

Expression Of Interest for manufacture of Gr. 91-Clamps on Conversion basis.

PC:OS:EOI:P91-CLAMPS:REV:01

09-03-12

BHEL, Piping Centre, Chennai invites expression of interest [EOI] from vendors for manufacture of P91 clamps with BHEL material as per the pre-qualification criteria given below .

Pre-qualification criteria for manufacture of P91 clamps with free-issue of materials by BHEL

1. In-house facilities for forming of clamps.
2. In-house facilities for welding of Gr.91 material. Approved WPS / PQR for the same shall be available.
3. In-house facility for heat-treatment using a furnace calibrated upto 1100 degrees C to carry out normalising, tempering and PWHT for Gr.91 material. Vendor shall also have knowledge of above HT cycles.
4. Vendor shall have prior experience in forming of Alloy steel material and welding of Gr.91 material.
5. Vendor shall accept to manufacture clamps as per BHEL QP Ref.: QPG:76 Rev.:01 and BHEL drawing.
6. Willing to execute Bank Guarantee for 10 Lakhs to take care of material cost of Gr. 91 material in case of loss/ damage
7. Shall have a production capacity of minimum 100 tonnes/month and a turnover of Rs. 8 crores per annum
8. Vendor should furnish willingness to recover the cost of material in case of faulty fabrication / damage / loss of material.

The total quantum of requirement is approximately 500 Tonnes.

SCOPE OF WORK :

- A] COLLECTION OF RAW MATERIALS FROM BHEL, TRICHY STORES.
- B] MANUFACTURE OF Gr.91-CLAMPS AS PER THE DRAWING AND QUALITY PLAN.
- C] INSPECTION BY BHEL / THIRD PARTY INSPECTORS AUTHORISED BY BHEL / CUSTOMER.
- D] DELIVERY OF FINISHED PRODUCTS TO ANY BHEL SITE IN INDIA / BHEL TRICHY.

NOTE :

- 1] Vendors who meet the above criteria can download the **SUPPLIER REGISTRATION FORM** from our website, fill up the same attach the credentials and send the same to
AGM / OS
BHEL, PIPING CENTRE
80-G.N. ROAD, T.NAGAR
CHENNAI – 600017
- 2] Also the enclosed format listing down pre-qualification requirement to be filled by the vendor furnishing necessary documentary proof to be sent along with the above.
- 2] This is only an advertisement calling for expression of interest from prospective vendors and not an enquiry / tender.
- 3] BHEL will evaluate the applications received from the vendors, empanel vendors found suitable and thereafter enquiry will be sent to them.
- 4] Quality plan and sample drawings are enclosed for vendor's reference to understand the work involved.
- 5] In case of any clarifications please contact :
Phone : 044-28161306 / 28161297 E-Mail : csv@bhelmpc.co.in / kbalu@bhelmpc.co.in
- 6] Last date for receipt of EOI from prospective vendors : 31-03-12

Encl : Quality Plan and sample drawings.

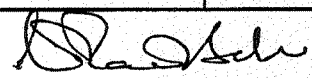
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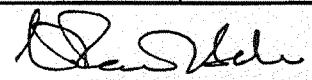
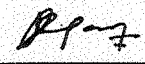
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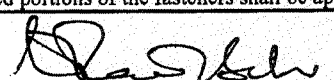
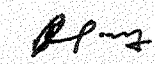
Questionnaire to be filled up by vendor and sent along with necessary documentary evidence.

SL. NO	DESCRIPTION	VENDOR'S RESPONSE [YES / NO]	DETAILS OF DOCUMENTS ENCLOSED.
01	Availability of in-house facility for forming of Gr.91 material clamps with requisite dies/toolings		
02	Availability of in-house facility for welding of Gr.91 material and approved WPS / PQR for the same.		
03	Availability of in -house facility for heat-treatment using a furnace calibrated upto 1100 degrees C to carry out normalising, tempering and PWHT for Gr.91 material. Vendor shall also have knowledge of above HT cycles.		
04	Vendor shall have prior experience in forming of Alloy steel material and welding of Gr.91 material.		
05	Accept to manufacture clamps as per BHEL QP Ref.: QPG:76 Rev.:01 and BHEL drawing.		
06	Willing to execute Bank Guarantee for 10 Lakhs to take care of material cost of Gr. 91 material in case of loss/ damage valid for the complete duration of the execution of the contract.		
07	Vendor shall have a production capacity of minimum 100 tonnes/month and a turnover of Rs. 8 crores per annum.		
08	Vendor should furnish willingness to recover the cost of material in case of faulty fabrication / damage / loss of material.		

 BHARAT HEAVY ELECTRICALS LTD PIPING CENTRE, CHENNAI - 17 QUALITY ASSURANCE & CONTROL DEPT.				STANDARD QUALITY PLAN ITEM : PIPE CLAMPS MADE OF SA387 Gr91 CLASS-2 PLATES (With BHEL Material)					QP No : QPG:76 Rev No : 01 Date : 20.12.2010			
S.No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY		REMARKS	
									M	C		
1	2	3	4	5		7	8	9	D*	** 10	11	
1.0	Material											
1.10	Plates : (SA387 Gr91 Class 2 procured as per TDC no:TDG:110 (Latest Revn.))	Co-relation & verification of Mill TCs for a) Chemical Composition. b) Mech. Properties c) Heat Treatment d) Hardness e) Soundness f) Dimension & Surface finish	Major	Verification	100%	Material Spec, TDG 110.		Mill TCs	✓	P	V	TC - Test Certificate
1.11	Positive Material Identification.	Chemical check	Major	Spectro/X-Ray fluorescence	100%	Material Specification.		Report	✓	P	--	
1.20	Rounds as per drg.	Co-relation with BHEL's material issue document.	Major	Verification	100%	BHEL Drawing, Material Spec.				P	V	
1.21	Positive Material Identification for AS items.	Chemical check	Major	Spectro/X-Ray fluorescence	100%	Material Specification.		Report	✓	P	--	
1.30	Fasteners (Nut, Bolt, Pin, Stud, Spacer ring etc...)	Co-relation with BHEL's material issue document.	Major	Verification	100%	BHEL Drawing.				P	V	
1.31	Positive Material Identification for AS items.	Chemical check	Major	Spectro/X-Ray fluorescence	100%	Material Specification.		Report	✓	P	--	
2.0	IN-PROCESS INSPECTION											
2.1	Material receiving inspection	Marking & transfer of identification	Major	Visual	100%	BHEL Drawing		HC		P	W	Note 1 HC - History card
2.2	Forming of clamps	Procedure for Hot Forming shall be submitted by Vendor for BHEL approval and forming shall be carried out as per approved procedure. First lot shall be witnessed by BHEL.										
 PREPARED BY G.PANNEER SELVAM DGM / QA			LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER ; B: BHEL P: PERFORM W: WITNESS R: REVIEW AND V: VERIFICATION				 APPROVED BY P. ELANGO VAN AGM / QA					
SIGNATURE			PAGE 01 OF 04									

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									M	C		
1	2	3	4	5		7	8	9	D*	** 10	11	
2.2.1	Heat Treatment	ROH,, ROC, Soaking temp & Soaking time	Major	Review of HT Chart / Log	100%	Refer Note 2		HT Chart	✓	P	W*/V	W*: Witness for First of Trail (FOT).
2.2.2	Hardness	Hardness	Major	Measurement	100%	190-250 BHN		Report	✓	P	W	
2.2.3	Dimensions	Dimensions	Major	Measurement & Visual	100%	BHEL Drawing		HC	✓	P	W*/V	
2.2.4	Bend area	a) Surface quality	Major	Wet MPI	100%	ASME Sec V / ASME B31.1 cl.136.4.3		Report	✓	P	W	@@:With photo micro-graphs 500X min.
		b) Micro Structure	Minor	Insitu Micro	##	No micro fissures, Tempered Martensite structure		Report@@	✓	P	W	## : 3 replicas in one bend per HT batch.
2.3	Attachment Welding											
2.3.1	Welding / Welder Qualification	Procedure & Performance Qualification details	Major	Verify	100%	ASME Sec. IX		WPS , PQR	✓	P	V	WPS, PQR shall be approved by BHEL
2.3.2	NDE on EP For Gr91	Discontinuities	Major	LPI/MPI	100%	ASME Sec V / ASME B31.1 cl.136.4.4 / ASME B31.1 cl.136.4.3		Report	✓	P	W*/V	
2.3.3	Weld Inspection	Weld profile, Size & Surface quality	Major	Measurement & Visual	100%	BHEL Drawing		HC	✓	P	V	
2.3.4	Post Weld Heat Treatment	ROH,, ROC, Soaking temp & Soaking time	Critical	Review of HT charts	100%	Refer Note 6		HT chart	✓	P	W*/R	
2.3.5	Hardness on Weld	Hardness	Critical	Measurement	100%	190-250 BHN		Report	✓	P	W	
2.3.6	NDE after PWHT for Fillet Welds	Soundness	Critical	Wet MPI	100%	ASME Sec V / ASME B31.1 cl.136.4.3		Report	✓	P	W	
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1	2	3	4	5		7	8	9	D*	M C	11										
3.0	FINAL INSPECTION																				
3.1	Dimensional Inspection	Overall Dimensions	Major	Measurement	100%	As per BHEL Drawing. Also refer Note 7 for Tolerance.		Report	✓	P	W										
3.2	Positive Material Identification for all AS components.	Chemical check	Major	Spectro/X-Ray fluorescence	100%	As per Required Material (ASME) Specn.		Report	✓	P	W										
3.3	Identification & Painting	Identification, Appearance & DFT.	Major	Visual & Measurement	100%	Painting as per Note 9 & Marking as per Note 10		IR	✓	P	W										
3.4	Packing & Protection	Protection	Major	Visual	100%	BHEL Drawing & PO. Also refer Note 11		IR	✓	P	V										
4.00	DOCUMENTATION	Verification of Records	Major	Compilation of Records.	100%	As per QPG 76		RM TC, Reports(NDE, Hardness, PMI), HT Charts, IR	✓	P	V										
NOTES: 1) Seal transfer on pieces to be cut shall be done by BHEL inspector. 2) POST FORMING HEAT TREATMENT For SA387 Gr91 :Normalise at 1040 - 1060 deg.C & Temper at 750-770 deg.C. Soaking time for both Normalising&Tempering shall be min 2Hrs for thickness upto 50mm and min 4Hrs for thickness 51-100mm. For Gr91, normalizing and tempering shall be carried out within 72 hours after completion of forming. The clamps shall be kept dry and stress free. The temperature shall be brought down to room temperature after hot forming before normalizing and also after normalizing before tempering. Tempering shall not be clubbed with PWHT. Normalising and tempering of Gr91 shall be done encompassing the entire component. a) The rate of heating & cooling shall be as below. <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <th>Thickness of Material</th> <th>Max. rate of heating & cooling above 300deg.C</th> </tr> <tr> <td>Upto 25mm</td> <td>220° C/Hr</td> </tr> <tr> <td>Over 25-50mm</td> <td>110° C/Hr</td> </tr> <tr> <td>Over50-75mm</td> <td>75° C/Hr</td> </tr> <tr> <td>Over 75mm</td> <td>55° C/Hr</td> </tr> </table>												Thickness of Material	Max. rate of heating & cooling above 300deg.C	Upto 25mm	220° C/Hr	Over 25-50mm	110° C/Hr	Over50-75mm	75° C/Hr	Over 75mm	55° C/Hr
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									M	C													
1	2	3	4	5		7	8	9	D*	** 10	11												
3) The product shall be manufactured as per BHEL drawing . 4) Welding Electrodes and Paints used shall be of BHEL approved make 5) All items shall be inspected and cleared by BHEL/BHEL approved inspecting agencies & Customer (If applicable) 6) Preheat, Post heat and Post weld heat treatment (PWHT) temperatures (Deg. C) for Attachment welds <table border="1" data-bbox="254 650 1559 768"> <thead> <tr> <th>Base Material</th> <th>Thickness</th> <th>Attachment material</th> <th>Preheat</th> <th>Post Heat</th> <th>PWHT</th> </tr> </thead> <tbody> <tr> <td>SA387 Gr91</td> <td>All</td> <td>SA335 P91</td> <td>220 \$\$</td> <td>280 for 2 Hrs</td> <td>760 +/- 10 \$\$</td> </tr> </tbody> </table> \$\$: Pre heat shall be maintained for SA387 Gr91 till welding is completed. After Post heating, Gr91 weldments shall be brought to a temperature of 80-100 deg.C and kept for minimum one hour. The PWHT shall commence immediately thereafter. Soaking time shall be min 2Hrs for thickness $\geq$ 50mm and min 4Hrs for $>$ 50mm. Rate of heating & cooling shall be as per Para 2 (a) above. 7) Dimensional tolerances shall be as per drawing / P.O. when not specified in drawing / P.O. the tolerances shall be as below: a) Radius of curvature. : - 1mm + 1mm b) Distance between both hole centers : - 0mm + 2 mm c) Over all length : - 0 mm + 2 mm d) Axis variation of holes : - 0 mm + 1mm e) Slot width : - 0 mm + 1mm 8) Cutting of SA387 Gr91 plates shall be done by Hacksaw/Power saw only. Gas cutting & Plasma cutting are prohibited for SA387 Gr91 material. 9) All Clamps shall be Painted as below when not specified in the P.O./Drawing:- Two coats of 20 microns each of Heat Resistance Aluminium Paint to IS 13183 Gr I, after surface preparation by power tool cleaning (SSPC-SP3). 10) The finished components shall be punched with DU code (14 digit work order details), Heat number, material specification, maker's emblem and Inspectors seal. In addition, the DU code, Heat no. and Material specification shall also be paint stencilled. 11) Threaded portions of the fasteners shall be applied with rust preventive oil to avoid rusting. The total clamp assembly shall be well packed to avoid transit & other damages.												Base Material	Thickness	Attachment material	Preheat	Post Heat	PWHT	SA387 Gr91	All	SA335 P91	220 \$\$	280 for 2 Hrs	760 +/- 10 \$\$
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