

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF ORBITAL WELDING MACHINE

Document No. HCM/CI-HEE-20-01		Rev. No. 11	Dt of issue 05.05.2020	
Instructions for compliance				
a	Vendor must submit complete information against clause no. 24 Qualifying Requirements. The offer meeting this clause would only be processed.			
b	The "Vendor" Column, and where applicable, the "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.			
c	The offer and all documents enclosed with offer should be in English language only.			
d	The information provided by vendor in this specification-cum-compliance certificate will supersede any other information provided by vendor.			
e	Complete set contained welding Head(Welding Tournch), Power source ,Welding head holding device, Remote control , Fixture if any ,or any other item shall be procured from one source only.			
f	Important : Vendor to submit offer in line with the tender specifications & in same order with supportive documents.			
Name and Address of the Vendor :				
E-Mail address :				
Supply, Installation & comissioning of Orbital welding machine complying with these specifications		Quantity : 02 (Two) Set		
S. No.	Description for BHEL requirement	BHEL requirement	Vendor's confirmation /	Remarks
1	Application : (Operations/Jobs involved): Orbital welding machine is required for welding of Tube with Tube sheet joint by pulse GTAW welding process of various Heat Exchangers/High pressure heaters etc.	Vendor to note & Confirm		
2	Tube material variant: Tubes Material : SA 182 TP 316L , Incoloy 800 solution annealed , Stainless steel SA688 TP 304 etc.	Vendor to note & Confirm		
2.1	Tube sizes variant : (i) 12.60 mm x 1.15 mm Tk , (ii) 12.6 mm x 1.0 mm Tk. (iii) 15.875 mm x 2.55 mm Tk . etc. These tubes shall be with dimension tolerances as per tube specn. SA-688. All the tubes are minimum wall (MW) thickness tubes.	Vendor to note & Confirm		
3	Tube Sheet details			
3.1	Material variant : (i) SA 182F316 L (ii) SA 350 LF2 + inconel overlay 6 mm (iii) SA350LF2 CL1 + SS 304 (Over Lay of 7 - 8 mm) etc.	Vendor to note & Confirm		

Signature

3.2	 Tubesheet Thickness : Varies from 100 mm to 500 mm	Vendor to note	
3.3	 Tube hole size(Range) : Varies from min. 12 mm to 30 mm	Vendor to note	
3.4	 Ligament i.e.: Distance between two consecutive drilled holes (Refer attached Annexure 1)	Vendor to note	
3.5	Tube Hole Pitch i.e. : Centre-to-centre distance between two consecutive holes : 60 Deg., Triangular pitching (Refer attached Annexure 1)	Vendor to note	
4	 Tube- to-Tubesheet Joint details		
4.1	 Tube to Tube sheet joint : Refer attached Annexure 2	Vendor to note	
4.2	To hold/ lock the tubes in its position the tube with Tube sheet , Tubes shall be light expanded 1 to 3% . Tube to tube sheet welding shall be carried out after Light expansion and weld edge preparation of 0.6 mm x 45 deg. (Refer Annexure 2)	Vendor to confirm	
4.3	Machine/ Welding Head shall be suitable for all the combination of Tubes joints details as follows: (i) Flush (ii) Recessed (iii) Low protruding	Vendor to specify the max .setting can be done in recessed and low protruding case.	
4.4	Tube to tube sheet weld joints shall be subject to Helium leak test, Hydro test, Liquid penetration test etc. Note: For better result & sound weld joint ,programme parameter shall be fed in the machine in mutual consultation with vendor representative	Vendor to note & confirm	
5	Welding Head		
5.1	Welding head shall be suitable for countinuous high duty cycle application hence its body shall be suitable to withstand high temperature and have high temperature resistant material	Vendor to confirm	
5.2	For precise & uniform welding : If welding head needed any Locating fixture / Pneumatic /centring or any clamping system / hanging , positioning and moving arrangement shall be under complete package and under vendor scope	Vendor to confirm specify & submit the details	
5.3	Rotation of welding Head and filler wire shall be smooth & vibration free to achieve uniform welding.	Vendor to confirm	
5.4	No jerking and jumping of torch & rotation is acceptable during welding operation.	Vendor to confirm	
5.5	Wire feeding shall be without twisting	Vendor to confirm	
5.6	It shall have easy approach and comfortable to change and adjust tungsten angle electrode , wire spool replacement etc.	Vendor to confirm	
5.7	Welding head shall be suitable to use for tube Min.size 10 mm (OD) to 50 (OD) mm .Higher range is also acceptable.	Vendor to specify	

5.8	Welding current : Pulsed welding current Min. 180 A at 100 % duty cycle. Higher capacity is also acceptable.	Vendor to specify
5.9	Welding head cooling system : Water Closed Loop Vendor to please specify DM water or DM water with glycol etc.	Vendor to specify
5.10	Wire feeder : External(On board attached with welding head)	Vendor to confirm
5.11	Arc Voltage control (AVC) : Automatic	Vendor to confirm
5.12	Travel / Rotation speed : Min 0.3 to 6.0 rpm , Higher range is also acceptable.	Vendor to specify
5.13	Wire feed speed range : Min. 150 -1100 mm/ min. (Higher range is also acceptable)	Vendor to specify
5.14	Wire spool size : Suitable to carry weight min.1.0 Kg . Diameter 100 mm	Vendor to confirm
5.15	Tungsten size : Min. 1.6 mm and 2.4 mm	Vendor to specify
5.16	Filler wire size : Min. 0.6 or 0.8 mm	Vendor to confirm
5.17	Wire spool shall be mounted on Torch or welding Head	Vendor to confirm
5.18	Shielding gas : Argon	Vendor to specify
5.19	Coolent flow rate :	Vendor to confirm
5.20	Arc Voltage control (AVC) : Automatic	Vendor to confirm
5.21	Refer Annexure 3 & confirm welding of OTL(Outer tube limit) tube . Welding shall be done from Chanel side.	
6	Power source (Control panel)	Vendor to confirm
6.1	Power source shall be microprocessor controlled programmable inverter type, pulse GTAW.	Vendor to specify
6.2	Welding current range(Minimum) : Continuous current - 6A to 200 A @ 100% Duty Cycle Pulsed current - 6A to 200 A @ 100% DutyCycle	Vendor to specify
6.3	Current accuracy : Min. ± 1 %	Vendor to specify
6.4	Travel speed accuracy : Min ± 1 %	Vendor to specify
6.5	Wire feed speed accuracy :Min ± 1 %	Vendor to specify
6.6	Setting of pulse time (sec.): Min. 0.02 to 3 sec	Vendor to specify
6.7	Setting of background time (sec.): Min. 0.02 to 3 sec	Vendor to specify
6.8	Setting of gas pre and post flow time (sec): Min 1 to 990 seconds	Vendor to specify
6.9	Setting of slope up and slope down time (sec.): PI specify	Vendor to specify

6.10	Arc ignition : HF		Vendor to confirm	
6.11	Insulation class : F		Vendor to confirm	
6.12	Protection class : IP 23 or IP 21		Vendor to specify	
6.13	In built coolant tank : Water close loop		Vendor to confirm	
	Control function : (i) Torch rotation (as per requirement constant or pulsed) . (ii) Wire Feed (as per requirement constant or pulsed / No wire) . (iii) AVC (Arc voltage control) (iv) OSC (Torch oscillation control) - for Tube to Tube joints only		Vendor to confirm	
6.14				
6.15	Cable length between power source , Welding head & Remote pendate control :Min. 15 meter		Vendor to confirm	
6.16	Display screen		Vendor to specify the size	
6.17	Power source cooling : Forced ventilation acceptable (If by other means vendor to specify)		Vendor to specify	
6.18	Shielding Gas control : Argon with flow safety valve		Vendor to confirm	
6.19	Programme editing facility, and display the memory programme comparison with original programme.		Vendor to confirm	
6.20	(Error diagnostic facility) like Real time detect and feedback of gas Flow failure, coolant flow failure, Lower voltage arc extinguish , over heat & arcing fail etc.,		Vendor to confirm	
6.21	Display of welding parameter real value like Arc voltage, welding current electrode position in angular degree , Torch rotation speed and wire speed during welding on screen / recording facility.		Vendor to confirm	
6.22	Gas flow setting :Gas flow display meter with gas solenoid operating button for presetting gas flow rate shall provided .		Vendor to confirm	
6.23	Power source shall be steel or castor wheel mounted for easy mobility.		Vendor to confirm	
6.24	Minimum No of section (segment) can be divided to carry out one joint.		Vendor to specify	
6.25	Torch gas control with safety valve and detection.		Vendor to confirm	
7	WELD PROGRAMMING			
7.1	It shall have a microprocessor base weld programming facility.		Vendor to confirm	
7.2	It shall have a multi level programming capability.		Vendor to confirm	
7.3	Weld report generation : It shall have a USB memory stick for saving loading and archiving of welding programme , monitored welding data.Alternatively external memory module for transfer of weld programme is also acceptable.		Vendor to confirm	

7.4	Weld programming : Parameter like pre flow gas/ post flow, start / end, current slope up , slope down end sector,Auto return to home position after welding, Ready to repeat new cycle. etc. have to set individually for each programme.	Vendor to confirm	
7.5	Sector programming : Setting of welding current , slop up and slop down setting , rotation speed, wire feed , pulsing time , etc.	Vendor to confirm	
7.6	Weld Programme storage capacity : Min 50 Numbers	Vendor to specify	
7.7	For aesthetic look, uniform & defect free welding ,Weld cycle programme shall have a feature that can be divided into Minimum No. 10 of sector (segment) or more.	Vendor to specify	
7.8	Dry Run : Before welding a dry run test feature to performed and to check by simulation operation mode.	Vendor to confirm	
7.9	Welding working orientation (Welding head): Horizontal Bidder shall furnished the Torch(Welding Head) holding ,hanging adjustable , Torch position / alignment mechanism to carry out the orbital welding	Vendor to Note , submit the detail & sketch etc.	
8	REMOTE CONTROL		
8.1	Compact , light weight & hand held remote function unit connected to Power source with min. 15 meter long control cable with protective insulation , safety & quick coupling end connectors shall be provided.	Vendor to confirm	
8.2	Full function digital display remote control unit with welding programme selection , editing & programme saving facility.	Vendor to confirm	
8.3	It shall have a facility to see the welding parameter like voltage,current pulsing time ,wire speed ,Torch rotation speed , torch position total welding time , start / end of programme etc.Alternatively only display of weld programme is also acceptable.	Vendor to confirm	
8.4	It shall also have to display running weld programme,	Vendor to confirm	
8.5	Gas flow setting : Gas flow display meter with gas solenoid operating button for presetting gas flow rate on remote control pendant.	Vendor to confirm	
8.6	Process/ selection Control: Button to select / control for following (1)Welding programme. (2) weld cycle start and weld cycle stop. (3) Emergency stop. (4) Manual command for torch rotation in any direction (Clockwise/ Anticlockwise) (5) Manual control for wire feed in both direction (In & Out). (6) Gas & water flow check . (7) Command for return to home position . Vendor is advise to furnish the other/ additional features provided in the Remote control .	Vendor to confirm	

9	Electrical	Vendor to specify	
	Option 1 415V(fluctuation $\pm 10\%$), 50Hz (fluctuation $\pm 3\%$), 3-phase AC (3-wire system with out neutral). Option 2 is also acceptable Single phase, 230 Volt ((fluctuation $+ 15\%$ to $- 25\%$), 50 Hz (fluctuation $\pm 3\%$) Power Supply Voltage will be provided by BHEL at a single point near the machine. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor.		
9.1			
9.2	All electrical & electronic control should be dust proof.	Vendor to Confirm	
9.3	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to Confirm	
10	Safety arrangements		
10.1	Following safety features in addition to other standard safety features should be provided on the machine:		
10.2	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece, Tools and the operator due to the malfunctioning or mistakes.	Vendor to confirm	
10.3	All the pipes, cables etc. on the machine should be well supported and protected. These should not create any hindrance to machine operator's movement for effective use of machine.	Vendor to confirm	
10.4	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations.	Vendor to confirm	
10.5	Emergency stop Switches at where ever required like Powersource & Remote pendant are to be provided.	Vendor to confirm	
11	Environmental performance of the equipment The Machine shall conform to following factors related to environment		
11.1	Maximum noise level shall be 85 dB(A) measured at a distance of 1 meter from the equipment, at normal load/operating conditions.	Vendor to confirm	
11.2	No hazardous chemicals shall be used in the machine/complete setup.	Vendor to confirm	
11.3	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to specify	
12	Tools required for Commissioning, Operation & Maintenance		
12.1	Special and necessary tools (Tool kit etc) if any required for commissioning, Installation, Operation, demonstration and maintenance of the machine shall arranged by the Vendor.	Vendor to confirm	

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13	Spares & Consumable			
13.1	All type of spares (to be quoted sapareately) for trouble free operation for three years after the guarantee period. Please ensure to submit a list of such spares with quantity along with offer; Spare list should be in the format such as Spares name, Spare Part No, Unit of measurement(UoM), Qty, Unit rate.etc. Offer shall be in package or set or lot. This price will be not be considered for evaluation of bid.(L1 Criteria) Consumable(to be quoted seprately): Item wise consumables to be offered like ceramic nozzle, gas lens, Tunguston, etc.recommended by the supplier for the below Work load . Equipment No.1 Nos of joints: 24,000(Twenty four Thousand) Tube size(OD) : 12.60 mm Tube Thickness : 1.0 mm (Minimum) +0.2 / -0.0 Equipment No.2 Nos of joints: 1500 (Fifteen Hundred) Tube size(OD) : 12.60 mm Tube Thickness : 1.15 mm (Minimum)+0.13/-0.0 Vendor shall submit the list of minimum consumable spares, Unit Price (in Set or package or lot) if any .Detail of spool like weight ,size, recommandate by vendor shall be submitted along with the offer. Note: 1. Filler wire size 0.6 or 0.8 mm , Spool dia.100 mm weight 1kg, international standard available will be use. 2. The prices of the consumables will not be considered for the evalaution of the machine cost.(L1 criteria)	Vendor to submit along with offer.		
13.2		Vendor to submit and also provide break up of list of consumable covered in Package, e.g. consumable name, Part No., UoM, Qty, Unit rate etc.		
14	Document to be submitted		Vendor to confirm	
14.1	Three sets of following documents (Hard copies) and one set in soft copy in English language should be supplied along with the machine		Vendor to confirm	
14.2	Operating manuals of the equipment alongwith the Trouble shooting charts.		Vendor to confirm	
14.3	Pre despatch Inspection report and guarantee certificate of the equipment		Vendor to confirm	
14.4	Maintenance manual of Electrical ,mechanical , Electronic & PLC system of machine alongwith the part list.		Vendor to Confirm	
15	Ambient conditions & thermal stability			

15.1	Total machine and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies: Ambient Conditions: Temperature : 10 to 45 degree celsius Relative Humidity = 60% max.	Vendor to Confirm		
15.2	Working conditions Atmosphere may be dust laden. Machine shall be kept in the normal shop floor condition. Max. temperature variation is up to 25 deg Celsius in 24 hours.	Vendor to Confirm		
15.3	The complete equipment/machine alongwith its attachments & accessories, should be suitable for 8-10 Hrs. intermittent operation to its full capacity.	Vendor to Confirm		
16	Installation, Commissioning, Trial Operation (prove out) & machine acceptance at BHEL works.			
16.1	Complete installation , commissioning of equipment & demonstration of all its features, control system & accessories at BHEL works is the sole responsibility of Vendor.	Vendor to Confirm		
16.2	It is supplier's. full responsibility to carry out the installation , start up, testing of machine, it's control & all types of other supplied equipment. Service requirement like power, air & water shall be provided by BHEL. Other requirements like crane shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance.	Vendor to Note & Confirm		
16.3	Details of Tube-to-Tubesheet (T-TS) joint i.e. sizes of Tube , Hole size , Material of Tube sheet & Tubes, Mock up size & other information pl refer Annexure 1,2,3,& 4 attached.	Vendor to Confirm compliance		
16.4	Vendor to provide tentative time taken to carry out of welding of one joint and shifting to next joint (It shall included Insertion of welding Head + setting time + welding time + Removal of welding Head).	Vendor to specify		
16.5	To prove out the equipment capability vendor has to demonstrate the welding on test block containing approx. minimum 50 Joints at BHEL Bhopal works. Test block will be arrange by BHEL & under BHEL scope . Note: 1.This joint shall be carried out by BHEL person under supervision of vendor. 2.For better result weld programme parameter shall be fed in machine under mutual consultation with vendor representative.	Vendor to note & confirm		

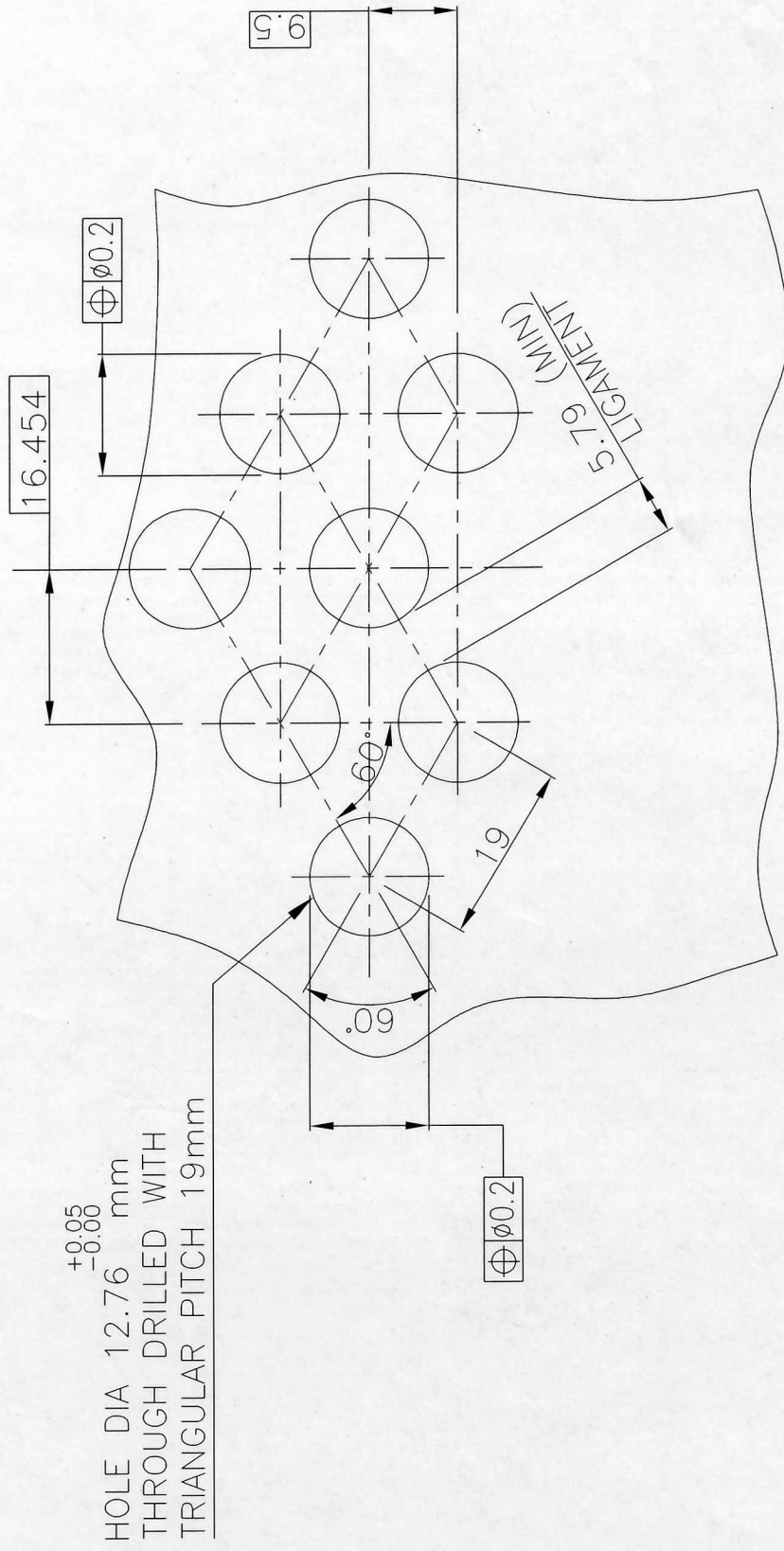
16.6	One separate Mock up containing Minimum 6 joints shall be selected for welding & carried out following testing : 1. Dye penetration testing of weld (To check that weld surface shall be defect free) 2. Destructive testing by parting / sectioning of weld joint. (To check the soundness of weld from inside , lack of fusion, porosity etc.) The size of tube, hole size, Pitch etc. will be same as in actual job & as called in Annexure 1 & 2 . Final machine will be accepted on the bases of satisfactory report of above testing and machine will be treated is commissioned & accepted to BHEL for regular production. Necessary Mock-up block will be arranged by BHEL. Tentative size of Mock - up Block will be 150 mm x 75 mm x 50 mm Thick shall be used. PI see the attached annexure 4. Note: 1. This joint shall be carried out by BHEL person under supervision of vendor expert. 2. For better result weld programme parameter shall be fed in machine in mutual consultation with vendor representative	Vendor to note & confirm	
17	Training at BHEL BHOPAL		
17.1	Bidder shall provide training to BHEL Engineers in operation, maintenance (Mechanical ,Electrical / Electronic, PLC system of the machine. etc) & programming.	Vendor to Confirm	
17.2	To & fro Airfare, boarding ,lodging, fooding, Local transport etc. for Trainer shall be under vendor's scope .	Vendor to note	
17.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to note	
17.4	Training charges (if any applicable) at BHEL Bhopal works considering two working days basis shall be quoted .	Vendor to note, confirm & specify charges if any.	
18	Painting		
18.1	Equipment / machine shall be protected by applying good quality paint to prevent corrosion, shall be rust proof and suitable for specified weather conditions. Paint of the machine should be oil/coolant resistant. Selection of colour is as per the choice of vendor.	Vendor to note & confirm	
19	Packing		
19.1	Equipment alongwith its loose items, accessories etc. shall be packed systematically in sea worthy packing boxes which shall be rigid enough to avoid any kind of damage during handling, transit & storage. Packing list of all boxes to furnished before dispatch.	Vendor to confirm	
20	Pre-Despatch Inspection		

20.1	For indigenous Works:-Pre-dispatch testing and inspection of the machine will be witnessed by BHEL personal at the Vendor's works for capacity and parameters. An inspection call shall be given by the Vendor at least 20 days before the date of inspection. Four copies of inspection & test certificate and guarantee certificate shall be submitted and got approved before dispatch. For Foreign Bidders: PDI will be witnessed by Third Party inspection agency such as Lloyd, Bureau Veritas or TUV Sud (Inspection charges to be quoted separately and to be borne by vendor)	Vendor to confirm	
20.2	Demonstration / physical inspection of all features, control panel, shall be done to the full satisfaction of BHEL representative before despatch.	Vendor to note	
20.3	Min .20 Nos. joints to extent possible nearest size mentioned in Annexure 1 & 2 for complete demonstration of Orbital welding at Vendor works as condition applicable. BHEL will provide only Test block and tubes. Other consumable shall be under vendor scope. Test block will be returned back by Vendor to BHEL after PDI.	Vendor to note & confirm	
21	GUARANTEE:		
21.1	The machine should be guaranteed for 12 months from the date of commissioning of the equipment. Free after sales services is to be provided during the guarantee period including free replacement of defective parts, if any.	Vendor to confirm	
22	General : Vendor to furnish following information along with the offer.		
22.1	Equipment model No of Power source & welding head :	Vendor to specify	
22.2	Approx. Size of the machine (Length, Width, Height) for complete equipment.	Vendor to specify	
22.3	Detailed catalogues, sketch/ photographs and technical literature of the machine and accessories/ attachments.	Vendor to submit	
22.4	Calibration procedure / method of machine are to be provided (After placement of Order). It is required to ensure the desired parameter set are to be achieved. Specify the reference international standard norm / code etc. if any follows. Calibration certificate of the machine shall be provided along with the machine.	Vendor to note & confirm	
22.5	First filling of consumables required like Oils & Grease, DM Water etc. if any to be supplied by vendor. Indigenous (Indian) source or Indian equivalent and specifications of oils / greases are also to be provided by the vendor.	Vendor to note ,specify if any & confirm	
22.6	Separate lump-sum charges (if any) for installation, commissioning and demonstration are to be indicated separately in the offer.	Vendor to Note & specify charges if any	
23	Delivery : Approximate time of Delivery (In Weeks) ex-works	Vendor to specify	
23.1	Approximate time of Installation & Commissioning (In Days or Weeks)	Vendor to specify	
23.2	Both the quoted Welding Head and welding power source shall be of the same make company.	Vendor to Note & confirm	

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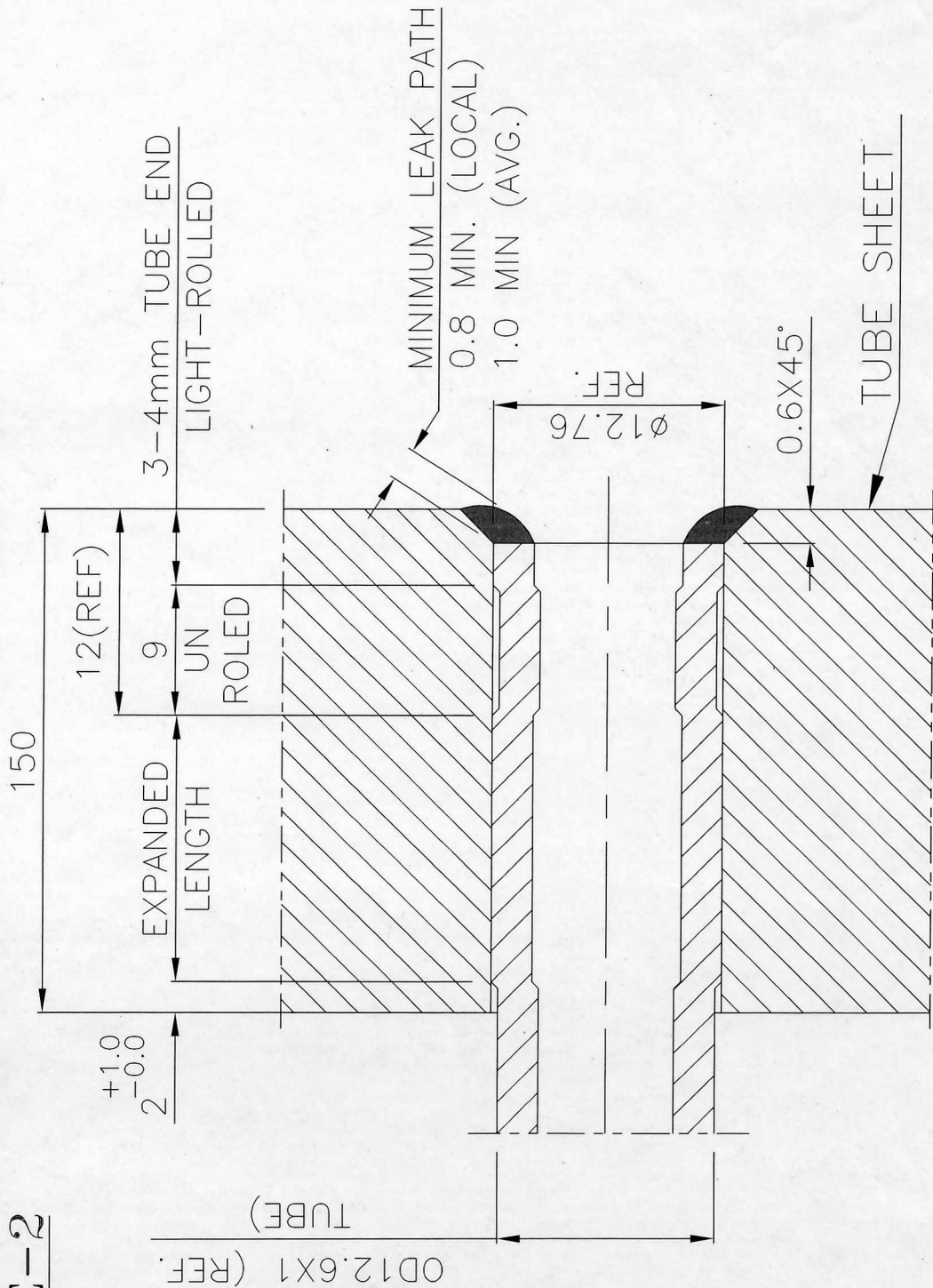
23.3	All the displays, measuring and controlling parameters shall be in English language .	Vendor to note		
23.4	Maintenance Friendly : The Base Unit (Power source / Controller) & welding Head shall have easy accessibility of its components for easy maintenance. The water tank shall have external filter for easy replacement.	Vendor to confirm		
23.5	Vendor must have full fledged service centre in India.	Vendor to confirm.		
24	Qualifying Requirements for consideration of Offer(For Micro & Small Enterprises,Startups & NON MSME vendors all clauses from 24.1 to 24.5 will remain same)			
24.1	Vendors who have successfully executed order of Minimum Two Nos Orbital TIG welding machine of Welding current capacity specified in clause No. 6.2 or higher capacity in the past Eight (8) years.Documentary evidence to furnish- copy of purchase order, Invoice/Delivery challan/Lorry receipt etc.	Vendor to confirm & Submit the supportive document		
24.2	Name of the customer(s)/company(s) where similar or higher capacity machine has been supplied.	Vendor to submit		
24.3	Performance feed back from any one customers/end user regarding satisfactory working of machine to be furnished. Pl furnish copy of Performance/End user certificate against orders indicated at sl no.24.1	Vendor to confirm & Submit the supportive document		
24.4	BHEL reserves the right to verify the information provided by vendor at their referred customer's works including machining accuracies. It shall be the responsibility of the vendor to share the contact details .In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to confirm		
24.5	Bidder Should have on average financial Turnover of Rs 48 lakhs or more for last 3 consecutive financial years ending march 2019 & it should be supported by Annual report(Balance Sheet and Profit & Loss Account). In case of Foreign bidders, business information report issued by D & B/credit reform/ Experian etc to be submitted along with offer. D & B/credit reform/ Experian report indicating turnover as mentioned above for the Financial year: 2016-17, 2017-18, 2018-19 to be submitted along with Technical bid. For Micro and Small Enterprises Manufacturer & start ups manufacturer it is exempted. For traders financial relaxation will not be applicable.	Vendor to confirm & Submit the supportive document		
25	Scope of Works & supply			
25.1	Supply of complete Orbital welding machine including Power source, Welding head ,Torch holding mechanism , & other accessories etc. to make it complete & as per specification : Two (2) sets.	Vendor to confirm		
25.2	Tool Kit Box : 2 (Two) set as per vendor standard.	Vendor to confirm		
25.3	Demonstration & acceptance of machine at BHEL works for clause No 16.5 and 16.6	Vendor to Note & Confirm		

ANNEXURE-1



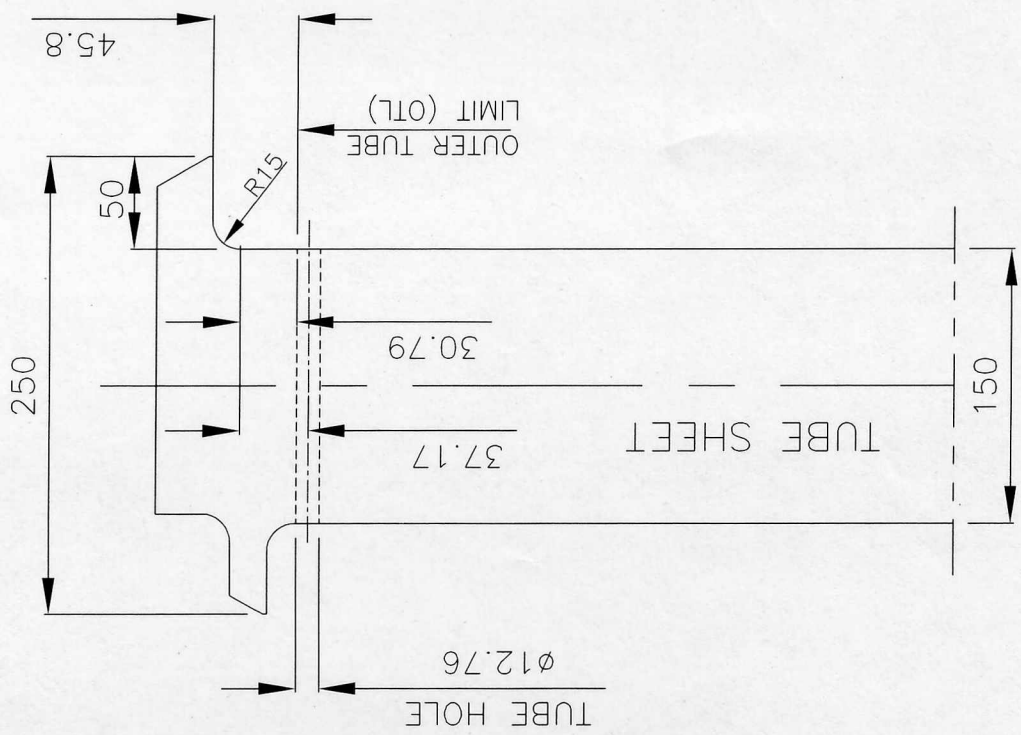
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ANNEXURE-2

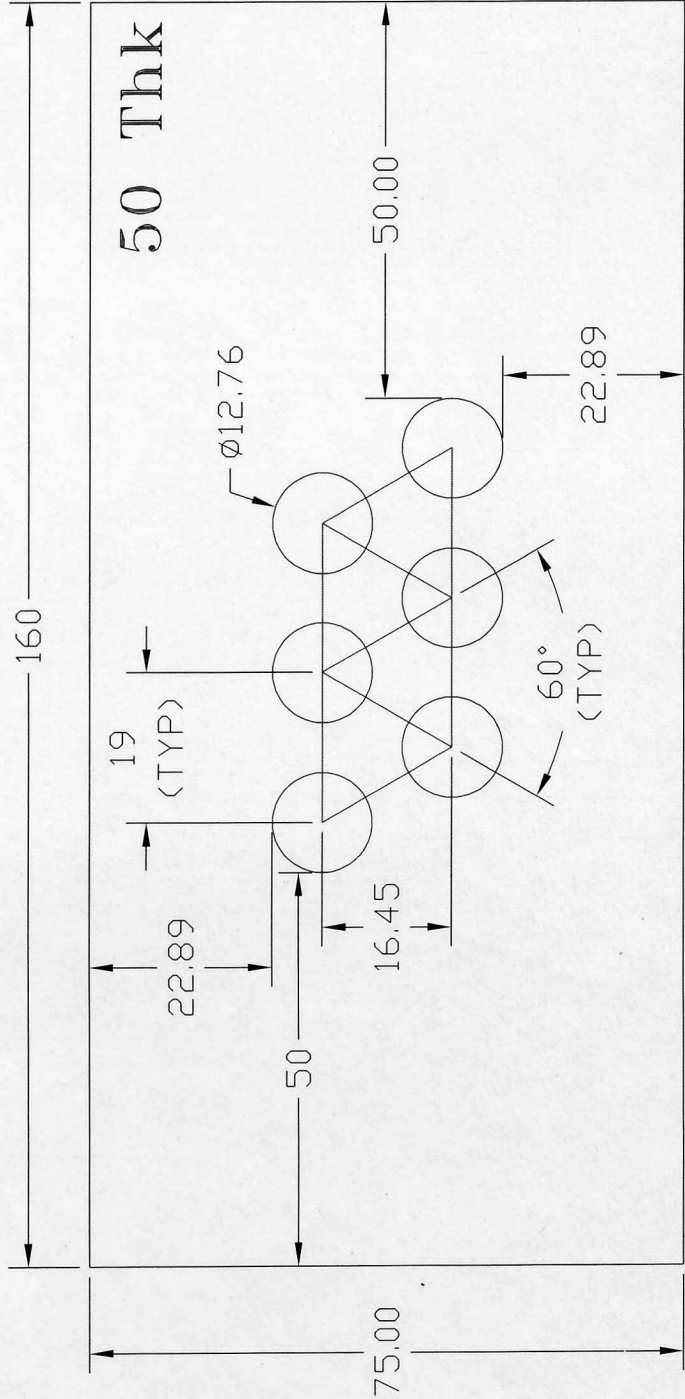


TUBE TO TUBE SHEET WELDING
(BY ORBITAL MACHINE)

ANNEXURE -3



ANNEXURE-4
(AS PER CLAUSE NO. 17.6)



MODERATOR HEAT EXCHANGER
TITLE: TUBE LAYOUT OF MOCKUP FOR SEAL WELD
DRAWING NO. - 4-16503-40367