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ANNEXURE-I

Tender No. : KID3208P07/07
Tender Date : 03.11.2006

Item No./ Mat. Code	Material Description	Quantity	UOM
10 0C000161	500 KVA, 11/3.3/0.4 KV Unitised substation as per Appendix - I, Appendix - II and Appendix -III. Note : Bids from Manufacturers or their authorized dealers will only be considered. In case offer is made by authorized dealer, the valid dealership certificate issued by Manufacturer must be submitted with offer failing which the offer shall be liable for rejection. APPENDIX - I 500 KVA, 11/3.3/0.4 KV Unitised substation. DECRIPTION OF THE OUT DOOR ENCLOSURE # The enclosure must be designed to be used under normal outdoor service condition according to IEC 694. # The inside of the high voltage enclosure must be designed as per normal operating conditions according to IEC 694. # The inside of the low voltage enclosure must be designed as per normal operating conditions according to IEC 439-1. # The enclosure should be made of 2.5mm thick Aluminum enclosure tropicalized to Indian weather condition. # The metal base should be made of 4mm thickness hot dip galvanized steel or stainless steel to ensure rigidity and to facilitate easy transportation and installation. # The structure of the substation should be capable of supporting the gross weight of all equipment. # The roof of the substation compartment should be designed to support the load up to 250kg/msq. # The enclosure must provide protection against external influences to the sub-station. # Intermediate ceiling roof to be provided and a minimum clearance to be left between the top of any component installed in the substation and roof of the substation. # Protection degree of the enclosure for MV (11KV) and LV (433V) compartment should be IP-34. # Ventilation apertures should be sufficient for natural ventilation. # The Sub-Station must be compartmentalized with separate Transformer, MV and LV switchgear rooms with individual access to each compartment. # Access to the operating (both HT and LT room) bay and the transformer bay should be provided with double doors with waterproof locking arrangements. DIMENSION OF ENCLOSURE. Overall maximum dimension must be within the following. ? Length-(mm): 3000 ? Width-(mm) : 1600	1	NO

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	? Height-(mm): 2300. APPENDIX - II 11KV SWITCH GEAR AND 500KVA TRANSFORMER. ? The 11 KV switching should be provided with a VCB with horizontal draw-out type. ? O/C, E/F and buchhlohz protection must be provided through numeric relay with fault recording facility. ? All the equipments offered must be designed, manufactured and tested in compliance with IEC/IS recommendations as given below ? Common clause for medium voltage switchgear and low voltage switchgear as per IEC-694 ? Self contained 11 KV apparatus IEC #298 ? Low voltage switchgear and control gear according to IEC 947-1 and IEC 439-1 ? AC and Earthling switches IEC # 129 ? Combine switch dis-connector IEC # 265 ? Current Transformer IEC # 420 / 185 ? Voltage Transformer IEC # 186 ? Classification degrees of protection for enclosure IEC # 529 # Enclosure - IP 54 # Enclosure and sheet metal - # Ratings: # Rated Voltage - 12 KV # Operating Voltage - 11 KV ? Rated Insulation voltage at power frequency 50 Hz / 1 min. - 38 KV rms. ? Rated Impulse withstand voltage 1.2 / 50 ms - 75 KV peak ? Rated frequency: 50 Hz ? No of phases: a) H.T.: Three Phase b) L.T.: Three Phase and neutral ? Rated Current: a) H.T.: 400 A b) L.T.: 1000 A ? Rated Short Circuit Current for 3 Sec a) H.T.: 13.1 KA b) L.T.: 13.1 KA ? Internal arc withstand for 1 sec - 16 KA (for both H.T. & L.T.) ? Rated Operating Voltage a) H.T.: 11 KV & 3.3 KV b) L.T.: 433 V c) Auxiliary circuits: 110 V DC ? Rated Power of the Sub-station: 500 KVA TRANSFORMER: ? KVA - 500 KVA (Dry Cast Resin Type) ? Primary Voltage - 11 KV and 3.3 KV (Two Tapping with separate marking) ? Secondary Voltage - 433 volts. ? The transformer must be designed according to Indian standard: IS 11171		

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	with latest amendments. ? Service Duty - Continuous ? Tape changer: As per IS # 2026 ? Vector group: Dyn11 ? Make: Bharat Bijlee/ Crompton Greaves/ Alstom. H.T. PANEL: VACUUM CIRCUIT BREAKER: ? Operating Voltage: 11 KV ? Short circuit breaking current: 13.1 KA ? Duration of short circuit: 3 Sec ? Impulse withstands: 75 KV peak. ? Closing coil voltage: 110 V DC ? Tripping Coil Voltage: 110 V DC ? Indication & Protection Circuit : 110 V DC ? Make: Crompton Greaves/Alstom/Siemens CABLE SIZE: ? HT Side (from breaker to transformer): 1 no. of 3 X 120 sq. mm XLPE Cable ? LT Side (from transformer to LT breaker): 3nos .of 4 x 240 sq. mm PVCA cable APPENDIX - III L.T. SWITCHGEAR PANEL BUS CHAMBER: 1 No. # sheet steel clad bus chamber having front and rear bolted covers with a set of TP&N high conductivity, electrolytic grade Aluminium Bus Bars, conforming to IS: 5082, quality # E 91 E rated 1600 Amps suitable for 430 V AC, 50 Hz system suitably supported at required intervals to withstand short circuit fault level up to 50 kA. The bus bars shall be insulated with heat shrink PVC sleeve and supported on SMC supports. Neutral bar rating should not be less than 50% of the phase bus rating. INCOMER: AIR CIRCUIT BREAKER with microprocessor based trip unit with LCD display: Make : Merlin Gerin/GE/Seimens/L&T Rated Voltage : 415V Rated Current : 1000A Making Capacity : 105KA peak Breaking Capacity : 50KA rms CT Ratio : 1000/5 Insulation Voltage : 1100V Shunt trip coil voltage : 110V DC Closing coil Voltage : 110V DC Spring charging motor : 110V DC Protection : Residual O/C, E/F along with Earth leakage protection Indication : Indication for each protection must be provided with : : LED with Low Voltage Glow Protection. The incomer shall be provided with cable box complete with brought out		

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	terminals and detachable gland plate with single compression cable gland suitable for 4 nos. 3 ½ X 240 sq. mm, PVCA Aluminium cable, as per IS-13947. AC-22 duty. INCOMING FEEDER INSTRUMENTS: SN Instruments Make Quantity 1. Ammeter One each in incoming and outgoing feeder 2. Voltmeter One in Incomer 3. Energymeter One in Incomer OUT GOING FEEDERS: 1. 2 Nos. 400A,4-POLE MCCBs with suitable brought out terminals. Switch as per IS-13947. AC-22 duty. Make: GEPC/L&T/Merlyn Gerin/Siemens. The unit shall be provided with cable end/ reverse entry box complete with brought out terminals and detachable gland plate with single compression cable gland suitable for 4X120 mm2, PVCA, Aluminum cable. 2. 2 Nos. 315A,4-POLE, MCCBs with suitable brought out terminals. Switch as per IS-13947. AC-22 duty. Make: GEPC/L&T/MerlynGerin/Siemens. The unit shall be provided with cable end/ reverse entry box complete with brought out terminals and detachable gland plate with single compression cable gland suitable for 4X120 mm2, PVCA, Aluminum cable.200A: 1 NO 3. 2 Nos. 100A,4-POLE, MCCBs with suitable brought out terminals. Switch as per IS-13947. AC-22 duty. Make: GEPC/L&T/Merlyn Gerin /Siemens. The unit shall be provided with cable end/ reverse entry box complete with brought out terminals and detachable gland plate with single compression cable gland suitable for 4X50 mm2, PVCA, Aluminum cable. The bidder can provide alternative quotations for LT panel consisting of CFS units of above mentioned specifications OUT GOING FEEDER INSTRUMENTS: Out going feeders should be provided with Ammeters and selector switches. The range of the meters should be as per the switch rating. GENERAL NOTES: 1. The frame of the Switch Board shall be sufficiently strong to bear the load. 2. Special non-deteriorating Neoprene rubber gaskets between all joints shall be provided. 3. The Bus bars rated 1600 Amps shall be air insulated and PVC sleeved and supported on SMC supports. Adequate insulated barriers between the bus chamber and feeder shall be provided to achieve Form-2 separation as per IEC 439-1. 4. All main riser connections & brought out links shall be done by suitably sized and rated aluminium links as recommended by the switch manufacturer. Current rating of riser connections & links shall be 1.5 times the switch rating. No bimetallic joints shall be permitted in the links & riser connections. Control wiring shall be done with 1.5 sq.mm PVC insulated copper cable of 1100V grade. Control wires must have ferrule numbers. CT wiring should be done with 2.5 sq.mm PVC insulated copper cable of 1100V grade. ISI, TAC, FLA approved cables shall be used for control & CT wiring. All joints in control & CT wiring should be done with TBs.		

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	5. Brought out solid links, duly supported should be provided for all incoming and outgoing feeders. 6. Sufficient space should be provided for proper glanding, dressing, connecting up and maintenance of cables. Adequate space should be provided for connecting the cable leads to the brought out terminals. 7. Works Test Certificate for routine tests as per IS-8623, 5039, 12063 (with calibrated testing equipment) and wiring diagrams should be provided along with the equipment. Test certificate of incomer breaker is also required. 8. The MV & LV switchgear along with the Transformer should be guaranteed for 12 months from the date of commissioning. 9. Skid earthing/Equipment earthing points should be separate. Proper arrangements to be provided with suitably sized G.I. strip. 10. Incoming cable (HT) and outgoing cable (LT) must be layed through a covered trench and proper inlets & outlets at the bottom must be provided for cable entry. 11. Three sets of following approved drawings/literature shall be provided along with the offer a. GA drawing and lay out showing all dimensional details. b. Single line diagram. c. Control wiring diagram. d. Bill of materials used in the MV & LV swittchboard showing the make. e. Catalogues of all the components used in the switch board showing all the technical details. f. Test certificate for short-circuit test & temp. rise test on similar size bus bar. 12. The Sub-station should be guaranteed for 12 months from the date of commissioning. To be filled up by the bidder: General Characteristics Ambient Temperature Normal operating condition Standard color Indoor operation Compartmented Type of ventilation Degree of standard protection MV & LV Compartments Transformer compartments Rated enclosure class Electrical characteristics Rated voltage (kv) Rated Insulation level Kv rms 50Hz 1min. Kv impulse 1.2sec Rated frequency(HZ) Switch connection to 11 KV Network Rated current Max.allowable impulse KV-rms-1s Current withstand KA peak LT Switchgear Panel Frame Description Gaskets Insulation of Bus Bar Rated current (A) Rated Insulation level Kv rms 50Hz 1min.		

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	Kv impulse 1.2sec Auxiliary circuit Auxiliary circuit voltage Indication lamp Type Make		

Special Notes :