

PROJECT:THE PROPOSED TICEL BIO PARK- II

BILL OF QUANTITIES FOR DIESEL GENERATOR SETS AND ALLIED WORKS

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
1	<p>Supply, unloading, moving to required erection location , unpack, positioning, installing, testing & commissioning of 2000KVA , 3 phase 4 wire, 415 volts, 50 Hz diesel generator set having 2000 KVA prime rated diesel engine coupled with 2000 KVA Alternator (vide technical specification P18) all mounted on common base frame . The scope includes supply & providing installing necessary first fill of lube oil, residential silencer, 24 volt, 150 AH battery with necessary mounting stand (wooden), initial charging of battery , 990 litres daytank etc., The engine shall have electronic governor engine control panel having (microprocessor based) for measuring various parameters such as low lube oil, high water temperature, oil temperature, over speed and all such parameters as desired in technical specification attached .</p> <p>Scope also includes providing necessary and required number of anti vibrating mounting pads of Kushi foot mounted type or equivalent so that the DG Set dynamic load / forces shall not transmit to the floor. All items as may be necessary for proper continuous operation of DG set shall have to be included whether all items have been specified herein technical specification or not.The scope also includes supply of all items for the first service check (i.e) 50 / 100 / 250 Hr checkups such as filters, gaskets and all other items as may be required for servicing.</p>	1	Set				
2	Supply and Installation Alternator adopter box including flexible bellow to receive 3200A TPN copper. Busduct.	1	Set				
3	CONTROL PANEL -ALTERNATOR Mounted						
	Supply, testing,commissioning of Indoor floor mounting dust&whether proof 2000 KVA DG Set control panel with AMF logic & with 1 No. 3200 Amps 4 pole 65 KA EDO ACB and with battery charged suitable for charging 24 volt battery with necessary trickle / boost charger arrangement etc., all as required as detailed in technical specification of DG Set control panel. The terminals of ACB shall be arranged as per site requirement suitable to receive busducts both from DG Set and MV board.	1	Set				
4	Day Tank						
	Supply,Installing, testing and commissioning 990 litre day tanks for diesel complete with fittings and accessories as required. (for inside DG Room)	2	Each				
5	Supply, Erection, Testing and commissioning of Louver frame boxes & louvers for the radiators, exhaustfans, fresh air fans and rear side fresh air openings, made out of GI perforated sheets, stuffed with sound absorbing media & MS angles etc..	75	Sq.Mtr.				
6	Supply, Erection, Testing and commissioning of 1.25 mm GI sheet ducts for inter connection of the radiator and the radiator sound attenuators.	40	Sq.Mtr.				
7	Supply, Erection, Testing and commissioning of Canvas cloth interconnection between the radiator and the sound attenuator to avoid transmission of vibration from the Dgset to the sound attenuator through the treated duct,with closer interval supports as directed by EC/TICEL	1	Nos.				

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
8	Supply, Erection, Testing and commissioning of 14" DIA MS exhaust pipe, with bends, flanges, gaskets suitable for 2000 kVA engine exhaust line.	20	Mtrs.				
9	Supply, Erection, Testing and commissioning of 16" DIA MS exhaust pipe, with bends, flanges, gaskets suitable for 2000 kVA engine exhaust line. As directed by EC/TICEL	100	Mtrs.				
9A	Supply, Erection, of MS structures for the above said MS pipes with proper intervals and necessary concrete pedestals as per site condition.	4000	Kgs				
10	Supply, Erection, Testing and commissioning of fiberglass with 50 mm thickness, 24 kg/m ³ density and will be sheeted by 24 SWG aluminum Clading for above 12" Dia exhaust pipe.	20	Mtrs.				
11	Supply, Erection, Testing and commissioning of fiberglass with 50 mm thickness, 24 kg/m ³ density and will be sheeted by 24 SWG aluminum Clading for above 14" Dia exhaust pipe.	100	Mtrs.				
12	Supply, Erection, Testing and commissioning of fiberglass with 100 mm thickness, 24 kg/m ³ density and will be sheeted by 24 SWG aluminum Clading for Residential silencer.	1	Set				
13	Supply, Erection, Testing and commissioning of 1.5" DIA MS fuel pipe for the inter connection of the day fuel tank to the engines with necessary welding, jointing, valves and anticorrosive painting.	50	Mtrs.				
14	Supply and laying of 16 core x 2.5 sq.mm copper control cable with termination in a prepared cable trench.	50	Mtrs.				
15	Supply and laying of 4 core x 2.5 sq.mm copper control cable with termination in a prepared cable trench.	50	Mtrs.				
16	Supply and laying of 3 core x 1.5 sq.mm copper control cable with termination in a prepared cable trench.	50	Mtrs.				
17	Earthing with copper earth plate 600 X 600 X 3.15 mm. Thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. complete with charcoal or coke and salt complete including civil work as required	4	Each				
18	Providing and fixing 70 mm. X 10 mm. Copper strip on surface or in recess for connection etc as required for neutral earthing.	100	Metre				
19	Providing and fixing 50 mm. X 10 mm. Copper strip on surface or in recess for connection etc as required for body earthing.	100	Metre				
20	Providing and fixing 25 mm. X 3 mm. Copper strip on surface or in recess for earth connection etc as required	150	Metre				

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
21	Supply, Erection, Testing and commissioning of acoustically treated with 100mm thick insulated panels wall,collumn,beam and ceiling treatment for meeting the noise level requirements as specified less than 75dBA at 1.5 mtrs, for 3 nos. 2000KVA DG set room building at full load.(DG set room drawing is enclosed.)	1	set				
22	Supply, Erection, Testing and commissioning of Acousitc double leaf doors(1.5 mtrs. W x 2.1 mtrs H)	2	Nos.				
23	Design, Manufacture, supply and erection of mechanical forced draft type ventilation fans & exhaust fans as required as per vendor's design as adequate number for Diesel Generator room to limit the temperature rise within 5°C above outdoor ambient air dry bulb temperature with suitable motor.						
	The impellers shall be die cast aluminium or MS powder coated . The fan shall be statically and dynamically balanced. The fan motor shall be suitable for three phase operations. The system shall be suitable for (1+2 Nos.) 2000 KVA DG Sets The Supply and Installation of spare ventilationfans shall also be included in the scope						
	The rate shall include necessary ducting, supporting angles, motors, fans, control switches, single phase preventor, filters, starters, cabling, earthing, switchboard etc. The incoming fan cable including termination to the ventilation system panel board will be provided by other agency.						
	Note: Each fan motor shall have a separate single phase preventor.						
	The panel board shall be of cubicle type incorporated with Voltmeter, Ammeter, Ammeter selector switch, Volt meter selector switch, Energy meter, RYB indication lamp, MCB & switch control etc.						
	All the incoming and outgoing feeder in the panel board shall be of MCCB of adequate rating. The busbars shall be of copper with suitable rating. The incoming cable and termination will be measured and paid separately. The phase and neutral busbars shall be provided with equal rating.	1	Set				
24	Supply,Erection,Testing and Commissioning of 3200 A TPN 433v, 50HZ, LV BUS duct air insulated comprising of TPN Copper Busbar housed in 14 swg CRCA sheet enclosure necessary right angle bends, Adapter chambers, twin copper earth bus for the entire length and required MS supports, from DG set AMF panel to MV panel.(As per the detailed Technical Specification enclosed.)	15	Meter				
25	Supply,Erection,Testing and Commissioning of 3200A Copper Flexible expansion joints (jointing portion to be tinned) at the DG side with required Standard Accessories etc., complete as required.(1 set = R,Y,B& N)	4	Set				
26	Supply, Installation, Testing and Commissioning of Medium Voltage Floor mounting Cubicle Type Distribution Board suitable for 415 V, 3 Phase, 50 Hz Power Distribution System with the following mounting complete as per specifications attached.						

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
	INCOMER						
	3200 AMPS ACB, 65 KA (lcs) AC Motor operated						
	Draw Out (EDO)Type Four Pole Microprocessor based relay having Over current, short circuit with time setting and 6NO + 6 NC,indication for test,service,isolated ON /OFF tripindications, ShutterAssembly,Racking interlock Manual /Electrical closing& tripping . as specified in the technicalSpecifications.						
	Metering Compartment:						
	1 No. Multiparameter Enercon make 6400 or eqvt. With						
	RS 485 MODUBUS protocol with suitable CTs .						
	Note: Provision should be made to connect 3200A TPN Copper busduct at top.						
	OUTGOINGS:						
	2500 A, TPN, Draw out type Air Circuit Breaker of 50 KA short circuit rating at 1 sec and Manual operated mechanism for closing with accessories with OC & SC releases as per specification.- 2 NOs.						
	Busbar:						
	1 Set of 2500 A, TP& N Copper Busbar Chamber for the entire length of the Panel as per specification	1	Each				
27	Design, manufacture, supply, installation, testing and commissioning of the Scrubbers suitable for their DGs. The design shall be scrubber for 3 nos.2000 KVA and this will be erected at terrace and this should cover all the requirements PCB / other authorities. The rate shall be inclusive of all necessary accessories required for the above and as per their OEMs recommendations. The type and technical parameters & working principle should be submitted along with quote.	1	Set				
28	Supply and providing rubber mat with 12 mm thickness	6	Sq.Mtr.				
29	Supply and providing 2 x 20 W emergency lamp.	6	Nos.				
30	Supply and providing fabricated with ms angles of suitable size qty 4 nos buckets filled with sand.	1	Set				
31	Supply and providing Shock treatment chart.	1	No.				
32	Supply and providing 4.5 kg. fire extinguisher.	2	Nos.				
	Note:-						
	Preparation of the drawing and submission to the statutory authorities such as pollution control board etc, Chief Electrical inspectorate to Govt. of TAMILNADU, TAMILNADU ELECTRICITY BOARD for commissioning the system including arranging inspection and also necessary approval / safety certificate from authorities including statutory fees/charges for the Electrical / DG Installation will be contractor scope at the quoted rates.						

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
UNDER GROUND DIESEL TANK AND CONNECTED WORKS							
	DIESEL STORAGE & TRANSFER						
33	Designing, Supply of storage tank, piping and pipe fittings, valves, Gaskets and supports structural, Installation, pre commissioning, painting as per code and commissioning and getting approval of storage & pumping system for Diesel unloading and transfer from diesel storage yard to plant use as per technical specification and codes and Indian standards and also as per rules and regulation stipulated by chief Controller of explosive dept and The petroleum Rules 2002 amended by 2005						
	Diesel Tank						
	Diesel tank of following capacity horizontal cylindrical type to with stand maximum pressure of 1kg/cm ² in IS 2062 MOC mild steel plates with safety accessories with complete supporting structure, roof Hand rail, ladder, walk way platform , flanged nozzles, manhole Vent valve with Box trap over flow valve, isolation valves and drain Valve shall be provided and IS10987-1992:Code of practice for design, fabrication, testing & installation of underground horizontal cylindrical steel storage tanks single skin shell for petroleum products and as per rules and regulation of Chief controller of Explosive Dept . Fabrication, Transportation, insurance, Unloading at site, Installation, Testing & Commissioning of HSD tank suitably designed for Under ground installation as per enclosed drawing and as per rules and regulation stipulated by chief control of explosive dept and The petroleum Rules 2002 amended by 2005..						
	Tank to be suitably fabricated out of M.S. plate shell minimum 6mm & end plate minimum 8mm) with stiffeners double wall leak proof , necessary accessories such as outlet, inlet, manhole, Aluminium dipstick, bolts, nuts and necessary brackets on the tank for holding turn buckle etc. complete all as per approved design/drawing Tank dia is inner vessel dia 2.65mtrs Length is 6.00m & outer dia 2.75m & Length is 6.40m Duly treated with necessary anti corrosive compound externally and stiffener angle for endplate , bottom pad plate and tumbuckles with support arrangement, The tanks to be tested for leaks under water fill test .Rate quoted shall include for necessary transportation, loading, unloading at site as directed, including necessary anticorrosive treatment to tank etc. complete. Propervent pipe with end with ss mesh (mesh size 10-25 mesh) flanged end to avoid insects entry						
	Painting :2 coats of Epoxy primer and 2 coats of epoxy paint.						
	Test Certificates :Hydraulic test, and radiographic test as per standards and as per rules and regulation of Chief controller of Explosive Dept To be Furnished.						
	Diesel transfer Pumping control system having Solenoid valve control & instrumentation with level sensor, indicating and control instrument, valve and accessories						
(a)	Capacity :25KL	1	Each				
(b)	Capacity :30 KL	1	Each				

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34	TRANSFER PUMP:						
	Supply, Transportation, Insurance, Unloading at site, decanting, installation & commissioning of HSD Unloading pump of approved type and make of centrifugal pump capacity of 6 cum/hr. against head of 20 Mtrs approx. to work on 3 Phase 415 V 50 cycles with necessary suction and discharge piping with valve cum strainer, non return valve flame proof motor, flame proof starter suitable for outdoor installation, suction and delivery outlets, companion flange nuts, bolts, gaskets etc. complete. Rate quoted shall include for foundation bolts, motor guard, flame proof glands, terminations for starters and motors, adequate size cable from starter to motors. and earthing inside the yard MS supports as necessary for pump installation. Pumps are as per DIN 24255/ ISO 2858 /API 610						
	Type Centrifugal pumps/positive suction (screwed type)						
	Capacity flow :4CMH						
	Total Head : 20MWC						
	Speed RPM :2990						
	Shaft EN9/SS304						
	Casing :CI						
	Impeller :CS /CI						
	Coupling :DIRECT						
	Gland : MECHANICAL SEAL						
	Base Frame with FRP coating To be provided						
	Qty 1W+ 1 Stand by-1 SET						
	Make :KIRLOSKAR/KSB	1	Set				
	In the Inlet Y strainer Filter (500 microns) is to be provided						
35	ELECTRICAL CONTROL PANEL						
	Supplying, installing, testing and commissioning of flame proof starter panel for HSD unloading and transfer pumps.	1	Set				
36	PIPING						
	DIESEL piping carried out of out of MS class 'C' pipes as per IS 1239 of latest version for sizes wall thickness for pipes 150-mm and as per IS 3589 with 6.25-mm for above 200-mm size with seamless fittings as per technical specifications and standard The works shall include the standard pipe fitting like equal tee, unequal tee, reducer, elbow, bend etc,all inclusive all necessary SECONDARY supports, painting & banding as per specifications. ALL JOINTS ARE TO BE WELDED For both indoor and outdoor Over head and under ground pipes Make: TATA/JINDAL/Equivalent						
a	40 mm NB	50	RMT				
b	25mm NB	20	RMT				

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
37	Cast Steel BALL valves with flanged fasteners, support arrangement as per specifications of sizes and quantities as detailed below: The rate quoted shall include for providing flange with necessary gaskets, nuts, bolts, washers, etc						
a	40 mm NB AUDCO /ANIL/FLOCON /ADVANCE MAKE	6	Each				
b	40 mm NB Cast STEEL Non Return VALVE	2	Each				
38	Supplying, installing, testing and commissioning flame proof Solenoid valve suitable for dia MS pipes						
a	80 mm dia (Flanged Ends)	1	Each				
b	25 mm dia. (Screwed ends)	3	Each				
39	Flanged end size 50 NB BUCKET TYPE strainer stain less steel mesh of size 300Micron strainer body made out of hot tipped Galvanized /CI Flanged connection CI 150 ANSI	2 Nos	Each				
40	Supply and fixing of Pressure gauge 6" dial with 20NB isolation valve	2	Each				
41	FLEXIBLE UNLOADING HOSE :Supply of Neoprene hose as per BS 1435/1968 suitable for diesel oil including fitting of one end flanged and other end with suitable coupler. (Decanting Hose) a) 80 mm dia. X3 Mtrs long	1	Nos				
42	FIRE EXTINGUISHERS						
	Supplying, installing and commissioning Portable Fire extinguishers of following type & capacity. MECHANICAL FOAM TYPE - 9 LTRS Mechanical foam type fire extinguisher of 9 Ltrs. Capacity, with initial filling in brand new cylinder with powder coated finish fitted with Gun metal union, discharge hose, complete, confirming to IS code.	3	Nos				
43	SAND FILLED GI BUCKETS -4nos With Holding Stand Made in MS Painted two coats of anticorrosive enamel paint over a coat of Red Oxide Primer, with painted safty letter as instructed.	1	Set				
44	Supply, fabrication & fixing pipe supports in M.S angle iron/plates, pipes, etc., as per dwg., instruction at site Rate quoted shall include for supply & providing necessary welding, cutting,U clamps, bolts, nuts, washers as per specification.	500	kg				

S.No.	DESCRIPTION	QTY	UNIT	SUPPLY	ERECTION	TOTAL	TOTAL AMOUNT
45	Supply, fabrication & installation of M.S FENCING using chainlink 10cm x 10cm using M.S angle /channel/Wire Mesh for height of 2.50 mtrs height. Quoted rate shall include for supply & providing necessary welding, cutting, clamps, bolts, nuts, washers, civil works with concrete for foundation support for fencing post members including painting the fence & angle with two coats of anti corrosive paint over one coat of Red oxide primer and necessary gate opening arrangement as instructed and as per specification to meet the norms as per CCOE and other statutory rules and regulations.	1	Set				
46	Supply, installation, testing & Commissioning of 100mm dia 13mm thick 2500mm long earth electrode as per IS 3043 complete with all works like excavation, refilling with soil treating media like charcoal, salt, Bentanite powder, watering the system etc. equipped with heavy duty top cover madeout of Cast iron or RCC slab meant for Heavy duty 75 ton truck loads. Rate shall be inclusive of testing of earth electrode to achieve combined earth resistance less than 2 Ohms.	2	Set				
47	Flow Meter to suit oil flow measurement with internal contact, parts made out of stainless steel and compatible system						
a	50 mm NB	1	Each				
48	TRANSFER & LEVEL CONTROL SYSTEM DIESEL TRANSFER PUMPING CONTROL SYSTEM - SOLENOID VALVE Control For the below said control, instrumentation with level sensor, indicating and control instrument, valve and accessories are to be installed with necessary electrical cabling work upto HSD storage pump house to start/stop the supply pump. 1) When the tank level reaches high, feed incoming valve gets closed & LAH starts. 2) When tank level reaches low, LAL starts & discharge pump stops. 3) When level reaches high -high >80% of volume of tank -LAHH starts.	1	Each				
GRAND TOTAL							

NOTE:

All statutory approvals and Prior approval and Licence for construction from CCE, Test/certification of tank under Rule 126 by Competent Person, Test/certification of tank under Rule 126 by Competent Person, Certification for Safety under Rule 130 by Competent Person, No-Objection-Certificate from Dist Authority (a pre-condition for grant of license by CCE) and necessary safety certificates, etc. are contractor scope within the quoted rate.