



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT/ MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 70 49 Fax : +91 431 252 07 19 Email : csguna@bheltry.co.in Web : www.bhel.com
NOTICE INVITING TENDER	

TWO PART BID	Enquiry Number: 2621100019	Enquiry Date: 14.02.2011	Due date for submission of quotation: 14.03.2011
Tender to be submitted in two parts.			
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 (Item required at BHEL on)
10	MV Indoor Cubicle Switch Board for Administrative Building as per the technical specification, general guidelines instructions & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	01 No.	15.06.2011
20	Cubicle Switch Board as per the technical specification, general guidelines instructions & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	05 No.	15.06.2011

Important points to be taken care during submission of offer

1. Checklist to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
2. Subsequent to the hosting of this Enquiry, any corrigendum to the Enquiry that may be hosted in the BHEL Web-site as well as Government Tenders-portal shall be viewed by the vendors regularly to know the details of corrigendum. In case if any vendor without seeing the corrigendum quoted as per original Enquiry and intimate that they have wrongly quoted will not be considered and rejected. However as per the appropriate Policy of BHEL action will be taken on them in this regard.

BHEL's General guidelines / instructions (refer MM/CE/GT/001) including bank guarantee formats and list of consortium banks, commercial terms check-list 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 referred above.

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

Sr. Manager / MM / Capital Equipment

Specification for MV Power switch board -Quantity -1no

Sl.No	Description for BHEL Requirement	Specified/ To be confirmed by	offerd	Deviations
	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, cubicle type switchgear comprising Air Circuit Breakers and MCCB's feeders and conforming to the specification and features given below.			
1.0	ACB Make: L&T / GE/ Siemens/ABB/ Schneider MCCB Make : Legrand /Siemens/ABB/GE/Schneider	Vendor to confirm		
2.0	Incomer Breakers: 1000A, 415V, Three pole and neutral, draw-out type, true, trip free, electrically operated spring closing type, Air circuit breakers having 24V D.C. shunt trip, emergency hand trip, 4 NO + 4 NC auxiliary contacts, ON/OFF mechanical indication, integral self powered current release, current transformers of required quantity, burden and accuracy for metering and for protection and conforming to IEC 60947-2/ IS:13947(Part 2) Quantity: 1 no	Vendor to confirm		
3.1	Outgoings a) Air Circuit Breaker: 1000A, 415V, Three phase and neutral, draw-out type, true, trip free, electrically operated spring closing type, Air circuit breakers having 24V D.C. shunt trip, emergency hand trip, 4 NO + 4 NC auxiliary contacts, ON/OFF mechanical indication, integral self powered current release, current transformers of required quantity, burden and accuracy for metering and for protection and conforming to IEC 60947-2/ IS:13947(Part 2) Quantity: 1no. b) 400A TPN MCCB short circuit current rating 36 KA with Micro processor based release - Quantity-2 nos c) 200A TPN MCCB short circuit current rating 36 KA with Micro processor based release - Quantity-2 nos	Vendor to confirm		
4.0	Busbars: 1250A, TPN aluminium busbars.	Vendor to specify		
5.0	Incomer /out going Breaker Specification:			
5.1	Air Circuit Breaker rated current, voltage, short circuit breaking capacity	1000A, 415V, 50KA RMS for one Sec		
5.2	Current Transformer Ratio for incomer & bus	1000/5A for incomer		
5.3	C.T. make	Vendor to specify		
5.4	Ammeter with selector switch	analog type, 0-1000 A, 96mm square, accuracy class 1.0		

5.5	Ammeter and switch make	Vendor to specify		
5.6	Voltmeter with selector switch	analog type, 0-500V, 96mm square, accuracy class 1.0		
5.7	Voltmeter and switch make	Vendor to specify		
5.8	Energy meter. 3-phase, 4 wire, 5A, class 1.0, Digital Energy Meter of reputed make acceptable to BHEL with RS485 communication port-(conserv EM6436 /Siemens PAC3100/L&T Quaser)	Vendor to specify		
5.9	Indication lamp red, green	LED type		
5.10	Cable entry	Aluminium, PVC armoured cables, bottom entry.		
7.0	Approx. overall dimensions of the Panel	Vendor to specify		
8.0	Make of the accessories in the panel, type no of ACB, technical leaflet of the ACB and protection release, copy of the type test report of the ACB to be furnished in the offer.	Vendor to specify		
9.0	3 sets of O&M manual including spare parts list for the breakers and panel, general arrangement drawing, power schematic drawing, wiring diagram, manuals for the self protection relay, Energy meter manual ,routine test certificate etc shall be supplied along with the panel.	Vendor to confirm		
10.0	General Features:			
10.1	The panel shall be of modular construction with IP 54 Protection . Incomer feeder panels shall be housed in one ACB panel whereas outgoing feeder panels shall be housed as two or three -tier formation along with MCCB 'S' ,busbars chamber ,cable trunking , metering and other accessories. Sufficient space for maintenance shall be provided in the panel.	Vendor to confirm		
10.2	Busbars shall be made of high conductivity aluminium alloy with adequate cross section to operate at low operating temperatures. Busbars including neutral and earth bars shall be short circuit tested as per IS:8623 for a fault withstand level of 50KA for one second & CPRI/ERDA/Govt approved Test centre -test certificate should be enclosed.	Vendor to confirm		
10.3	The neutral busbars shall have a continuous current rating of 50% of the phase busbars. All busbars shall be insulated, colour coded for easy identification of individual phases and neutral.	Vendor to confirm		
10.4	The earth busbar of size 50x 6mm copper shall run through out the length of the switchboard and be terminated at the two ends with cable eyes.	Vendor to confirm		
10.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.	Vendor to confirm		

10.6	All sheet steel work used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phosphating and painting.	Vendor to confirm		
10.7	The panel shall have cable chamber housing the cable end connections and power/ control cable terminations. Adequate safety shall be provided for working in one vertical section without accidental contact with the live parts in an adjacent section.	Vendor to confirm		
10.8	Adequate number of cable riser supports shall be provided to withstand rated short circuit current.	Vendor to confirm		
10.9	Front and rear doors shall be fitted with dust excluded neoprene gaskets.	Vendor to confirm		
10.10	External aperture for ventilation shall be covered with a perforated sheet to prevent entry of vermin.	Vendor to confirm		
10.11	The ACBs shall have three distinct positions i.e. service, test and isolated with position indicators.	Vendor to confirm		
10.12	Automatic shutters shall be provided to screen the live parts when the breaker is drawn out of the cubicle.	Vendor to confirm		
10.13	The ACB shall be equipped with an integral self powered microprocessor based current release, which works on true RMS values for ensuring accurate protection. Overload, selective short-circuit, instantaneous short circuit and earth fault protections shall be provided. The protection unit should conform to the EMI/EMC requirement.	Vendor to confirm		
10.14	The min. setting range of protection release should be as follows: a) Overload protection shall have adjustable setting from 50% to 100% of the circuit breaker rated current in steps of 5% preferably. b) Short time delayed short circuit protection shall have adjustable current setting from 200% to 1000% of the overload setting and adjustable time delay setting for time discrimination from 20ms to 400ms. c) Instantaneous short circuit protection shall be adjustable from 2 to 15 times rated current d) Earth fault protection shall have adjustable current setting from 20% to 60% of rated current and adjustable time setting from 100ms to 400ms.	Vendor to confirm		
10.15	Trip indicators shall be provided to display the exact nature of fault like O/L, E/F/ S/C. Test facility to test the healthiness of the release and the trip circuit of the breaker shall be provided.	Vendor to confirm		
10.16	The ACB shall be provided with mechanical anti-pumping feature to prevent auto reclosing of breaker on fault and necessary safety interlocks for closing the ACB.	Vendor to confirm		
10.17	The control panel of ACB along with its operating device shall project through the cutout in the door which is provided with suitable gasket.	Vendor to confirm		

10.18	The ACB shall be suitable and should be able to carry the rated current for an ambient temperature of not less than 45 degree C without any derating and suitable for working in Indian conditions.	Vendor to confirm		
10.19	The Ultimate breaking capacity (Icu) should be equal to Service breaking capacity (Ics) and short time withstand capacity (Icw) for 1 sec.	Vendor to confirm		
10.20	Provision should be available for the following: a) to switch on and switch off the ACB from a PLC using the closing coil and shunt trip b) to monitor the ON/OFF status of the breaker through a PLC c) to monitor and acquire the data regarding the parameters like current, voltage, power, energy through the communication port of the energy meter	Vendor to confirm		
10.21	The cassette and the breaker shall be provided with standard interlocks related to the opening/closing of doors and the positions of the breaker.	Vendor to confirm		
10.22	All control wiring in the panel shall be carried out with 1100V single core PVC cable having stranded copper conductors of min. 1.5 sq.mm section for potential circuits and 2.5 sq.mm section for current transformer circuit. Wires shall be identified with number ferrules at either end.	Vendor to confirm		
10.23	Removable gland plates shall be provided at the bottom of panel for cable termination.	Vendor to confirm		
10.24	The various tests that would be conducted as part of Routine test and the laboratory facilities available in the manufacturing plant for conducting those tests should be mentioned in the offer.	Vendor to confirm		
10.25	Pre despatch inspection of panel before 15 days should be informed and required training for Engineers /Technicians should be included in the offer at ACB Manufacturer's works	Vendor to confirm		
10.26	The construction of the panel shall generally conform to the Indian Electricity Rules.	Vendor to confirm		
11.0	Reference List/ Qualifying Conditions:			
11.1	Only those vendors who have supplied and commissioned same or higher capacity panel that is working satisfactorily for at least one year after commissioning should quote.	Vendor to confirm		
11.2	Information about the companies to whom similar panels have been supplied, with satisfactory performance certificate are to be submitted for qualification of the offer.	Vendor to confirm		
11.3	Latest CPRI/ERDA short circuit test certificate for similar or higher size PCC panels should be enclosed as per point 10.2 of specn.	Vendor to confirm		
9.0	Scope of Supply			
9.1	Indoor Cubicle type Power Switch board as specified above	Quantity		
		1 no		

Specification for Cubicle Type Power Switchboard (PCC)				
Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, cubicle type switchboard comprising Switch fuse units conforming to the specification and features given below.			
1.0	Swich fuse unit Make: L&T / GE/C&S / Siemens/STD/ indo Asian			
2.0	Incoming switch: Medium voltage 630 amps Triple Pole & Neutral (TPN) switch fuse unit as per IEC 60947-3/IS:13947(part3) with HRC fuses Quantity: 1 no			
3.0	Outgoing Switches a)200Amps TPN switch fuse units with HRC fuses -2nos b)100Amps TPN switch fuse units with HRC fuses -5nos c) 63Amps TPN switch fuse units with HRC fuses -5nos			
4.0	Busbars: 630A , TPN aluminium busbars.			
5.0	Incomer &outgoing switch fuse units Specification:			
5.1	Rating of switch fuse units	AC 23A rating		
5.2	Swich fuse type	Panel mounting type Front operated, with Quad make&break mechanism		
5.3	Required Phase barriers should be provided for the fuse units with enough space formaintenance &replacement of contacts	vendor to confirm		
5.4	Positive isolation of fuses &separate arching¤t carrying zone	vendor to confirm		
5.5	operating handle coupling arrangement confirming to IS -8623	vendor to confirm		
6.0	Specification of Meters incomer unit			
6.1	C.T. make shall be KayCee/Indcoil/Precise	Vendor to confirm		
6.2	Ammeter with selector switch(makeAE/Rishab)	analog type, 0-630 A, 96mm square, accuracy class 1.0		

6.3	Voltmeter with selector switch(makeAE/Rishab)	analog type, 0-500V, 96mm square, accuracy class 1.0		
6.4	Energy meter	3-phase, 4 wire, 5A, class 1.0, Digital meter shall be ENERCON/selec/L&T		
6.5	Indication lamp red, green	LED type		
6.60	Cable entry	Aluminium, PVC armoured cables, bottom entry or busduct		
6.7	Overall dimensions of the Panel	Vendor to confirm		
6.8	Make of the accessories used in the panel, make & type no of switch fuse unit , technical leaflet of the switch fuse unit to be furnished in the offer.	Vendor to confirm		
7.0	General Features:			
7.1	The panel shall be of modular construction. Incomer and the outgoing switch fuse units with metering panel should be constructed using 2 mm thick CRCA sheet steel with neoprene gasgets for the doors . The PCC panel should be painted with 2 coats of red oxide primery and one coat of powder coating finish paint Siemens grey color after undergoing degreasing,de rusting &phospating process . The PCC should have sufficient clearence in the back panel for cable termination. Suitable IBMC channel at the bottem of the panel should be made .	Vendor to confirm		
7.2	Busbars shall be made of high conductivity aluminium alloy with adequate cross section to operate at low operating temperatures. Busbars including neutral and earth bars shall be short circuit tested as per IS:8623 for a fault withstand level of 50KA for one second.The panel builder should have approved by CPRI/ERDA/ERTL for the panel being tested for the type test and the test certificate should be enclosed with offer	Vendor to confirm		

7.3	The neutral busbars shall have a continuous current rating of 50% of the phase busbars. All busbars shall be insulated, colour coded for easy identification of individual phases and neutral.	Vendor to confirm		
7.4	The earth busbar of size 6x 50mm copper shall run through out the length of the switchboard and be terminated at the two ends with cable	Vendor to confirm		
7.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.	Vendor to confirm		
7.6	All sheet steel work used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phosphating and painting.	Vendor to confirm		
7.7	The panel shall have cable chamber housing the cable end connections and power/ control cable terminations. Adequate safety shall be provided for working in one vertical section without accidental contact with the live parts in an adjacent section.	Vendor to confirm		
7.8	Adequate number of cable riser supports shall be provided to withstand rated short circuit current.	Vendor to confirm		
7.9	Front and rear doors shall be fitted with dust excluded neoprene gaskets.	Vendor to confirm		
7.9.1	All control wiring in the panel shall be carried out with 1100V single core PVC cable having stranded copper conductors of min. 1.5 sq.mm section for potential circuits and 2.5 sq.mm section for current transformer circuit. Wires shall be identified with number ferrules at either end.	Vendor to confirm		
7.9.2	Removable gland plates shall be provided at the bottom of panel for cable termination.	Vendor to confirm		
7.9.3	The PCC panel shall be suitable and should be able to carry the rated current for an ambient temperature of not less than 45 degree C without any derating and suitable for working in indian conditions.	Vendor to confirm		
7.9.4	The construction of the panel shall generally conform to the Indian Electricity Rules.	Vendor to confirm		
8	Reference List/ Qualifying Conditions:			

8.1	Only those vendors who have supplied and commissioned similar or higher capacity/ size equipment that is working satisfactorily for at least one year after commissioning should quote.	Vendor to confirm		
8.2	Information about the companies where similar equipments have been supplied, certificate about satisfactory performance are to be submitted for qualification of the offer.	Vendor to confirm		
9.0	Scope of Supply	Quantity		
9.1	Industrial type switchboard of the configuration and specification as furnished above	5 nos		