test in each page, against each test the clause number of QAP to be mentioned.</p> <p>Inspection clause shall be mentioned against each test.</p> <p>1. Raw Material Test Certificates (NABL approved Lab TC/Manufacturer TC like Mechanical properties, Chemical Properties, UT etc. as per approved QAP.</p>

K. Kovarthan

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கவர்த்தன திபா / Quality Department
பி.என்.எம். / BHEL R&P RANIPET-3

	<p>2. In process Inspection Reports like Hydro test, Dimension Report, MPI,UT ,Balancing etc. as per approved QAP.</p> <p>3. Final Inspection Reports like Shop Assembly with testing reports, Hydro test/Leak / Pressure test reports, Type test Reports, WPS/PQR/WPQ Reports, PT/RT/UT/MT Reports etc. as per approved QAP.</p> <p>4. Final Inspection like packing and surface preparation & Painting/Metal finishing reports. (Sea worthy packing / Special Packing requirement).</p>
6	Relevant pages of standard shall be attached with report.
7	Calibration reports of the instruments used to be signed by TPI after verification.
8	Above said documents are should be in single .pdf file with not more than 10MB (if more than 10MB can be split into multiple files)
9	Hard copy of the same to be submitted along with material dispatch.

K Kovarthanan

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