

Scope of Work: welding overlay of stainless steel material, machining & drilling on Tube sheet of Kaiga-unit 5

The bidder shall produce documentary evidence (wherever called) / confirmation for technical compliance along with their offer against each point.

S. no.	Criteria	Confirmation / Documents required to be submitted in support of claim
1	Bidder to have a valid calibrated PMI tester (calibrated by NABL accredited lab) to ensure chemical composition of undiluted cladded surface. In case the tester is not available in-house, same can be outsourced subject to having valid calibration record.	(Yes/No)
2	Bidder to use calibrated UT testing instruments & facility. In case UT facility is not available in-house, name the agency who shall be doing it finally. In any case UT to be done by ISNT / ASNT Level-II while doing UT.	(Yes/No – Name of the agency in case such in-house facility is not available)
3	Bidder to have WPS and PQR of welding overlay of SS on CS material duly approved by any govt. agency.	(Yes/No) Vendor to submit such approved WPS and PQR
4	Raw material for SS overlay (as mentioned in drawings in tender) to be procured by the bidder from reputed supplier along-with original co-related TC only. In case original co-related TC is not available along-with the procurement, same requires to be tested at any NABL approved lab duly witnessed by BHEL-IA to ensure its chemical properties meeting the specification requirement (as specified in the WPS & PQR)	(Yes/No)
5	After receipt of order, vendor to demonstrate overlaying procedure using approved WPS & PQR on mock-up plate of size as per ASME Sec. IX. This deposit as per drawing requirement on mock-up plate shall be checked for chemical composition on top surface by PMI Tester.	(Yes/No)
6	Bidder to ensure pure chemistry at a depth of minimum of 2 mm from the top surface of the SS cladding considering the total clad thickness of 6 mm (+1 / -0 mm). Vendor on receipt of order has to demonstrate the same prior to start of cladding process.	(Yes/No)
7	Manufacturers/vendors should have in-house CNC drilling machine having accuracy of drilling as +/- 0.08 mm for tube holes with minimum X-axis travel of 800 mm & Y-axis travel of 800 mm. In case in-house machining & drilling facility is not available, same can be outsourced but the above accuracy has to be maintained.	(Yes/No) - Vendor to submit drilling machine specification mentioning accuracy & table dimension (X & Y axis). In case, machining & drilling is outsourced, bidder to submit name of agencies to whom the operations are outsourced. Bidder to submit agency's drilling machine specification

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		mentioning accuracy & table dimension (X & Y axis).
8	Vendor should have all machine tools & valid calibrated inspection instrument required for carrying out machining work of jobs as per drawing mentioned in tender.	(Yes/No)


Note:

1. Mock-up plate shall be issued by BHEL for carrying out operation as per technical **annexure A** & applicable **QA plan**. Vendor shall have to collect the same on receipt of order at their own cost. Vendor shall have to lift tube plate forgings from BHEL Bhopal after successful execution of operation of mock-up plate.
2. The mock up plate shall be returned to BHEL along with first supply without tying any commercial value to it.
3. Bidders to note that final welding over lay of 6mm shall be required as per applicable drawing
4. Scrap generated, if any, to be retained by the vendor free of cost. GST on the scrap generated shall be recovered by BHEL from the bidder.
5. The vendor, who performed/carried out the same kind of Mock Up testing for overlay welding within last 2 years for any NPCIL/BHEL project need not to be do the mock-up testing again, can simply submit the previous mock up qualifying document reports.


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**PRE QUALIFICATION REQUIREMENT FOR WELDING OVERLAY, MACHINING AND
DRILLING ON TUBE PLATES (PI NUMBER -)**

Sl.No.	DESCRIPTION	Requirement	Bidder's Response
1.0	Traders / agents are not allowed to participate	<ul style="list-style-type: none"> Manufacturers/vendors who are owners of at least in house cladding arrangement are allowed to quote. Offers of parties who are traders, authorized dealers and third parties would not be considered. 	YES / NO – bidder to submit statutory document clearly stating they are not trader.
2.0	Experience criteria	<p>Only those vendors who have successfully executed similar operations - i.e.</p> <ul style="list-style-type: none"> minimum 6 mm tk austenitic SS overlay on CS material. and drilling minimum 700 nos of holes of min. dia 25 mm on CS material with minimum job weight of 2 MT & minimum dia 1250 mm. <p>Above should have been done in at-least 02 different financial years during last 07 years (from the tender opening date), shall be considered for evaluation.</p>	Invoice copies - 2 nos of different Financial years along with drawing / dimension report confirming above. In case drilling operation had been outsourced, invoice copies of that agency is to be submitted.

Important note:

1. After satisfactory, fulfilment of the all the above criteria/requirement, offer shall be considered for further evaluation as per NIT and all other terms of the tender.
2. All documentary evidences along with this PQR shall be duly signed and stamped by authorized person with name & contact details.
3. BHEL reserves the right to verify the information submitted by the vendor. In-case any information is found to be false or incorrect the offer shall be rejected at any stage.
4. After successful qualification against PQR, credentials shall be submitted to NPCIL for approval. Consideration for the placement of order is subject to technical compliance of NPCIL requirement and NPCIL approval of vendor.

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HEAT- EXCHANGER
GROUP
BHEL BHOPAL

QUALITY ASSURANCE PLAN
ASSY. / ITEMS: SS OVERLAY, MACHINING & DRILLING ACTIVITY FOR TUBESHEET OF MSR
Kaiga Unit-5 & Unit-6
CUSTOMER: M/S NUCLEAR POWER CORPORATION


Doc. No.: QAX/TH/1718
Rev.: 00
Date: 22.04.24
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Sl. No.	COMPONENT/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT / ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS
							M	B/BT	N	
1	2	3	4	5	6	7	8			9
1	Material (Tube plate forging) receipt verification & identification	For traceability & co-relation	Visual	100%	IR from BHEL	IR	R	W	-	See note - 1
2	Cladding Material	Chemical check each heat No./Batch No.	Testing	100%	As per BHEL Drawing	Lab TC	R	W	-	
3	Welding Procedure & Welder Qualification	WPS/PQR/WQR	Visual	100%	As per ASME Sec.-IX	ASME Format	R	R	-	See note - 2
4	SS Overlay material on Mock up plate & Tube plate forgings	Clad material checking	I+Visual	100%	As per drawing	MTC & PMI Report	P	W	-	See note - 7
5	Tube Plate Overlay	DPT on Surface to be Overlay	Visual	100%	As per Appendix-8 of ASME Sec. VIII Divn.1	IR	P	W	R	
		DPT on Overlay Surface after machining	Visual	100%	As per Appendix-8 of ASME Sec. VIII Divn.1	IR	P	W	W	
		UT on Overlay Surface for Bonding Check	I+Visual	100%	As per drawing	IR	P	W	W	
6	Drilling of Tube Plate hole	Hole size & Ligament	I+Visual	100%	As per BHEL Drawing	IR	P	W	R	Calibrated Gauge
		Finish	I+Visual	100%	As per BHEL Drawing	IR	P	W	W*	*Random witness by NPCIL limited to 5%
7	Tube plate final dimension	OD, Thickness and other dimensions.	I+Visual	100%	As per BHEL Drawing	IR	P	W	R	
8	Identification on final job	For co-relation with TC / IR	Visual	100%	See note - 8	See note - 8	P	W	-	Original marking to be retained or transferred
9	Documentation	Verification of Quality documents.	Minor	Visual	100%	BHEL Drawing	BHEL Drawing	IR	P	R

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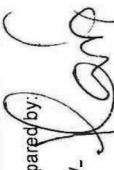


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 HEAT- EXCHANGER GROUP BHEL BHOPAL		QUALITY ASSURANCE PLAN ASSY. / ITEMS: SS OVERLAY, MACHINING & DRILLING ACTIVITY FOR TUBESHEET OF MSR Kaiga Unit-5 & Unit-6 CUSTOMER: M/S NUCLEAR POWER CORPORATION					Doc. No.: QAX/TH/1718 Rev.: 00 Date: 22.04.24 Page: Page 2 of 2		
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LEGEND: M: MANUFACTURER/SUB-SUPPLIER, **B/IT:** BHEL/BHEL APPOINTED TPIA, **N:** NPCIL P: PERFORM, **W:** WITNESS, **R:** DOCUMENTS REVIEW, **UT:** ULTRASONIC TESTING, **DPT:** DYE PENETRANT TESTING, **MPT:** MAGNETIC PARTICLE TESTING, **TC:** TEST CERTIFICATE, **IR:** INSPECTION REPORT, **I:** INSPECTION USING INSTRUMENT.

Notes:

- (1) BHEL / TPIA to verify receipt of material (forgings) at vendor works as per Identification marked on OD of forging as per BHEL drawing.
- (2) If WPS/PQR/WQR is already qualified earlier, same shall be submitted to BHEL & customer (NPCIL).
- (3) During manufacturing, only latest revision of drawings / specifications / codes shall be used.
- (4) During inspection only qualified personnel (NDT & welder) shall be employed. NDT person should be Level-II duly certified by ISNT / ASNT.
- (5) Only calibrated Instruments / Gauges / etc. (i.e. with valid NABL calibration record) shall be used during inspection.
- (6) All documents to be submitted with index sheet QAP clause wise.
- (7) MTC to be properly co-related with the actual material as received. In case original co-related MTC is not available, testing to be carried out at any NABL accredited lab duly witnessed by BHEL-TPIA.
- (8) Vendor to mark PO number along with PO item number and sl.no. of item in PO on the OD of the final job. BHEL / TPIA shall check the same for co-relation with TC / IR.
- (9) All instruments should have calibration record (duly calibrated by NABL lab / accredited agency).

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