Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

An ISO 9001 Company

ENQUIRY NOTICE INVITING TENDER	Phone: +91 431 257 7529 Fax : +91 431 257 6826 Email : anaga@bheltry.co.in Web : www.bhel.com

TWO PART BID Tender to be submitted in two Parts	Enquiry Number: 2621400042	Enquiry Date: 24.09.2014	Due date for submission of quotation: 28.10.2014

You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order.
Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the Date of tender opening.

Item	Description	Quantity	Delivery Schedule
10	**Inverter Controlled Advanced TIG System with Cold Wire Feeder** as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	**1.00 No**	**3 months from date of PO**

Important points to be taken care during submission of offer

1. **Compliance Form No. TRY/IMP/O3 & TRY/IND/03 to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.**
2. **Material shall be delivered to FOR ,BHEL Stores, HIGH PRESSURE BOILER PLANT, BHARAT HEAVY ELECTRICALS LIMITED, Tiruchirappalli- 620014, Tamilnadu State.**
3. **Time period required for Erection & Commissioning shall be 2 Weeks from the date of intimation by BHEL requesting supplier to depute Service Engineers about site readiness.**
4. **EMD for this Tender will be (₹) : 40,000.00**
5. **All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.**

BHEL's General guidelines / instructions (refer MM / CE / GENL / 001 - EMD) including bank guarantee formats and list of consortium banks, commercial terms compliance form can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2621400042".

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED Manager / Capital Equipment / MM A. NAGARAJAN Manager MM/Capital Equipment BHEL, Trichy - 620 014.

PART – A
INVERTER CONTROLLED ADVANCED TIG SYSTEM WITH COLD WIRE FEEDER

SECTION- 1: Qualifying Criteria

The BIDDER has to compulsorily meet the Qualifying Criteria indicated in **Section 1** to get qualified. Otherwise the technical offer will not be considered.

S NO.	REQUIREMENTS	VENDOR'S RESPONSE
1.1	Only those vendors (OEMs), who have supplied and commissioned at least ONE complete Inverter Controlled Advanced TIG welding system with wire feeder for radiographic quality TIG applications in the last three years (as on original date of opening of Tender) should quote.	
1.2	Only those vendors (**OEMs**) should quote, who have supplied and commissioned in the last three years (as on the original date of tender opening) at least **ONE** "Inverter Controlled Advanced TIG welding system of the quoted wire feeder" to any boiler related industries or similar industries. **EITHER** (i) In at least one country other than the country of origin to establish vendor's global business activity. **OR** (ii) In India; and the referred machines are presently working satisfactorily for more than one year from the date of commissioning (as on the original date of tender opening). The name and contact addresses of the customers to whom the above said machines were supplied to be furnished with details.	
1.3	Vendor has to submit at least **ONE PERFORMANCE CERTIFICATE** for satisfactory performance of **Inverter Controlled Advanced TIG system of the quoted wire feeder** as referred under clause 1.2 above, for a minimum period of one year from the date of commissioning (as on the original date of tender opening) from their customers in India or in any other country outside the country of origin, supplied and commissioned with in the last three years. Performance certificate as Original Certificate or E-mail directly from the customer may be submitted. The original certificate may be returned after verification by BHEL, if required. For obtaining the Performance certificate, a suggestive format is provided at the end of Part A.	
1.4	BHEL reserves the right to verify the information provided by the Vendor for the referred Machine at their referred customer's works. It shall be the responsibility of the vendor to facilitate the visit of BHEL's team at their referred customer works .The Travel, Board and Lodging expenses for BHEL Personnel shall be borne by BHEL. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected. BHEL reserves the right to accept or reject the OEMs based on the assessment of their technical and financial capability.	

SECTION - 2:

The BIDDER / VENDOR are requested to provide the following information:-

S NO.	REQUIREMENTS	VENDOR'S RESPONSE
2.1	The BIDDER / VENDOR to furnish Reference List of Customers, with complete address, details of contact person, where Inverter Controlled Advanced TIG welding systems have been supplied in the past.	
2.2	Specify details of Inverter Controlled Advanced TIG welding systems supplied to other units of BHEL, if any (Year of commissioning with details etc).	
2.3	Details on SERVICE-AFTER-SALES Set-up in India including the Address of Agents / Service Centres in India.	
2.4	Any Additional data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

SECTION – 3:

The BIDDER to note:

S NO.	REQUIREMENTS	VENDOR'S RESPONSE
3.1	The BIDDER / VENDOR shall submit the offer in TWO parts. 1. Technical Offer [**with PART A & PART B**] 2. Commercial Offer and Price bid.	
3.2	The Technical Offer shall contain complete details against all clauses of Technical Specifications given by BHEL.	
3.3	The Technical Offer shall be supported by copies of product Catalogues, DataSheets and technical details of Bought- Out-Items.	
3.4	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

Suggestive Format of Performance Certificate:

The Performance should be certified by the customer on **Customer's Letter Head** and submitted along with the offer.

PERFORMANCE CERTIFICATE

1.0	Name of the equipment:	
2.0	Suppliers name	
3.0	Make & Model number of the Wire feeder	
4.0	Month & Year of Commissioning	
5.0	Application for which the equipment is used	
6.0	**Machine Details**	
6.1	Sizes of the jobs performed in the machine	
	a) Tube diameter(Min and Max) in mm	
	b) Tube thickness(Min and Max) in mm	
	c) Tube materials	
7.0	Performance of the Machine (Please tick the appropriate option)	Satisfactory Not Satisfactory
8.0	Service after sales (Please tick the appropriate option)	Satisfactory Not Satisfactory
9.0	Other remarks (if any)	
Date:		Signature & Seal of the Authority Issuing the Performance Certificate

PART B

TECHNICAL SPECIFICATION FOR INVERTER CONTROLLED ADVANCED TIG SYSTEM WITH COLD WIRE FEEDER [300 AMPS @ 100% Duty cycle]

Sl.No.	FEATURES /BHEL SPECIFICATION		OFFER BY BIDDER
1.0 APPLICATION			
1.1	The proposed ADVANCED TIG Welding Machine with cold wire feeder is intended to use (with continuous current setting and pulsed current setting mode) for Welding Process of Radiographic Quality Welds like Butt Joints, Fillet Welds, and Double Groove Welds coming in High Pressure Vessels using wires of ϕ 1.0 mm & ϕ 1.2mm		
1.2	The Offered Welding Machine shall be PORTABLE in Nature and a CONSTANT CURRENT DC Power source.		
1.3	The system should consist of the following main equipment • Power source • Cold wire feeder • Welding torch • Water Cooling Unit		
2.0 POWER SOURCE			
2.1	Inverter Based DC Power Source with CC characteristics for TIG welding, capable of delivering a smooth Constant Direct Current (in DCEP and DCEN modes of welding operations), even with a fluctuation of $\pm$10 % in the Input Voltage		
2.2	Power source integrated with TIG control unit featuring high frequency Arc ignition, Pulsed TIG & Non-pulsed TIG options Upslope & Down slope.		
2.3	Control Unit Integrated with Power source (for Hot Start & Arc Dynamics Control)		
2.4	Digital display of Welding Current &Voltage to be provided with in-built provision for Error Correction. Provision for easy calibration should be provided.		
2.5	Control Panel Switches	Power ON/OFF, Remote ON/OFF, Voltage & Ampere Control, Hot Start Control, Arc Dynamics Control, pulse setting etc.	
2.6	Current Rating	350 Amps. @ 60 % Duty Cycle OR Around 300 Amps. at 100% Duty Cycle.	
2.7	Operating Range for Welding Current	350 Amps Max (with stepless variation)	
2.8	Open Circuit Voltage	BIDDER to mention the Open Circuit Voltage for the offered Powersource [Preferred OCV is 70 to 75 V]	
2.9	EMI Suppression	a) Powersource shall be equipped with a suitable Filter Network connected to the INPUT Power Line, to prevent propagation of EMI either into or out of the Powersource. b) All metal enclosures and internal shields shall prevent radiated EMI. c) BIDDER has to elaborate the DESIGN FEATURES to meet the above requirements.	

Sl.No.	FEATURES /BHEL SPECIFICATION		OFFER BY BIDDER
2.10	Arc Dynamics Control	To be provided in order to minimise spatter and optimise weld-bead wetting action, during welding	
2.11	Switching Frequency	BIDDER has to indicate the Switching Frequency of the Inverter Circuit and the make of IGBT used	
2.12	Power Input	415 ± 10% V AC, 3 Phase, 50 ± 2% Hz, through a 3 Wire System [4th wire for EARTHING] – No Neutral Conductor .	
2.13	Portability	Under-Carriage with hard rubber lined wheels for portability of the power source& wire feeder by manual pushing and bottle rack for holding one Argon Gas cylinder	
2.14	Ambient Conditions	Temperature upto + 50° C ; Humidity upto 90 % but both upper limits do not occur simultaneously.	
3.0	**POWER CABLES**		
3.1	Input Power Cable	A 5 m long electric input power cable with protective sheathing to be provided with the power source.	
3.2	Welding Current Cable	TIG Welding (current) Cable, 8m in length, minimum 50mm^2 cross sectional area with one end connected to the Power source and the other end connected to Welding Electrode Holder.	
3.3	Return Current Cable	Welding Current RETURN Cable , 8 m in length, with one end connected to the Power source and the other end provided with a Screw Type Earth Clamp	
3.4	Electrode Holder & Return Current Connection	Heavy Duty rugged LUG type terminals to connect Welding Cable for TIG Electrode Holder and Return Current Cable for TIG Process	
3.5	Load Compensation	Output variation due to line voltage fluctuation to be minimized	
3.6	Auxiliary Power	Appropriate Control Transformer shall be provided for the Auxiliary Power for 110V AC or further low voltage power supply points to pulse control unit etc . When these units are put into operation at the same time, to carry-out pulsed Tig welding with water cooled TIG torch..	
3.7	Power Rating	BIDDER to indicate the Maximum Power Rating [in kVA] of the Power source and the NO-LOAD Power Consumption in Watts.	
3.8	Power Source Model	To Specify the Model of Power source Offered	
4.0	**COLD WIRE FEEDER:**		
4.1	Digital Microprocessor controlled cold wire feeder	Vendor to confirm	
4.2	Drive type	4 roll drive	
4.3	Feed Roller Type	Roller with U & V groove	
4.4	Vibratory system	The constant fed weld wire is to be superimposed by a secondary, high speed oscillation. The wire oscillation is generated by a four roll, mechanized drive plate. The mechanical action of the drive plate generates vibration through the weld wire. The vibration passes through the weld wire into the molten pool agitating the TIG weld.	
4.5	Wire feed	Wire feed to be integrated with the welding torch	

Sl.No.	FEATURES /BHEL SPECIFICATION		OFFER BY BIDDER
4.6	Wire feed controls	Start, stop, wire feed delay controls etc to be provided. Vendor to provide details.	
4.7	Wire feed motor	Wire feed motor/drive must be capable of driving the feed wire up to 8m	
4.8	Wire feed rate- range	Min:0.5 m/min Max:Vendor to specify (Not less than1.5m/Min)	
4.9	Digital display	Digital display of wire feed speed	
	Wire diameter range	φ1.0 & φ 1.2mm	
4.10	Material	All Carbon, Carbon steel, Alloy steel, Stainless steels	
4.11	Pulsed wire feeding setting	Vendor to Confirm	
4.12	Time delay in wire feeding (both automatic and torch knob control)	Vendor to specify	
5.0	**Water Cooled TIG welding torch**		
5.1	APPLICATION	Suitable for TIG process and for welding of Radiographic Quality Welds like Butt Joints, Fillet Welds, and Double Groove Welds coming in High Pressure Vessels using wires of ϕ 1.0 mm and ϕ 1.2mm . Must be compatible to the welding power source offered	
5.2	Make	Preferred makes are WELD CRAFT of USA,KEMPPI of Finland or OTC/DAIHEN CORPN.of Japan, BINZEL, TOKIN .	
5.3	Wire feed nozzle	Wire feed nozzle to be mounted on the Tig torch. Wire feed nozzle to be manually adjustable in order to feed the wire at desired angle during welding. Vendor to provide the details of arrangement and mechanism.	
5.4	Extension bracket	Welding torch with additional extension bracket to be provided	
5.5	Wire feed control	Torch with inbuilt knob for controlling wire feed to be provided.	
5.6	Torch Knob setting	2 stroke and 4 stroke knob setting has to be provided for Welding torch	
5.7	Cable sheathing	Protective sheating to be provided for the TIG Torch cables & Hoses, to withstand shopfloor rough use for the entire length of cables/hoses.	
5.8	Water cooled torch	a.Current rating:350 A @ 60% Duty cycle. b.Cable length: 8 m	
5.9	All hose (water, gas) Connectors and earth cable are of Quick Release type	Vendor to Confirm	
6.0	**WATER COOLING UNIT**		
6.1	Application	Compatible for the offered power source with suitable quick fix end connectors for connecting water cooled tig welding torch	

Sl.No.	FEATURES /BHEL SPECIFICATION		OFFER BY BIDDER
6.2	Coolant capacity	a.Tank capacity sufficient enough to feed a water cooled TIG Torch fitted with 8 meter long cables & hoses and with required buffer quantity to meet the continuous welding applications b.bidder to specify the tank capacity (not to be less than 5.5 litres)	
6.3	Max Flow rate	4 to 5 lpm	
6.4	Pumping pressure or head	Vendor to specify	
6.5	External Dimensions	Vendor to specify	
6.6	Details of chilling unit	Bidder to specify the Details of chilling unit	
6.7	Alarm indicators	a. To be provided with an alarm indicators for failure of coolant circulating pump, low level of coolant, failure of coolant flow etc. b. Bidder to specify the type of alarm indicators	
6.8	Inter connecting hoses	Well reinforced water/coolant circulation hoses are to be provided for the inter connection between welding power source and water cooling unit. (additional hoses with quick fix end connectors are to be quoted under spares head)	
7.0	**REMOTE CONTROL UNIT**		
7.1	Application	For welding current variation and wire feed speed from a distant work place, in addition to that provided in the front panel of the welding power source.	
7.2	Remote control pendent-hand operated	Pendent Type remote control for controlling the **Current** and **Wire Feed Speed** to be provided.	
7.3	Remote control-foot operated	Foot operated Remote control for Weld start and current Variation	
7.4	Current Control	Stepless Variation of Welding Current	
8.0	**Gas Regulator**		
8.1	Gas regulator	Two stage Regulator	
8.2	Gas hose with end fittings	Gas cylinder to power source length to suit long travel on cable festoon	
8.3	Flow rate Range	Vendor to specify	
8.4	Outlet Pressure Range	Vendor to specify	
8.5	Two pressure gauge	Cylinder pressure, outlet pressure	
8.6	Flow meter	Vendor to Confirm	
9.0	**SPARES:**		
9.1	Power Source	All type of Spare Parts, Consumable and Non consumable spares along with unit price must be suggested by the vendor.	
9.2	Ammeter kit (optional)	Vendor shall quote the price for ammeter calibration kit complying National/International standards for calibrating ammeter of range 0-500A	

Sl.No.	FEATURES /BHEL SPECIFICATION		OFFER BY BIDDER
9.3	TIG Torch consumables	Complete set of consumable spares for φ2.4mm Tungsten electrode,"o" Rings,Gas lens,nozzle/diffusers,ceramic nozzles(both types),collet bodies, etc. to be suggested with unit price	
9.4	Remote Control Unit	Complete Set of Remote Control Unit and its Spares like Knob, Potentiometer, etc. to be quoted for reference	
9.5	Wire feeders	a. Two Set of wire feed rollers for all sizes of wires. b. Wire feed liners between wire feeder & Torch Suitable for all sizes of Wires. c. Universal Tip Holder Assembly & 7.5" Tip / Liner Assembly. d. The Teflon Inlet /Outlet Guide Tube.	
9.6	Availability of spares	All types of spares should be available for at least ten years after supply of the machine. In case the machine is likely to become obsolete within ten years period, the vendor should inform BHEL to procure the spares in advance.	
10.0	**INSULATION**		
10.1	Insulation	Class "H" – to suit Tropical Working Conditions	
10.2	Machine Protection	IP 23 – Degree of Protection	
10.3	Machine Cooling	The Power source shall feature a 'state of art' forced air cooling system that ensures adequate cooling of the components while preventing dust and metal particles from being drawn in.	
10.4	Functional / Elemental Design Protection/safety	a) Inbuilt protection for the IGBT/Power source against Thermal / Overload / Short-Circuit / Single or Two Phase Power Input Conditions. b) All PCBs to be sprayed with mould coating to prevent damage from dust and grinding particles. c) Machine Design to ensure proper earthing for the machine and its peripherals Vendor to provide details d) Protection against electric shock for ensuring operator safety.	
11.0	**O & M MANUALS**		
11.1	No. of Copies	3 (Three)	
11.2	Language	English	
11.3	Soft Copy	One SOFT COPY in CD-ROM is to be given for each machine	
11.4	Manual Details :	a. Manual shall contain all instructions for machine installation and welding trial testing, in sequence. b. Manual to give general circuit diagrams, showing the interconnection of various elements and also details on PCBs [Printed Circuit Board] like tapping voltages, main electronic elements' specifications and ratings, etc. c. Manual to give other details like trouble shooting chart, weld parameters selection for various base metals, etc. d. Master List of Parts & Spares used in the machine with Make, Model, Rating, etc.	

Sl.No.	FEATURES /BHEL SPECIFICATION		OFFER BY BIDDER
12.0	Pre-dispatch Inspection	The welding machines shall be offered for inspection by BHEL Engineers at supplier's works prior to despatch.	
13.0	**Erection & Commissioning:**		
13.1	Commissioning	The equipment shall be commissioned by the supplier's representative at BHEL Works.	
13.2	Performance prove out	Performance prove out has to be done by the supplier at BHEL,trichy Welding Trails are to be taken on butt joints of carbon & alloy steel pipes of higher thickness (Not exceeding 100mm) and subjected to radiographic tests for acceptance. Consistency in quality to be maintained for a minimum of 5 joints.	
13.3	Training	The Supplier's SERVICE ENGINEER shall give training in the Operation and Maintenance of the Machine to Operators, Maintenance personnel at BHEL,Trichy.	
14.0	Guarantee	Vendor shall provide a guarantee for a period of 12 months from the date of Commissioning of the equipment or 18 months from the date of dispatch, whichever is earlier.	