



An ISO 9001  
Company

## Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT/ MATERIALS MANAGEMENT

### ENQUIRY

### NOTICE INVITING TENDER

Phone: +91 431 257 70 49

Fax : +91 431 252 07 19

Email : [csguna@bheltry.co.in](mailto:csguna@bheltry.co.in)

Web : [www.bhel.com](http://www.bhel.com)

#### TWO PART BID

Tender to be submitted in two parts.

**Enquiry  
Number:**  
**2621000094**

**Enquiry  
Date:**  
**02.09.2010**

**Due date for  
submission of  
quotation:**  
**02.10.2010**

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	<b>MV Panel 2 Incomer 1 Bus coupler 16Outgoings</b> as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	02 Nos.	30.01.2011

#### 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 reference "2621000094".

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 SWITCH GEAR PANEL / Qty.-2nos.			
Sl.No.	Description	Specification / Confirmation	Comments / Deviation
	Design., manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, cubicle type switchgear panel comprising Air Circuit Breaker feeder and conforming to the specification and features given below.		
1.0	Air Circuit Breaker Make : L & T or GE or SIEMENS or SCHNIEDER or ABB.	Vendor to confirm	
2.0	<b>Incomer Breaker</b> : 2000A, 415V, Three Phase and neutral, draw-out type, true, trip free, electrically operated spring closing type, Air Circuit Breakers having 24V DC shunt trip, emergency hand trip, 4No + 4NC 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 confirming to IEC 60947 /2 / IS 13947 ( Part 2 ) <b>Quantity - 2 Nos.</b>	Vendor to confirm	
3.0	<b>Outgoing Breaker</b> :a) 1000A, 415V, Three Phase and neutral, draw-out type, true, trip free, electrically operated spring closing type, Air Circuit Breakers having 24V DC shunt trip, emergency hand trip, 4No + 4NC 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 confirming to IEC 60947 /2 / IS 13947 ( Part 2 ) <b>Quantity - 16 Nos.</b>	Vendor to confirm	
3.1	<b>Outgoing Breaker.(bus coupler)</b> b)1600A, 415V, Three Phase and neutral, draw-out type, true, trip free, electrically operated spring closing type, Air Circuit Breakers having 24V DC shunt trip, emergency hand trip, 4No + 4NC auxiliary contacts, ON / OFF mechanical indication and confirming to IEC 60947 /2 / IS 13947 ( Part 2 ) <b>Quantity - 1 No.</b>		
4.0	<b>Bubars 2000A, TPN aluminium busbars.</b> (Size -2 runs of 100mmx10mm for phase & 1 run of 100mmx10mm for neutral.)		
5.0	<b>INCOMER BREAKER PANEL SPECIFICATIONS.</b>		

5.1	Air Circuit Breaker rated current, Voltage, short circuit breaking capacity.	2000A,415V,50KA	
5.2	Current Transformer Ratio	2000/5A for incomer & main bus bar CT.	
5.3	C T Make(reputed make accepted by BHEL)	Vendor to specify	
5.4	Ammeter detail(reputed make accepted by BHEL)	analog type, 0 to 2000A, 96mm square, accuracy class 1.0	
5.5	Ammeter selector Switch Make	Vendor to specify	
5.6	Voltmeter detail(reputed make accepted by BHEL)	Analog type, 0-500V, 96mm square, accuracy class 1.0	
5.7	Voltmeter Selector switch make.	Vendor to specify	
5.8	Digital type Three Phase Over Current & Earth fault Relays with High set Communication and breaker control. ( Reputed make accepted by BHEL).	Vendor to specify	
5.9	Energy Meter 3 phase, 4 wire, 5A, Class 1.0 Digital meter of reputed make acceptable to BHEL with RS 485 communication port- reputed make of CONSERV,L&T,AE, SECURE ER, RISHAB.	Vendor to specify the make & model no with catalogue.	
5.1	Indication lamp red, green	LED type	
5.11	Cable Entry	Aluminium, PVC armoured cables, bottom entry.	
6.00	<b>OUT GOING BREAKER PANEL SPECIFICATIONS</b>		
6.1	Air Circuit Breaker rated current, Voltage, short circuit breaking capacity.	1000A/1600A, 415V, 50KA as specified	
6.2	Current Transformer Ratio	1600/5A-1 set & 1000/5A-16 sets.	
6.3	C T Make(reputed make accepted by BHEL)	Vendor to specify	
6.4	Ammeter with Selector Switch	Analog type, 0-1600 A-1 nos ,0-1000A -16nos. 96mm square, accuracy class 1.0	
6.5	Voltmeter with selector Switch Make(reputed make accepted by BHEL)	Analog type, 0-500V, 96mm square, accuracy class 1.0	
6.6	Energy Meter 3 phase, 4 wire, 5A, Class 1.0 Digital meter of reputed make acceptable to BHEL with RS 485 communication port.	Vendor to specify the make & model no with catalogue	
6.7	Digital type Three Phase Over Current & Earth fault Relays with Highset Communication and breaker control ( Reputed make accepted by BHEL).	Vendor to specify	
6.8	Indication lamp red, green	LED type	

6.9	Cable Entry	Aluminium, PVC armoured cables, bottom entry.	
7.0	<b>Specification for MV Switchgear Panel.</b>	Vendor to specify	
	Approx. overall dimensions of the Panel(Max-10000mm length, 1500mm depth & 2200mm height acceptable ).	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 confirm	
9.0	3 sets of O & M manual for each panel including spare parts list for the breakers and panel, general arrangement, drawing, power schematic drawing wiring diagram shall be supplied along with the panel.	Vendor to confirm	
10.0	<b>General Features.</b>		
10.1	The panel shall be of modular construction, Incomer feeder & bus coupler panels shall house one ACB whereas outgoing feeder panels shall house two Air Circuit Breakers in two-tier formation along with busbars, metering and other accessories. Sufficient space for maintenance shall be provided in the panel.	Vendor to confirm	
10.2	Bus bars shall be made of high conductivity alluminium 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 50 KA for one second and 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 with heat shrinkable insulating sleeve, colour coded for easy identification of individual phases and neutral.	Vendor to confirm	
10.4	The earth busbar of size 6 x 50 mm copper shall run through out the length of the switch board 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 panels shall undergo a rigorous metal treatment process involving alkaline degreasing descaling in dilute sulphuric acid, phaspating and painting.	Vendor to confirm	
10.7	The panel shall have cable chamber housing with cable suitable supports, 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 with vermin proof.( protection of IP20)	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 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 circuit and earth fault protections shall be provided. The protection unit should confirm to the EMI / EMC requirement.	Vendor to confirm	

10.14	<p>The min. setting range of protection release should be as follows.</p> <p><b>(a)</b> Over load protection shall have adjustable setting from 50% to 100% of the circuit breaker rated current in steps of 5% preferably.</p> <p><b>(b)</b> Short time delayed short circuit protection shall have adjustable current setting from 200% to 1000% of the overload setting and adjustable time setting for time discrimination from 20ms to 400ms.</p> <p><b>(c)</b> Instantaneous short circuit protection shall be adjustable from 2 to 15 times rated current.</p> <p><b>(d)</b> Earth fault protection shall have current setting from 20% to 60% of rated current and adjustable time setting from 100ms to 400ms.</p>	Vendor to confirm	
10.15	<p>Trip indication shall be provided to display the exact nature of fault like OL/EF/SC Test facility to test the healthiness of the release and the trip circuit of the breaker shall be provided.</p>	Vendor to confirm	
10.16	<p>The ACB shall be provided with mechanical anti-pumping feature to prevent auto reclosing of the breaker on fault and necessary safety interlocks for closing the ACB.</p>	Vendor to confirm	
10.17	<p>The control panel of ACB along with its operating device shall project through the cutout in the door which is provided with suitable gasket.</p>	Vendor to confirm	
10.18	<p>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 condition.</p>	Vendor to confirm	
10.19	<p>The Ultimate breaking capacity (Icu) should be equal to service breaking capacity (Ics) and short time withstand capacity (Icw) for 1 sec.</p>	Vendor to confirm	

10.20	Provision should be available for the following. (a) to switch "ON" and switch "OFF" 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 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 the doors and the positions of the breaker	Vendor to confirm	
10.22	All control wiring shall be carried out with 1100 V single core PVC cable having standard 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 construction of the panel shall generally confirm to the Indian Electricity Rules.	Vendor to confirm	
10.25	Technical catalogue furnishing the features of the controller (ACBs,Meters etc.,) and panel shall be enclosed with the offer Required.	Vendor to confirm	
11.00	<b>Reference list / Qualifying condition.</b>		
11.1	Only those vendors who have supplied and commissioned same or higher capacity panel that is working satisfactorily for atleast one year after commissioning should quote.	Vendor to confirm	
11.2	Information about the companies where such equipments have been supplied is to be submitted for qualification of the offer.	Vendor to confirm	

	<p><b>Note :</b> 1) GA drawings and bill of materials to be submitted for approval before manufacturing of the panels. 2) Final inspection to be offered at site before despatch. 3) During commissioning the MV panel in the substation, programming of the ACB, Protection relays and Energy meters to be supported by the firm and necessary training to our staffs should be given. 4) 3 sets of Operation, Maintenance &amp; programming manual in English . Circuit/ wiring diagram to be supplied along with the each panel Required. Single copy of make, rating details, technical details and catalogue of all the bought out items used in each panel. 5) Point by point confirmation is required from the supplier otherwise the offer will not be considered.</p>		
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