

**SCHEDULE OF ITEMS AND PRICES**

<b>Sl.No</b>	<b>Description of Work</b>	<b>Unit</b>	<b>Provisional Qty</b>	<b>Rate</b>	<b>Amount</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>1</b>	<b>Horizontal Francis Turbine 2.0MW capacity with specifications mentioned in the tender documents</b> i) Governor oil sump tanks & pumps ii) Governor oil pressure tanks iii) All air, oil water piping/tubing with valves including misc. pipes iv) Sensors meters, controls, gauges, switches/turbine gauge panel v) First fill of lubrication & Governor oil with 10% extra vi) Turbine flow-meter vii) Switchgear & controls for auxiliaries viii) Turbine Auxiliaries for the oil leakage unit, top cover drainage system etc. ix) Any other items forming essential part of turbine but not specifically mentioned	No.	2		
<b>2</b>	<b>Digital Electronic Hydraulic governors Comprising regulator consoles &amp; hydraulic Actuator units complete in all respects</b>	Nos.	2		
<b>3</b>	<b>Butterfly valves (MIV)</b>	No.	2		
<b>4</b>	<b>H.P.Compresses air system for Governor &amp; MIV (if required)</b>	Set	1		
<b>5</b>	<b>Hydraulic quantities measuring devices i.e. head and tail water level indicators, Turbine Flow-meter, device and Net head on turbine</b>	Set	1		
<b>6</b>	<b>Mandatory spare for Turbine etc. i.e. Sl.No. 1-5(as per Annexure-I)</b>	Set	1		
<b>7</b>	<b>Special mandatory tools, tackles, slings for erection of turbine</b>	Set	1		
<b>8</b>	<b>2.0MW, 0.8 pf 3.3kV 50 Hz, 3 phases horizontal synchronous generators with brushless excitation system</b>	Nos.	2		
<b>9</b>	<b>Mandatory Spares for the above generator (as per Annexure-II)</b>	Set	1		
<b>10</b>	<b>Cooling Water System complete with piping, valves etc, as per the specification (if required)</b>	Lot	1		
<b>11</b>	<b>Unit dewatering and Station Drainage System complete with pumps, pipings, valves, fittings, auto starting and stopping features and other accessories (if not included in the turbine, as per Annexure-III)</b>	Set	1		

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1	2	3	4	5	6
12	<b>Mandatory spares for dewatering &amp; station drainage system (if not included in the turbine)</b>	Set	1		
13	<b>Low Pressure Compressed Air System as per specification (if required)</b> i) Two compressors with coolers, moisture separator etc. Main air receiver and two air pressure accumulators, each one to operate the generator brakes, ii) inflatable seals and associated auxiliaries of one unit, with all necessary pressure gauges, switches, safety valves etc. iii) Distribution circuits upto the various consumer points iv) Control cubicle including motor starters and motor protection equipment v) Wiring and cabling between the compressors, the instruments, the control and alarm devices integrated in the system and the control cubicle	Lot	1		
14	<b>E.O.T Crane : electrically operated overhead travelling cranes of sufficient span having main hoist of 15 Tonnes and auxiliary hoist of 5 Tonnes complete with motors, resistors, drums, wire ropes, protective and control equipment, runaway rails along with fixing arrangement, down shop lead conductors, insulators,current collectors.etc.</b>	No.	1		
15	<b>Mandatory spares for EOT Crane (as per Annexure-IV)</b>	Lot	1		
16	<b>Grounding &amp; Lightning Protection System as per tender specification</b>				
i)	Main earthing conductor (Power House & Switchyard), 50x8mm (M.S.Flat)	Lot	1		
ii)	Earthing conductor for connection to different equipments from riser in the Power House (exposed parts) (50x6mm Galvanised steel flat)	Lot	1		
iii)	MS Rod grounding electrodes of 30mm diameter, 3000mm long, complete as per specification	Lot	1		
iv)	Perforated 40mm diameter, 3000mm long pipe with test link, bentonite etc.	Lot	1		
17	<b>POWER TRANSFORMER AND OTHER TRANSFORMERS:</b>				
i)	2.5MVA, 3.3/33kV, 3-phase 50Hz, YNd11, ONAN cooled outdoor type step-up transformer complete with all fittings and accessories as detailed in the specifications	Nos.	2		
ii)	Oil for first filling plus 10% to account for spillage, etc. during filling for all the transformer	LS			

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iii)	250kVA, 33/0.415kV, 3-phase 50Hz, Dyn11, ONAN cooled outdoor type step-down Transformer complete with all fitting and accessories	Set	2		
18	<b>Mandatory spares for the above transformers (Sl.No.17, as per Annexure-V)</b>	Set	1		
19	<b>3.3kV LAVT Panel including, Lightning Arrestor, PT,CT, Excitation Transformer, Surge Capacitor etc.</b>	Set	1		
20	<b>415V LT AC SWITCHGEAR:</b>				
i)	415 volts, 630 Ampere, A.C.Station/Unit auxiliary boards having short time rating of 35kA for one sec totally enclosed complete with bus bars, bus bars chambers, supports, small writing, terminal block, fuses, labels,interlocks,meters,relays etc. and each comprising the circuit breakers with protection equipment	Set	1		
21	<b>D.C.System (Battery &amp; Battery Charger, DCDB, etc.)</b>				
i)	110V, 250AH VRLA based on 10hr discharge rate, complete in all respects with accessories, like racks, insulators, electrolyte, connections between battery cells, cell number plates, anchor bolts, terminal connections, terminal block to receive connection from the battery, cable glands etc. as per specification and the drawings.	Set	1		
ii)	Float cum Boost battery charging units to Charge 1 (one) no.110V, 250AH VRLA battery sets, complete with necessary transformers, DC earth fault annunciation, protection and control gear and indicating instruments, etc. suitably mounted on a panel.	Set	1		
iii)	Sectionalized D.C. distribution board (Metal Sheet Cubicle Type) complete with bus bars, moulded case circuit breakers, cable glands, earth connection strips, small wiring, cleats, fuse, AC voltage sensing relay, terminal blocks, panels, together with all supporting and foundation frame work etc. as per specification and the drawing (if not combined with battery charging unit).	No.	1		
iv)	415V, 25kVA, 3ph DG Set for auxiliary supply complete with electrical interlock system, metering and protection system.	No.	1		
v)	Fault annunciation system for audio-visual Alarms.	Set	1		
22	<b>Unit and Station Control System</b>				
i)	Unit Control Board for each generating units comprising of control, metering, relay,alarm & gauge panels complete with all accessories.	Set	2		
ii)	Electronic governor panels complete with all accessories.	Set	2		

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iii)	Microprocessor based sequencing & unit level control equipment complete with all accessories.	Set	2		
iv)	Computer based Data Acquisition System.	Set	1		
v)	Auto Synchronizer.	Set	1		
vi)	Electronic Transducer Panel.	Set	1		
vii)	Mandatory spare parts and special tools and plants for Unit and Station Control System (as per Annexure-VI)	Set	1		
<b>23</b>	<b>Protection System and Synchronizing Panel</b>				
i)	Electrical protection system for generating Units, Step Up Transformers, Feeders, Bus couplers, Step Down Transformers complete with all accessories, wiring and cubicles,instruments, etc. as per specification of the Technical Specification.	Lot	1		
ii)	Control Desk for each Generating units Complete withh all mountings and Accessories (optional)	Lot	1		
iii)	Synchronising Panel complete with Frequency Meter, Voltmeter, Synchroscope & all other internal/external mountings etc.	Set	1		
iv)	Neutral Grounding Cubicle complete with Neutral Grounding Transformer, loading resistor, neutral isolating switch etc.	Set	1		
<b>24</b>	<b>Power Cables</b>				
i)	3.6kV grade, Single core, 500 Sq.mm XLPE insulated, unarmored aluminium conductor cables as per requirements.	Lot	1		
ii)	Other power cables 1.1kV grade, HR-PVC Insulated & PVC sheathed unarmored, aluminium conductor cables suitable for use on 415V, 3-phase, 50 c/s system and 110V DC system of suitable sizes as per requirements.	Lot	1		
iii)	Accessories such as suitable terminations kits and jointing kits for 3.6kV XLPE cable, cable lugs, cable glands,manually operated cable crimping tool, hydraulic operated cable crimping tool etc. as per specification requirements.	Lot	1		
<b>25</b>	<b>Control and Instrumentation Cables</b>				
i)	1.1kV grade, HR-PVC insualted & PVC sheated unarmored, annealed copper conductor control cables of suitable sizes as per requirement.	Lot	1		

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1	2	3	4	5	6
ii)	1.1kV grade HR-PVC insulated & PVC sheated, with braided copper screen unarmored, Annealed copper conductor instrumentation cables of suitable size as per requirements.	Lot	1		
iii)	Accessories for control and instrumentation cables such as cable lugs, cable glands etc. as per specification requirements.	Lot	1		
<b>26</b>	<b>Oil purification system comprising the following</b>				
i)	One mobile pneumatic type oil purifier, dehumidifier and degasser for governor and lubrication oil.	Set	1		
ii)	One portable clean oil transfer pump.	Set	1		
iii)	One portable dirty oil transfer pump	Set	2		
iv)	Two self-priming barrel pumps	Set	1		
v)	Tools and devices	Set	1		
<b>27</b>	<b>Mandatory spares for the above Oil Purification System (as per Annexure-VII)</b>	Set	1		
<b>28</b>	<b>Illumination and small power installation : Illumination and small power installation system shall be complete with all accessories including main lighting board, distribution boards, switch boards, circuit breakers, cable/wires, lighting fixtures for Power House, Switchyard &amp; Dam site etc. as per requirement.</b>	Lot	1		
<b>29</b>	<b>33kV Step-up Substation Equipments/Works</b>				
	a) 33kV isolator without earth switch as specified complete with structure.	Nos.	6		
	b) 33kV isoator with earth switch as specified complete with structure	Nos.	1		
	c) Outdoor type vacuum circuit breakers as per specifications for use in 33kV system.	Nos.	3		
	d) 33kV Control & Relay Panels (to be installed inside the Power House) with suitable metering, indication, annunciation and protection systems for line and transformers.	Nos.	3		
	e) 33kV lightning Arresters complete with mounting structures, surge monitor, terminal connector, insulating base etc. and as per specifications.	Nos.	15		
	f) 33kV Potential Transformers complete with mounting structures and as per specification.	Nos.	3		
	g) 33kV Horn Gap Fuse unit	Nos.	1		

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	g) 33kV Current Transformers with CTRs as per requirement complete with mounting structure and as per specification.	Nos.	9		
	h) Galvanized steel structures for switchyard.	Lot			
	i) Erection, testing & commissioning including all connected Accessories and civil works for outdoor switchyard.	Lot			
<b>30</b>	<b>Transportation of the items mention above from Sl.No.1 to 29</b>				
<b>31</b>	<b>Construction of foundations, cable trench, tail race etc. and Erection and commissioning of the items mentioned above from Sl.No.1 to 29</b>				