



An ISO 9001
Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING

ENQUIRY	Phone: +91 431 257 75 75 Fax : +91 431 252 07 19 Email : rmanohar@bheltry.co.in Web : www.bhel.com
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	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620600029	20.05.2006	05.07.2006

Your are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery Schedule
10	600 Amps (100% Duty Cycle) Manual Arc Welding machines as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com)	16 Nos.	30.12.2006

Note:

- (1) The detailed Technical Specification along with technical point-by-point confirmation, Commercial Terms & Conditions applicable for this Enquiry, Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site www.bhel.com under Enquiry reference “2620600029”. Your offer should be based on all the above documents.
- (2) Also, you are requested to fill in the Supplier Registration formats available in www.bhel.com (under Advancement – Supplier Registration) and send it along with your offer.

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 Dy. Genl. Manager / Capital Purchase / MM / Manufacturing
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PART A**QUALIFYING CRITERIA FOR THE SUPPLY OF
INVERTER CONTROLLED SPECIAL PURPOSE
MANUAL ARC WELDING MACHINES – 600 Amps.****SECTION – I**

The BIDDER / VENDOR has to necessarily provide the following details, for making an assessment of the firm's capability and competency:

[The BIDDER is expected to give complete details against each clause in the table given below and wherever necessary an additional sheet may be attached (giving clear reference number) to cover the required details]

S. No.	PARTICULARS	VENDOR's RESPONSE
1.0	Number of Years of Experience of the BIDDER/ VENDOR in the field of design, manufacture and supply of 'INVERTER CONTROLLED WELDING MACHINES' for Heavy Duty SMAW Welding Applications	
2.0	Number of Welding Machines (as per Clause 1.0) supplied till date, in the following category a) up to 400 Amps. rating and b) above 400 Amps. rating [both cases for 60 % Duty Cycle]	
3.0	YEAR of LAUNCH of the MODEL quoted against this ENQUIRY	
4.0	Is there any other model launched after the quoted Model? Otherwise, indicate the likely year in which the next model is likely to be launched	
5.0	Number of 'Inverter Controlled SMAW Welding Machines' supplied, till date in the QUOTED MODEL	
6.0	Number of 'Inverter Controlled SMAW Welding Machines – 600 Amps. Rating with 100 % Duty Cycle' supplied and commissioned till date for the following category of CUSTOMERS a) Heavy Engineering Fabricators b) Foundry & Mining Sector c) Ship Building Companies	
7.0	Details of Design Set-Up and Technology Back-Up (R & D Centre) assured for the PRINCIPAL Equipment Maker	

S. No.	PARTICULARS	VENDOR's RESPONSE
8.0	Details on International Standards followed in Design and Testing of Welding Machines [Copy of English Version of Standards / Design Codes followed shall be furnished with the Technical Offer]	
9.0	Comprehensive Details, on Performance Testing of Welding Machines quoted, to be furnished with the Technical Offer.	
10.0	Details of Quality System followed (Furnish the salient aspects of the Quality Assurance System followed)	
11.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centres in India, to be furnished compulsorily.	
12.0	Any Additional Data to supplement the manufacturing capability of the BIDDER	
13.0	BIDDER to indicate the Country of Origin [source of supply of welding machines]. Equipment manufactured in Countries like TAIWAN, CHINA and KOREA are not acceptable.	

SECTION – II

The BIDDER has to compulsorily meet the following requirements to get qualified for submitting an offer for the Inverter Controlled SMAW Welding Machine .

S. No.	REQUIREMENTS	VENDOR's COMMENTS
14.0	The BIDDER / VENDOR shall have a minimum of TEN Years of Continuous Experience in the Design, Manufacture & Supply of Inverter Controlled SMAW Welding Machines.	
15.0	The BIDDER / VENDOR shall have supplied a minimum of 10 number of Inverter Controlled SMAW Welding Machines with rating 500 Amps. and above to Customers in India. Indicate the number of such welding machines sold in India, till date.	
16.0	Reference List of Customers and Performance Certificate from CUSTOMERS [minimum 2 Customers – Government Organisations and / or Heavy Engg. Companies in Private Sector in INDIA] with full contact details of CONTACT PERSON, who are the End Users of the QUOTED MODEL of Inverter Controlled SMAW Welding Machines.	

SECTION – III

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser :

S.No.	REQUIREMENTS	VENDOR's COMPLIANCE
17.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical [with PART A & PART B] & Commercial and Price Bid.	
18.0	The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. A just 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
19.0	The BIDDER / VENDOR shall assure a continuous support for SPARES and SERVICE for TEN Years, from the date of commissioning of the equipment at BHEL Works.	
20.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details / literature on the QUOTED MODELS of Welding Powersources	
21.0	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	
22.0	The reference List of Customers shall be accompanied with the details (Phone Number /E-Mail ID) of the CONTACT PERSON for cross reference by BHEL	
23.0	The BIDDER may give details [like MAKE, MODEL, YEAR of SUPPLY, Specifications] on supply of similar welding machines for any of MANUFACTURING UNITS of BHEL [Bharat Heavy Electricals Limited].	
24.0	In case of preliminary qualification of the OFFERED MODEL, the BIDDER has to demonstrate the capability of OFFERED POWERSOURCE at BHEL/TRICHY Works, at the cost of the BIDDER / VENDOR.	
25.0	Earlier performance & field experience (service support) with BHEL (if any) will be a reckoning factor for the technical qualification of the OFFER.	

PART B

**TECHNICAL SPECIFICATIONS FOR INVERTER CONTROLLED SPECIAL PURPOSE
MANUAL ARC WELDING MACHINES [600 AMPS. @ 100 % Duty Cycle]**

AA. APPLICATION :			
Sl.No.	FEATURES /BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
AA.1	The proposed Welding Powersource is intended for continuous duty in SMAW Process for Radiographic Quality Welds like Butt Joints, Fillet Welds, Deep Groove Weld coming in Full Throat Nozzle Welding Applications, in High Pressure Vessels using ϕ 6.3 mm basic coated stick electrodes .		
AA.2	A Typical Application involves continuous welding of 400 numbers of ϕ 6.3 mm x 450 mm long E 7018-1 SMAW Electrodes using current in the range of 450 to 540 amps. in a time period of around 14 hours [arcing time works out to 800 minutes in a total time duration of 840 minutes.].		
AA.3	The Offered Welding Machine shall be PORTABLE in Nature and a CONSTANT CURRENT DC Powersource.		
BB. MACHINE CONFIGURATION : [The scope of supply shall consist of the following, for each machine]			
Sl.No.	FEATURES /BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
BB.1	Welding Powersource with Transport Trolley and Wheels		
BB.2	Control Unit Integrated with Powersource (for Hot Start & Arc Dynamics Control)		
BB.3	Hand Operated Remote Control Unit for Current Variation		
BB.4	Optional – Wire Less Remote Current Control Unit		
BB.5	Set of Inter-Connecting Cables, Adapters , etc.		
BB.6	Welding Cable and Welding Holder (multiples of 5 mtrs. in length)		
BB.7	Return Current Cable with Screw Type Earth Clamp.		
BB.8	Electrical & Mechanical Spares for Powersource & Control Unit		
BB.9	Operation & Maintenance Manuals – Three Copies per Machine		
BB.10	Commissioning of Equipment and Performance Prove-out of the offered equipment at BHEL Works, by Supplier's Representative, free of cost.		

CC. EQUIPMENT SPECIFICATION : POWERSOURCE FEATURES				
Sl.No.	FEATURES	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
CC.1	Type	Powersource shall be Inverter Controlled with IGBT and capable of delivering a smooth Constant Direct Current, even with a fluctuation of $\pm 10\%$ in the Input Voltage		
CC.2	Switching Frequency	BIDDER has to indicate the Switching Frequency of the Inverter Circuit and the make of IGBT used		
CC.3	Current Rating	600 Amps. @ 100 % Duty Cycle [continuous duty] OR Minimum of 725 Amps. at 60% Duty Cycle.		
CC.4	Operating Range for Welding Current	75 Amps. to 725 Amps. (with stepless variation)		
CC.5	Open Circuit Voltage	BIDDER to mention the Open Circuit Voltage for the offered Powersource [Preferred OCV is above 75 V]		
CC.6	Current Setting	The variation in the set value of the welding current to the actual value, shall not exceed 1 %.		
CC.7	Current Control	Through the LOCAL VARIATOR [with the help of a 3 inch diameter KNOB] provided in the Front Panel of Powersource and the REMOTE CONTROL Unit.		
CC.8	Power Input	415 \pm 10% V AC, 3 Phase, 50 \pm 2% Hz, through a 3 Wire System [4 th wire for EARTHING] – No Neutral Conductor		
CC.9	Input Power Cable	A 10 metre long electric input power cable with protective sheathing to be provided with the powersource.		
CC.10	Control Panel Switches	Power ON/OFF, Remote ON/OFF, Voltage & Ampere Control, Hot Start Control, Arc Dynamics Control		
CC.11	Voltmeter & Ammeter	Factory Installed Ammeter & Voltmeter on the front panel with easy removal and replacement (i.e., without lifting the top cover of the Powersource) for instrument calibration		
CC.12	Arc Strike	Selection for Instantaneous Arc Strike with HOT START for SMAW Process.		

CC. EQUIPMENT SPECIFICATION : POWERSOURCE FEATURES				
Sl.No.	FEATURES	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
CC.13	Arc Dynamics Control - Electronic Inductance Variable Control	To minimise spatter and optimise weld-bead wetting action, during welding of materials like Stainless Steel, T 91/P 91, Inconel, etc.		
CC.14	Insulation	Class "H" – to suit Tropical Working Conditions		
CC.15	Machine Protection	IP 23 – Degree of Protection		
CC.16	Machine Cooling	The Powersource 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.		
CC.17	Functional / Elemental Design Protection	a) Inbuilt protection for the IGBT/Powersource against Thermal / Overload / Short-Circuit / Single or Two Phase Input Conditions. b) All PCBs shall 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	<i>[BIDDER has to specifically furnish technical details on how these protective measures are addressed in the Machine Design]</i>	
CC.18	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.		
CC.19	Portability	Under-Carriage with hard rubber lined wheels for portability of the powersource by manual pushing		
CC.20	Ambient Conditions	Temperature upto + 50 ° C ; Humidity upto 90 % but both upper limits do not occur simultaneously.		

CC. EQUIPMENT SPECIFICATION : POWERSOURCE FEATURES				
Sl.No.	FEATURES	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
CC.21	Load Compensation	Output variation due to line voltage fluctuation, cable heating or drift due to the use of long cable, [20 metres long welding cable] to be eliminated.		
CC.22	Electrode Holder Connection	Heavy Duty rugged LUG type terminals to connect > 70 mm ² Welding Cable for SMAW Electrode Holder and Return Current Cable for SMAW Process		
CC.23	Welding Current Cable	SMAW Welding (current) Cable, 20 mtrs. in length, with one end connected to the Powersource and the free end provided with a FEMALE Connector to connect a MALE Connector with 50 mm ² to 70 mm ² Cable of the Electrode Holder.		
CC.24	Return Current Cable	Welding Current RETURN Cable , 20 mtrs. in length, with one end connected to the Powersource and the other end provided with a Screw Type Earth Clamp		
CC.25	Power Rating	BIDDER to indicate the Maximum Power Rating [in kVA] of the Powersource and the NO-LOAD Power Consumption in Watts.		
CC.26	Power Source Model	To Specify the Model of Powersource Offered		
DD. EQUIPMENT SPECIFICATION : REMOTE CONTROL UNIT FEATURES				
Sl.No.	FEATURES	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
DD.1	Type	Hand Operated with 10 mtrs. long control cable with end connectors		
DD.2	Control	Stepless Variation of Welding Current		
DD.3	OPTIONAL REMOTE CONTROL UNIT	To quote for a suitable Remote Control Unit , which operates on Wire-Less (Cord Less) mode.		

EE. SPARES :				
S.No.	ITEMS	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
EE.1	Power Source	<p>All type of Spare Parts including the following items :</p> <ul style="list-style-type: none"> a. IGBT Kit b. All Types of Fuses c. Control – Transformers d. Printed Circuit Boards / PCBs – All Types e. Rectifiers, Thermistors, Capacitors f. Switches and Knobs g. Cooling Fan Motor h. Ammeter & Voltmeter i. Potentiometer j. Relays & Timers k. Receptacles l. Control Cable with End Connectors n. Filters o. Welding & Return Cable Connectors <p>are to be COMPULSORILY QUOTED (with Unit Rate) for one powersource required for 2 years of operation on THREE shift basis for 365 Days in an year.</p>		
EE.2	Remote Control Unit	Complete Set of Remote Control Unit and its Spares like Knob, Potentiometer, etc. to be OFFERED		
FF. O & M MANUALS :				
S.No.	PARTICULARS	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
FF.1	No. of Copies	3 (Three) for Each Machine		
FF.2	Language	English		
FF.3	Soft Copy	One SOFT COPY in DC-ROM is to be given for each machine, containing the details mentioned under Clause Sl.No. FF.4.		

FF. O & M MANUALS :				
S.No.	PARTICULARS	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
FF.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.		
GG. GENERAL POINTS :				
S.No.	PARTICULARS	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
GG.1	Inspection	a. The welding machines shall be offered for inspection by BHEL Engineers at supplier's works for performance evaluation prior to despatch. b. Welding Trials are to be taken on 25 mm thick Plate Butt Joints with ϕ 6.3 mm SMAW Electrodes of Class E 7018-1		
GG.2	Commissioning	The equipment shall be commissioned at free of cost by the supplier's representative at BHEL Works.		
GG.3	Training	The Supplier's SERVICE ENGINEER shall give training in the Operation and Maintenance (mainly on electric/electronic troubleshooting) of the Machine for BHEL Staff, after the successful commissioning of the Welding Machines		

GG. GENERAL POINTS :				
S.No.	PARTICULARS	BHEL SPECIFICATION	OFFER BY BIDDER	DEVIATIONS
GG.4	Guarantee	The equipment shall be guaranteed for a minimum of twenty-four months from the date of commissioning.		
GG.5	Bought-Out Items	a) The Bought-Out Items - like Motors, ICs, Relays, Contactors, Switches, Electronic Elements, etc., used in the Powersource & Control Unit shall be of Internationally Reputed Manufacturers only. b) BIDDER has to furnish the MAKE of Bought-Out Items used in the Welding Machine, with the OFFER .		
HH. ANNUAL MAINTENANCE CONTRACT :				
S.No.	BHEL SPECIFICATION		OFFER BY BIDDER	DEVIATIONS
HH.1	The BIDDER has to QUOTE for the Annual Maintenance Contract [AMC] for THREE YEARS, in the following two patterns, after the expiry of the ORIGINAL FREE WARRANTY PERIOD :			
HH.2	AMC Charges for the whole lot of machines, INCLUDING the Cost of Free REPLACEMENT of the MACHINE SPARES / PARTS within 72 Hours of reporting machine break-down by e-mail or telefax.			
HH.3	AMC Charges for the whole lot of machines, EXCLUDING the Cost of REPLACEMENT of the MACHINE SPARES / PARTS within 48 Hours of reporting machine break-down by e-mail or telefax. Machine Spare Parts and Consumables will be supplied by BHEL.			
HH.4	The BIDDER has to furnish the Details of the INDIAN AGENT and CONTACT ADDRESS of the nearest SERVICE CENTRE, for reporting the Machine Break-Down.			
HH.5	The BIDDER has to CONFIRM the supply of replacement machine or wire feeder in case of prolonged break-down of the welding machine during the AMC Period.			