Bharat Heavy Electricals Limited

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

An ISO 9001 Company

ENQUIRY	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com

	Enquiry Number:	**Enquiry Date:**	**Due date for submission of quotation:**
	2620900059	**25.02.2009**	**27.03.2009**
You 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 (Item required at BHEL on)**
10	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, cubical type Switchgearnel Comprising Air Circuit Breaker feeders as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	01 No.	30.06.2009

BHEL commercial terms & conditions along with technical specifications 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 "2620900059".

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

Specification for MV Switch gear Panel

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Vendor's Offer	Deviations
	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, cubicle type switchgearnel comprising Air Circuit Breaker feeders and conforming to the specification and features given below.			
1.0	**Air Circuit Breaker Make:** L&T or GE or Siemens or Schneider or ABB	Vendor to confirm		
2.0	**Incomer Breakers:** 1600A, 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: 2 nos.**	Vendor to confirm		
3.0	**Outgoing Breakers:** 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: 14 nos.**	Vendor to confirm		
4.0	**Busbars: 200**0A, TPN aluminium busbars.(SIZE-2runs of 100mmx10mm for phase &1 run of 100mmx10mm for Nutral)			
5.0	**Incomer Breaker Panel Specification:**			
5.1	Air Circuit Breaker rated current, voltage, short circuit breaking capacity	1600A, 415V, 50KA		
5.2	Current Transformer Ratio	1600/5A		
5.3	C.T. make	Vendor to specify		
5.4	Ammeter with selector switch	analog type, 0-1600 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 meter of reputed make acceptable to BHEL with RS485 communication port	Vendor to specify		
5.9	Indication lamp red, green	LED type		
5.10	Cable entry	Aluminium, PVC armoured cables,		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Vendor's Offer	Deviations
6.0	**Outgoing Breaker Panel Specification:**			
6.1	Air Circuit Breaker rated current, voltage, short circuit breaking capacity	1000A, 415V, 50KA		
6.2	Current Transformer Ratio	1000/5A		
6.3	C.T. make	Vendor to specify		
6.4	Ammeter with selector switch	analog type, 0-1000 A, 96mm square, accuracy class 1.0		
6.5	Ammeter and switch make	Vendor to specify		
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		
6.7	Indication lamp red, green	LED type		
6.8	Cable entry	Aluminium, PVC armoured cables,		
7.0	Approx. overall dimensions of the Panel(Max-5400mmlength, 1350mmdepth& 2200mmheight 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 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. Incomer feeder 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	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. CPRA/ERDA 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 6x 50mm 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, phospating and painting.	Vendor to confirm		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Vendor's Offer	Deviations
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 shalll 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		

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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 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 where such equipments have been supplied is to be submitted for qualification of the offer.	Vendor to confirm		