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

An ISO 9001 Company

ENQUIRY – Corrigendum 1	Phone: +91 431 257 7653 Fax : Email : skaruna@bheltry.co.in spsy@bheltry.co.in kmk@bheltry.co.in Web : www.bhel.com

NIT No. 35763	**Enquiry Number:**	**Enquiry Date:**	**Due date for submission of quotation (Revised):**
	2621700003	**23.11.2017**	**07.12.2017**

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: 11kv, 1250A, VCB Incomer Panel, VCB Bus Coupler Panel and Bus Riser Cum Bus PT Panel, Qty: 5 Nos. (3 Items).

Details of Corrigendum

Following changes included in Specification Part A and Part B
1. Part-A: Sl No: 3
2. Part-B: 2.2.2, 8.1, 8.2, 9.1 and 9.4 is added.

Enquiry Cover Sheet (Important points to be taken care during submission of offer) Sl.No.2 should be corrected as
"Erection, Testing & Commissioning period required **2 Weeks** from the date of intimation by BHEL to vendor for deputation of their Engineers for E&C."

Encl: Part A and Part B - Revised Specification enclosed.

All other terms and conditions and specifications as published in the NIT_35763 remain unaltered.

Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site www.bhel.com or from the Government tender website https://eprocure.gov.In/epublish/app under above Enquiry reference.

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 / MM / Capital Equipment

S.PARTHASARATHY
MANAGER
CAPITAL EQUIPMENT / MM
BHEL, TRICHY-620014.

Annexure-I

Part-A

Pre-Qualification criteria for the supply of HT VCB switch board

Sl. No	Description	Vendor to confirm
1	The bidder shall be Original Equipment Manufacturer (OEM). The offered equipment have to be designed, manufactured and tested as per relevant IS/IEC with latest amendments.	
2	Equipment offered shall have Type Test Certificates from accredited laboratory (accredited based on ISO/IEC Guide 25 / 17025 or EN 45001 by the National accredition body of the country where laboratory is located, as per IEC / IS / technical specification. Type test report shall be submitted along with the offer.	
3	Equipment proposed shall be of similar or higher rating and in service for a minimum period of one year and satisfactory performance certificate in respect of this is to be available and submitted.	
4	The bidder shall agree to supply the panels that match with the existing ABB make Unisafe model with VD4 VCB panel switch board. The busbar chamber shall be matched with the existing switchboard for extenstion.	

Annexure-II

Part-B

Technical specifications for the supply of HT VCB switch board

Sl. No	Description	Vendor to Confirm
	TECHNICAL AND SYSTEM CONDITIONS	
1	**SYSTEM CONDITIONS:**	
1.1	11 kV switchgear equipment and accessories shall comply with the following system conditions:	
1.2	Nominal system voltage (kV): 11	
1.3	Highest system voltage (kV): 12	
1.4	System earthing: Effectively earthed	
1.5	Number of phases: 3	
1.6	Rated Frequency (Hz): 50	
1.7	Basic Insulation level	
1.7.1	1.2 x 50 micro second impulse withstand voltage (in KV peak): 75	
1.7.2	One minute power frequency withstand voltage (KV rms): 28	
2	**TECHNICAL REQUIREMENT:**	
2.1	**CIRCUIT BREAKERS:**	
2.1.1	The circuit breakers shall comply with the following technical requirements:	
2.1.2	Type: Indoor drawout	
2.1.3	Insulating Medium: Vacuum	
2.1.4	Rated normal current of breakers (Amp): 1250	
2.1.5	Bus-bar Rating (Amp): 1600	
2.1.6	Rated short time current (kA RMS): 26.3	
2.1.7	Rated time (Sec.): 3	
2.1.8	Operating duty cycle: 0 - 0.3 Sec - CO- 3 Min.-CO.	
2.1.9	Method of closing:	
2.1.9.1	Normal: Motor operated	
2.1.9.2	Emergency: Manual	
2.1.10	Auxiliary voltage for closing and tripping coils: 110 V DC	
2.1.11	Auxiliary voltage for spring charging motor: 240 V, AC, 50 Hz with voltage variation +10% and –15% of normal value and frequency variation ± 3%	
2.1.12	Size of bus bar: 1200 Sqmm Copper (preferably 2x60x10mm)	
2.2	**GENERAL REQUIRMENTS OF C.B.**	
2.2.1	The circuit breakers shall comply with the requirements of the latest edition of IS: 13118/1991 or IEC-62271-100 except where specified, otherwise in the specification.	
2.2.2	The circuit breakers shall be with vacuum insulating medium and shall be of indoor, cassatte type , draw out type. They should be complete with raising and lowering mechanism, transportation truck, isolating plugs and spouts with automatic metallic gravity fall type safety shutters, padlocking arrangements and necessary mechanical interlocks. They shall be incorporated in panel boards described in clause no: 2.6 of this specification.	

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2.2.3	The closing release shall operate correctly at all values of voltage between 85% and 110% of the rated voltage. The shunt trip shall operate correctly under all conditions of the circuit breaker upto the rated breaking capacity of the circuit breaker and at all values of supply voltage between 70% and 110% of the rated voltage	
2.2.4	Mechanical indicators to show the 'close' or 'open' position of the contacts shall be provided. Operating handle shall be provided for charging the operating mechanism.	
2.2.5	All MS parts of breakers and ferrous parts such as hangers, supports, bolts & nuts shall be hot dip galvanized as per IS:2629 (latest edition) with zinc platting & olive green passivation. The material for spring shall be rust proof.	
2.2.6	The circuit breaker shall comprise of three independent poles, fitted with a common operating mechanism.	
2.2.7	The breaker along with its operating mechanism shall be mounted inside a weather proof sheet steel cabinet described under clause no. 2.6	
2.2.8	Each pole of circuit breaker shall constitute a separate breaking chamber. These three breaking chambers shall be mounted on a common chassis and connected together for operation by common operating mechanism.	
2.2.9	The following interlocks between the withdrawable/drawout breaker and cubicle shall be provided:	
2.2.9.1	The circuit breaker can not be inserted into 'service' position, when it is in 'closed' position.	
2.2.9.2	The circuit breaker can not be withdrawal from the 'service' position, unless it is in 'open' position.	
2.2.9.3	The circuit breaker can be closed only in 'test' and in 'service' position.	
2.2.9.4	VCB of lower rating cannot be inserted into the panel with VCB of higher rating.	
2.2.9.5	VCB cannot be put in service unless the multiple plug is in position.	
2.2.9.6	Multiple plug cannot be removed, when VCB is in 'service' position.	
2.2.9.7	The door can only be opened when breaker is in 'OFF' condition & vice versa.	
2.2.9.8	The operation shall be possible only with closed-door condition.	
2.2.9.9	Racking – in/out operation should be possible only when front panel door is closed.	

Sl. No	Description	Vendor to Confirm
2.3	**CURRENT TRANSFORMERS**	
2.3.1	The cast resin insulated current transformers shall comply with the requirements of IS:2705 (latest edition) and technical requirements furnished below.	
2.3.2	CT Ratio: 700/5-5A	
2.3.3	Class of accuracy: 0.2S for meetering and 5P for protection	
2.3.4	Rated Burden: 15 VA for meetering and 10 VA for protection	
2.4	**POTENTIAL TRANSFORMERS**	
	The potential transformers shall comply with the following requirements:	
2.4.1	Rated Burden : 100 VA	
2.4.2	Type and Connections : One unit - 3 phase, 11 KV/110 Volt, Class (0.5) accuracy PTs connected in star-star with neutral grounded	
2.4.3	The drawout cast resin insulated potential transformers shall be provided in the 11 KV panels in a separate chamber, with necessary plug and socket type connections to enable easy withdrawal of PTs.	
2.4.4	The secondary lead shall be brought out to a terminal board. Fuses shall be provided at both HV and LV sides and limiting resistors were required, shall be provided. The PTs shall be easily withdrawable independent of the breaker.	
2.5	**ENERGY METERS (KWH METERS)**	
2.5.1	Digital multi-function meter with import/ export energy measurment capability shall be provided. The meter shall be of 0.2S accuracy and indicate all electrical parameters like V, I, P, Q, Energy, PF, THD, etc.	
2.5.2	The Multi-function meter should have appropriate hardware and software to communicate with existing SCADA system using RS485 communication port.	
2.6	**PANEL BOARDS**	
2.6.1	The 11 KV panel with accessories and fittings shall be indoor, floor mounting, extensible sheet steel cubicle type switch boards	
2.6.2	The breaker, CTs and PTs described under clauses 2.1, 2.3 and 2.4, above and the panel board shall be so constructed as to form independent 11KV indoor switch board panel. All the panels shall be completely dust and vermin proof. The panels shall remain vermin proof, even when the breaker is taken out for maintenance.	
2.6.3	The panel shall be provided with not less than 2 mm thick MS sheet for all sides. Suitable blanking plates shall be provided to facilitate extensions of bus bars. Suitable insulating barriers for the bus-bars breakers shall be provided, so that damage to other healthy panels is minimized in case of damage in one of the panels. Lifting arrangement shall be provided for the panel.	
2.6.4	Breaker, Busbar, cable/CT, PT chamber shall be individual.	
2.6.5	The rear door shall have wire mesh provided behind it, so that the person opening the door shall not have access to live parts of the panel. The nuts shall be welded with rear door cover so that all the bolts of the rear door cover shall be in position, there by effecting complete closing of the door.	

Sl. No	Description	Vendor to Confirm
2.6.6	The panels shall be vermin proof for degree of protection of IP5X. The manufacturer shall submit type test report for offered panel along with material, size, thickness of metal sheet and gaskets provided. All the front doors shall be latch type only.	
2.6.7	Dimensions of panel shall be provided as mentioned below: Depth : 1400 mm Height : 2400 mm Width : 600 mm	
2.7	**BUS– BARS**	
2.7.1	A set of 3-phase copper bus-bars of 1600 A current rating, having size of preferably 2 x 60 x 10mm = 1200 mm2, suitably insulated by heat shrinkable tubes shall be provided.	
2.7.2	The bus bars shall be made of electrolytic high-grade copper and shall be rectangular bars of sufficient current rating. PVC sleeves/tap of suitable thickness shall be provided on bus bars and jumpers except at the joints.	
2.7.3	The joints shall be covered with suitable shrouds. Suitable shutters shall be provided in addition and separate from interlocks, with padlocking arrangements, so that bus bars become inaccessible, when the breaker is drawn out for maintenance. Phase and inter panel barriers shall be of FRP/UL994 material.	
3	**INCOMER PANEL- 3 Nos**	
3.1	The circuit breakers (vacuum) switchboard panels shall be complete with the following equipments:	
3.2	Vacuum circuit breaker of 11 KV, 1250 Amp current rating and having S.T.C. rating and B.I.L. as per clause 1.8 and 1.9 respectively of the specifications.	
3.3	1-true trip free manually charged, manually released spring closing mechanism fitted with 110 V DC shunt trip coil and a hand trip device.	
3.4	1-set of vertically horizontally isolated secondary plugs and sockets with automatic safety shutters with locking arrangement.	
3.5	The cable entry shall be from the bottom (300 mm2 cable for 1250 Amp VCB).	
3.6	3- cast resin insulated current transformer having ratio 700/5-5A Amp for instrumentation, protection and differential as per detailed technical particulars, furnished under clause no: 2.3 of this specification.	
3.7	1-voltage transformer, cast resin insulated, withdrawable carriage type independent of breaker 3-phase and having ratio 11000/110 volts, class I accuracy to IS:3156, complete with current limiting resistors and HT and LT fuses.	
3.8	2 numbers -80 watts/230 volt AC tubular heater, with thermostat set at required setting (One each in breaker and cable chamber)	
3.9	1-instrument panel mounted on the front comprising:	
3.10.	1-Voltmeter, 96 mm2 flush pattern case, with selector switch and scaled suitably.	
3.11	1-Multi-function meter with import/ export measurment capacbility. Class of accuracy 0.2S.	

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3.12	1-Triple pole IDMT over current and earth fault Numerical relay as per the detailed specifications given below:	
3.12.1	The relay shall have 2 over current and 1 Earth Fault element.	
3.12.2	TRUE RMS Measurement.	
3.12.3	Have selectable and front panel programmable normal, inverse, very inverse & IDMT Characteristic.	
3.12.4	Selectable CT Secondary. I.e. 1A / 5A	
3.12.5	High set over current with selectable time delay.	
3.12.6	High set Earth fault with selectable time delay	
3.12.7	Shall have Breaker Failure Protection as in built feature.	
3.12.8	Include hand reset Flag/LED indicators for phase identification for all faults.	
3.12.9	Readable Human Machine Interface with LED/ LCD display.	
3.12.10	Shall have Self monitoring feature.	
3.12.11	Relay offered shall be communicable type	
3.12.12	Over Current: 20% - 200% (In steps of 5%)	
3.12.13	Earth Fault: 5% - 80% (In steps of 5%)	
3.13	1-CB TNC control switch.	
3.14	1-Set of LED indication lamps for R,Y,B, ON, OFF, TRIP, TC Healthy, etc	
3.15	1-Test terminal block having 1100V grade insulation, duly wired for testing of relays and meters.	
3.16	Complete internal wiring with 1100 volt grade single core multi-stranded copper wires conforming to modern standard practice. All necessary cable glands and minor accessories shall be supplied.	
3.17	Internal earthing of all parts of the panel as per standard practice and providing for earthing of panel.	
4	**BUS COUPLER PANEL- 1 No.**	
4.1	Outwardly this panel will be similar to the Incomer switchboard. No metering arrangement is to be provided on this panel. Single core CTs required for protection only shall be provided. All other equipments shall be provided as given in the Incomer panel. The panel shall have 11 KV bus connections with adjoining panels on both sides, instead of cable box at bottom.	
5	**BUS RISER/ TRUNKING PANEL- 1 No.**	
5.1	This panel shall be supplied for matching the bus between the existing panels and the bus-coupler supplied by the bidder.(i.e. the bus riser panel)	

Sl. No	Description	Vendor to Confirm
6	**TESTS & TEST REPORTS**	
6.1	The indoor switchgear panels with VCB shall be of proven design and should have been type tested as per IEC-62271-100 / IS:13118 for the following type tests, carried out in Government approved laboratory:	
6.1.1	Short time current and peak withstand current test.	
6.1.2	Temperature Rise test.	
6.1.3	Degree of protection (IP5X).	
6.1.4	Humidity test.	
6.2	Type test reports for above tests shall be submitted with the offer. In case of non-submission of the type test reports with the offer, the bid shall be liable to be rejected.	
6.3	Routine tests/acceptance tests as per the latest edition of IS: 13118 for circuit breakers and also as indicated below shall be carried out on each VCB panels (in presence of purchaser's representative if desired by the purchaser.)	
6.4	All tests reports for acceptance / routine rests shall be submitted and got approved from the purchaser before dispatching the breaker.	
7	**AUXILIARY POWER SUPPLY**	
7.1	Power supply for auxiliary will be available at 240 V, single phase and 415 V, three phase, AC 50 Hz. The frequency can vary between 97% and 103% and voltage would vary from 110% to 85% of the normal value.	
7.2	DC supply at 110 Volt, two wires will be available from the station battery for trip coils and closing coils of panels. DC supply is subject to variation between 85% and 110% of the normal value.	
8	**ERECTION, TESTING AND COMMISSIONING:**	
8.1	Erection, testing and commissioning of the panels at BHEL Trichy 110kV Substation in the scope of bidder.	
8.2	During the erection, the bidder shall ensure to match the supplied panels with the existing ABB make Unisafe model panel. The General arrangement of the same is given as Annexure-III.	
9	**SPECIAL CONDITIONS:**	
9.1	The bidder shall furnish the drawings within 15 days after placing the order for approval by BHEL. The bidder should also submit the foundation layout for making the cable trench.	
9.2	Erection, testing and commissioning of the panel shall be done immediately after the supply of panels.	
9.3	Training shall be imparted to the BHEL staff regarding the operation and maintenance of the panels supplied.	
9.4	The bidder may visit the site before quoting for understanding the nature of work.	