Bharat Heavy Electricals Limited

(High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
An ISO 9001 Company
CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING

ENQUIRY	Phone: +91 431 257 75 75 Fax : +91 431 252 07 19 Email : rrmanohar@bheltry.co.in Web : www.bhel.com

	Enquiry Number:	**Enquiry Date:**	**Due date for submission of quotation:**
	2620600080	**28.11.2006**	**06.01.2007**
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	Medium Voltage Industrial Type Switchboard - 1 as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	14 Nos.	31.03.2007
20	Medium Voltage Industrial Type Switchboard - 2 as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	1 No.	31.03.2007
30	Medium Voltage Industrial Type Switchboard - 3 as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	6 Nos.	31.03.2007
40	12 Way x 16 A per way Distribution Fuse Board as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	22 Nos.	31.03.2007

50	8 Way x 32 A per way Distribution Fuse Board as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	6 Nos.	31.03.2007
60	8 Way x 63 A per way Distribution Fuse Board as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	42 Nos.	31.03.2007
70	8 Way x 16 A per way, 3 Phase MCB Distribution Board as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com**)	25 Nos.	31.03.2007

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 "2620600080". 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 Sr. Dy. Genl. Manager / Capital Purchase / MM / Manufacturing

Specification for Medium Voltage Industrial Type Switchboard-1				
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, Industrial type switchboard comprising of fuse switches, busbar chamber and conforming to the specification and features given below.			
1.0	**Incomer Fuse Switch unit with fuses:**			
1.1	Current rating at 415V, 50Hz	800A		
1.2	Configuration	Three poles and neutral		
1.3	Type of enclosure	Sheet steel		
1.4	Fuses for 3 phases	630A		
1.5	Quantity of Incomer fuse switch	**1 no.**		
2.0	**Outgoing Fuse switch Units with fuses:**			
2.1	Configuration	Three poles and neutral		
2.2	Current rating at 415V, 50Hz	400A		
2.2.1	Type of enclosure	Sheet steel		
2.2.2	Fuses for 3 phases	400A		
2.2.3	Quantity of 400A fuse switch	**1 no.**		
2.3	Current rating at 415V, 50Hz	200A		
2.3.1	Type of enclosure	Cast iron		
2.3.2	Fuses for 3 phases	200A		
2.3.3	Quantity of 200A fuse switch	**6 nos.**		
2.4	Current rating at 415V, 50Hz	100A		
2.4.1	Type of enclosure	Cast iron		
2.4.2	Fuses for 3 phases	100A		
2.4.3	Quantity of 100A fuse switch	**6 nos.**		
3.0	**Busbars:**			
3.1	Current rating at 415V, 50Hz	800A		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
3.2	Configuration	Three poles and neutral		
3.3	Material	Aluminium		
3.4	Busbar chamber	CRCA sheet steel of min. 2 mm thickness.		
4.0	**Accessories:**			
4.1	Voltmeter with selector switch	Analog type, a.c., 0-500V, 96mm square, accuracy class 1.0		
4.2	Voltmeter and switch make	Vendor to confirm		
4.3	Indication lamp	3 lamps for the phases		
5.0	Overall dimensions of the Panel	Vendor to confirm		
6.0	Make of the Fuse switches	Reputed make		
6.1	Type no. and make of the fuse switch offered	Vendor to confirm		
6.2	Technical leaflet of the fuse switch offered to be enclosed with the offer.	Vendor to confirm		
7.0	**General Features of the Fuse switches:**			
7.1	The switches shall be totally enclosed and fully shrouded			
7.2	Provided with On/Off flag indication and two earthing terminals			
7.3	Quick make, quick break mechanism, independent of the speed of the operator.			
7.4	Double break isolation arrangement ensuring complete isolation of fuse units when unit is in off position			
7.5	All current carrying parts shall be hard silver plated			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
7.6	Units to be provided with bolted type neutral links with facility to disconnect neutral easily.			
7.7	Interlock to ensure the lid cannot be opened until the switch is in off position and the possibility to defeat the interlock by a competent examiner.			
7.8	Provided with phase-phase, phase-earth barrier			
8.0	**General Features of Switchboard:**			
8.1	The panel shall be of Industrial type construction with enclosed busbar chamber in the middle and the fuse switch units mounted on the top and bottom of the busbar chamber.			
8.2	Busbars shall be made of high conductivity aluminium alloy with adequate cross section to operate at low operating temperatures.			
8.3	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.			
8.4	The earth busbar of size 6x 50mm G.I.Flat shall run through out the length of the switchboard and be terminated at the two ends.			
8.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.			
8.6	All sheet steel used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phospating and painting.			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
8.7	The switches shall be provided with cable adopter boxes in sheet steel for termination of armoured aluminium cable suitable for the curent rating of the switches.			
8.8	Adequate number of busbar supports shall be provided to withstand short circuit current.			
8.9	The busbar chamber covers shall be fitted with dust proof neoprene gaskets.			
8.10	The switchboard shall be provided with angle iron frame work of adequate size for floor mounting.	Vendor to specify size		
8.11	The connections from the busbars to the switches shall be through flexible insulated copper conductors of adequate cross section.			
8.12	The switchboard shall be painted with one coat of red oxide primer and two coats of enamel paint to match the colour of the switches.			
8.13	The construction of the panel shall generally conform to the Indian Electricity Rules and switches shall conform to the relevant IS.			
9.0	**Reference List/ Qualifying Conditions:**			
9.1	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.			
9.2	Information about the companies where similar equipments have been supplied, certificate about satisfactory performance are to be submitted for qualification of the offer.			
10.0	**Scope of Supply**	**Quantity**		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
10.1	Industrial type switchboard of the configuration and specification as furnished above	**14 nos.**		

Specification for Medium Voltage Industrial Type Switchboard-2				
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, Industrial type switchboard comprising of fuse switches, busbar chamber and conforming to the specification and features given below.			
1.0	**Incomer Fuse Switch unit with fuses:**			
1.1	Current rating at 415V, 50Hz	800A		
1.2	Configuration	Three poles and neutral		
1.3	Type of enclosure	Sheet steel		
1.4	Fuses for 3 phases	630A		
1.5	Quantity of Incomer fuse switch	**1 no.**		
2.0	**Outgoing Fuse switch Units with fuses:**			
2.1	Configuration	Three poles and neutral		
2.2	Current rating at 415V, 50Hz	400A		
2.2.1	Type of enclosure	Sheet steel		
2.2.2	Fuses for 3 phases	400A		
2.2.3	Quantity of 400A fuse switch	**5 nos.**		
2.3	Current rating at 415V, 50Hz	200A		
2.3.1	Type of enclosure	Sheet steel		
2.3.2	Fuses for 3 phases	200A		
2.3.3	Quantity of 200A fuse switch	**1 no.**		
3.0	**Busbars:**			
3.1	Current rating at 415V, 50Hz	800A		
3.2	Configuration	Three poles and neutral		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
3.3	Material	Aluminium		
3.4	Busbar chamber	CRCA sheet steel of min. 2 mm thickness.		
4.0	**Accessories:**			
4.1	Voltmeter with selector switch	Analog type, a.c., 0-500V, 96mm square, accuracy class 1.0		
4.2	Voltmeter and switch make	Vendor to confirm		
4.3	Indication lamp	3 lamps for the phases		
5.0	Overall dimensions of the Panel	Vendor to confirm		
6.0	Make of the Fuse switches	Reputed make		
6.1	Type no. and make of the fuse switch offered	Vendor to confirm		
6.2	Technical leaflet of the fuse switch offered to be enclosed with the offer.	Vendor to confirm		
7.0	**General Features of the Fuse switches:**			
7.1	The switches shall be totally enclosed and fully shrouded			
7.2	Provided with On/Off flag indication and two earthing terminals			
7.3	Quick make, quick break mechanism, independent of the speed of the operator.			
7.4	Double break isolation arrangement ensuring complete isolation of fuse units when unit is in off position			
7.5	All current carrying parts shall be hard silver plated			
7.6	Units to be provided with bolted type neutral links with facility to disconnect neutral easily.			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
7.7	Interlock to ensure the lid cannot be opened until the switch is in off position and the possibility to defeat the interlock by a competent examiner.			
7.8	Provided with phase-phase, phase-earth barrier			
8.0	**General Features of Switchboard:**			
8.1	The panel shall be of Industrial type construction with enclosed busbar chamber in the middle and the fuse switch units mounted on the top and bottom of the busbar chamber.			
8.2	Busbars shall be made of high conductivity aluminium alloy with adequate cross section to operate at low operating temperatures.			
8.3	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.			
8.4	The earth busbar of size 6x 50mm G.I.Flat shall run through out the length of the switchboard and be terminated at the two ends.			
8.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.			
8.6	All sheet steel used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phospating and painting.			
8.7	The switches shall be provided with cable adopter boxes in sheet steel for termination of armoured aluminium cable suitable for the curent rating of the switches.			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
8.8	Adequate number of busbar supports shall be provided to withstand short circuit current.			
8.9	The busbar chamber covers shall be fitted with dust proof neoprene gaskets.			
8.10	The switchboard shall be provided with angle iron frame work of adequate size for floor mounting.	Vendor to specify size		
8.11	The connections from the busbars to the switches shall be through flexible insulated copper conductors of adequate cross section.			
8.12	The switchboard shall be painted with one coat of red oxide primer and two coats of enamel paint to match the colour of the switches.			
8.13	The construction of the panel shall generally conform to the Indian Electricity Rules and the switches shall conform to the relevent IS.			
9.0	**Reference List/ Qualifying Conditions:**			
9.1	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.			
9.2	Information about the companies where similar equipments have been supplied, certificate about satisfactory performance are to be submitted for qualification of the offer.			
10.0	**Scope of Supply**	**Quantity**		
10.1	Industrial type switchboard of the configuration and specification as furnished above	**1 no.**		

Specification for Medium Voltage Industrial Type Switchboard-3				
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, Industrial type switchboard comprising of fuse switches, busbar chamber and conforming to the specification and features given below.			
1.0	**Incomer Fuse Switch unit with fuses:**			
1.1	Current rating at 415V, 50Hz	800A		
1.2	Configuration	Three poles and neutral		
1.3	Type of enclosure	Sheet steel		
1.4	Fuses for 3 phases	630A		
1.5	Quantity of Incomer fuse switch	**1 no.**		
2.0	**Outgoing Fuse switch Units with fuses:**			
2.1	Configuration	Three poles and neutral		
2.2	Current rating at 415V, 50Hz	400A		
2.2.1	Type of enclosure	Sheet steel		
2.2.2	Fuses for 3 phases	400A		
2.2.3	Quantity of 400A fuse switch	**1 no.**		
2.3	Current rating at 415V, 50Hz	100A		
2.3.1	Type of enclosure	Cast iron		
2.3.2	Fuses for 3 phases	100A		
2.3.3	Quantity of 200A fuse switch	**8 nos.**		
3.0	**Busbars:**			
3.1	Current rating at 415V, 50Hz	800A		
3.2	Configuration	Three poles and neutral		
3.3	Material	Aluminium		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
3.4	Busbar chamber	CRCA sheet steel of min. 2 mm thickness.		
4.0	**Accessories:**			
4.1	Voltmeter with selector switch	Analog type, a.c., 0-500V, 96mm square, accuracy class 1.0		
4.2	Voltmeter and switch make	Vendor to confirm		
4.3	Indication lamp	3 lamps for the phases		
5.0	Overall dimensions of the Panel	Vendor to confirm		
6.0	Make of the Fuse switches	Reputed make.		
6.1	Type no. and make of the fuse switch offered	Vendor to confirm		
6.2	Technical leaflet of the fuse switch offered to be enclosed with the offer.	Vendor to confirm		
7.0	**General Features of the Fuse switches:**			
7.1	The switches shall be totally enclosed and fully shrouded			
7.2	Provided with On/Off flag indication and two earthing terminals			
7.3	Quick make, quick break mechanism, independent of the speed of the operator.			
7.4	Double break isolation arrangement ensuring complete isolation of fuse units when unit is in off position			
7.5	All current carrying parts shall be hard silver plated			
7.6	Units to be provided with bolted type neutral links with facility to disconnect neutral easily.			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
7.7	Interlock to ensure the lid cannot be opened until the switch is in off position and the possibility to defeat the interlock by a competent examiner.			
7.8	Provided with phase-phase, phase-earth barrier			
8.0	**General Features of Switchboard:**			
8.1	The panel shall be of Industrial type construction with enclosed busbar chamber in the middle and the fuse switch units mounted on the top and bottom of the busbar chamber.			
8.2	Busbars shall be made of high conductivity aluminium alloy with adequate cross section to operate at low operating temperatures.			
8.3	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.			
8.4	The earth busbar of size 6x 50mm G.I.Flat shall run through out the length of the switchboard and be terminated at the two ends.			
8.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.			
8.6	All sheet steel used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phospating and painting.			
8.7	The switches shall be provided with cable adopter boxes in sheet steel for termination of armoured aluminium cable suitable for the curent rating of the switches.			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
8.8	Adequate number of busbar supports shall be provided to withstand short circuit current.			
8.9	The busbar chamber covers shall be fitted with dust proof neoprene gaskets.			
8.10	The switchboard shall be provided with angle iron frame work of adequate size for floor mounting.	Vendor to specify size		
8.11	The connections from the busbars to the switches shall be through flexible insulated copper conductors of adequate cross section.			
8.12	The switchboard shall be painted with one coat of red oxide primer and two coats of enamel paint to match the colour of the switches.			
8.13	The construction of the panel shall generally conform to the Indian Electricity Rules and the switches shall conform to the relevent IS.			
9.0	**Reference List/ Qualifying Conditions:**			
9.1	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.			
9.2	Information about the companies where similar equipments have been supplied, certificate about satisfactory performance are to be submitted for qualification of the offer.			
10.0	**Scope of Supply**	**Quantity**		
10.1	Industrial type switchboard of the configuration and specification as furnished above	**6 nos.**		

Specification for Medium Voltage Distribution Fuse Board				
Sl.No.	**Description for BHEL Requirement**	**Specified/ To be confirmed by**	**Offered**	**Deviations**
	Manufacture and supply of Medium Voltage, wall/ column mounting, indoor, enclosed distribution fuse boards comprising of fuse units, HRC fuses, busbar and conforming to the specification and features given below.			
1.0	**Distribution Fuse Board**			
1.1	Current rating at 415V, 50Hz	16 A/ 32 A/ 63 A (as specified in the scope of supply)		
1.2	Configuration	Three poles and neutral		
1.3	Type of enclosure	Fabricated Sheet steel		
1.4	Number of ways per phase	8 ways/ 12 ways (as specified in the scope of supply)		
1.5	Fuse Units	Porcelain fuse units comprising of fuse base and holder and suitable for HRC fuses		
1.6	Make of the distribution fuse board/ fuse units	Reputed make. Vendor to specify the make offered.		
2.0	**HRC Fuses:**			
2.1	Current rating at 415V, 50Hz	16 A/ 32 A/ 63 A (as specified in the scope of supply)		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
2.2	Number of Fuses	3 fuses per way		
2.3	Make of the fuse	Reputed make		
2.4	Make, Type and configuration of the fuse offered	Vendor to specify.		
3.0	Overall dimensions of the DB	Vendor to specify		
4.0	**General Features of the Distribution fuse board:**			
4.1	Metallic enclosure shall be arranged as to prevent any accidental contact between ther enclosure and the live parts when the enclosure is in place.			
4.2	Two separate earthing terminals shall be provided			
4.3	Sufficient space shall be left in the interior for accommodation of external conductors from their point of entry into the enclosure upto the terminal.			
4.4	Label to be permanently and securely fixed inside the case to mark the name, current rating of the circuit and fuse rating.			
4.5	The neutral busbar shall be of the same size as phase busbar upto 32A DB and for higher rating it shall be half the size of phase busbar.			
4.6	The busbar chamber covers shall be fitted with dust proof gaskets.			
4.7	The DB shall be painted with one coat of red oxide primer and two coats of enamel paint.			
4.8	The distribution fuse board should conform to IS:2675-1983 and Indian Electricity Rules.			
5.0	**Reference List/ Qualifying Conditions:**			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
5.1	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.			
5.2	Information about the customers to whom similar equipments have been supplied is to be submitted for qualification of the offer.			
6.0	**Scope of Supply**	**Quantity**		
6.1	12 way x 16 A per way distribution fuse board of the configuration and specification as furnished above	**22 nos.**		
6.2	8 way x 32 A per way distribution fuse board of the configuration and specification as furnished above	**6 nos.**		
6.3	8 way x 63 A per way distribution fuse board of the configuration and specification as furnished above	**42 nos.**		

Specification for Lighting Distribution Board				
Sl.No.	**Description for BHEL Requirement**	**Specified/ To be confirmed by**	**Offered**	**Deviations**
	Manufacture and supply of Medium Voltage, wall/ column mounting, indoor, enclosed Lighting MCB distribution boards comprising of MCB, busbar, interconnection and conforming to the specification and features given below.			
1.0	**MCB Distribution Board**			
1.1	Current rating	100A, 4 pole MCB for main incomer. 100A, 2 pole ELCB in each phase for phase isolation. 16A, 1 pole MCB for each outgoing way.		
1.2	Configuration	Three poles and neutral DB with per phase isolation		
1.3	Type of enclosure	Fabricated Sheet steel		
1.4	Number of ways per phase	8 ways		
1.5	Busbar Rating	100 A		
1.6	Make of the MCB distribution board	Reputed make. Vendor to specify the make offered.		
2.0	**Miniature Circuit Breaker**			
2.1	Current rating	16 A/ 100 A (as specified for outgoing/incomer)		

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
2.2	Number of MCB	24 nos. 16A, 1P, MCB 3 nos. 100A, 2P, ELCB 1 no. 100A, 4P. MCB		
2.3	Breaking capacity of the MCB	9KA / 10KA		
2.4	Make, Type of the MCB offered	Reputed make. Vendor to specify the make offered		
3.0	Overall dimensions of the DB	Vendor to specify		
4.0	**General Features of the Lighting Distribution board:**			
4.1	The DBs shall be ready to use with neutral links, earth links, Busbar and interconnecting wires/links.			
4.2	DB shall be provided with gland plates at the top and bottom with knockouts.			
4.3	Earth bar for facilitating individual earth for each outgoing circuit.			
4.4	Label to be permanently and securely fixed inside the case to mark the name, current rating of the circuit.			
4.5	Gaskets shall be provided to ensure vermin proof condition.			
4.6	The DB shall be provided with single door.			
4.7	The DB shall be painted with one coat of red oxide primer and two coats of enamel paint.			
4.8	The DB should conform to IS:13032-1991 and Indian Electricity Rules.			
4.9	The MCB shall conform to IS:8828-1996			

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered	Deviations
5.0	**Reference List/ Qualifying Conditions:**			
5.1	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.			
5.2	Information about the customers to whom similar equipments have been supplied is to be submitted for qualification of the offer.			
6.0	**Scope of Supply**	**Quantity**		
6.1	8 way x 16 A per way, 3-phase MCB distribution board of the configuration and specification as furnished above	**25 nos.**		