



**UNITED INDIA INSURANCE CO. LTD.**

**Regional Office: United India Towers, 3-5-817 & 818, Basheerbagh, Hyderabad - 500 029. Ph: 23236367, Fax: 040-23231847**

**PART II : PRICE BID**

Tender Document for the work of Supply, installation, testing and commissioning of one No. 320 KVA DG Set at United India Insurance Co. Ltd., Regional Office: United India Towers, 3-5-817 & 818, Basheerbagh, Hyderabad - 500 029.

**ISSUED TO M/s.** \_\_\_\_\_

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**Supply, Installation, Testing & Commissioning of 1 No. 320 KVA DG set with logic control panel including changeover arrangements, cabling, earthing etc., at United India Insurance Co. Ltd., Regional Office, Hyderabad - 500029.**

**PART II PRICE BID**

S.N o.	DESCRIPTION	Qty.	Unit	Supply		Installation	
				Rate	Amount	Rate	Amount
	<b>GENERAL</b>						
1	Supply, installation, testing and commissioning of 320 KVA Diesel Generator set complete with all accessories like engine, alternator, batteries with leads, control panel, base frame, antivibration mounts, residential silencer, 350 litres fuel tank, intake & exhaust piping, Motorized pump for pumping diesel from Barrel to fuel tank, other miscellaneous accessories for the total set including test trial run at load as specified elsewhere in this Tender.	1	set				
	Rate to include are taxable duties						
	<b>SUPPLY:</b>						
	<b>a) Engine</b>						

<p>The engine shall be of continuous rated, turbo charged, water cooled, electric starting, multi cylinders, 1500 RPM, 4 stroke to be coupled to 320 KVA alternator. The engine shall include water-cooled radiator, high tensile strength steel forged crank shaft, induction hardened bearings, alloy cast iron removable wet liner cylinder block, corrosion resistant cylinder heads with supply and return lines and valves, crank shaft actuated injectors with integral fly wheel, ball type governor for fuel system, forced feed gear type pump for lubrication, aluminum alloy ring carrier piston with provision for thermal expansion, exhaust gas driven turbocharger for fuel economy and low smoke and noise, heat and corrosion resistant intake and exhaust valves etc.</p>						
<p>It shall also be fitted with standard components like breather crank case, air filter, coolant filter, oil filter, fuel filter, electronic governor, central pump, panel instruments provided with ammeter, hour meter, water temperature gauge, lubricating oil pressure gauge, starting key switch, belt driven centrifuged coolant, heavy duty radiator, supports to engine from base frame with pedestal type support in the front and rear, residential silencer, alternator directly coupled to the engine, complete painting, lubricating oil measuring lever, engine base frame with cushion / antivibration pads, 24 volts electric starting equipment complete with starter motor alternator and batteries with cable etc.</p>						
<p><b>b) Alternator</b></p>						
<p>320KVA rated for continuous duty single ended, brush less, self excited, totally enclosed IP 21/22 enclosure, class of insulation H, regulation <math>\pm 5\%</math>, terminal box suitable for 2 runs of 3.5 core 240 Sq.mm. PVC insulated aluminum armoured cable, terminal voltage 415 volts, 50 Hz, 3 phase, 4 wire system, automatic voltage regulator, suitable mounting arrangements and coupling with the base frame and engine etc. and painting in suitable colour.</p>						
<p><b>c) Logic control panel</b></p>						

<p>The Control panel shall be made of 14 &amp; 16 SWG sheet steel mounted on a channel frame, floor mounting, free standing, dust proof, cubicle type, front operated etc. It shall be provided with 630A 35KA TPN MCCB (with adjustable settings) with U/V coil and thermal magnetic release, current transformers with suitable ratio for metering and protection, earth fault relay, square digital type ammeter (0 – 600A), square digital type voltmeter (0 - 600V), digital type frequency meter, KWH meter, indicating lamps, fuses and also provision for Auto Start/Auto Stop, Logic module etc.</p>						
<p>The panel shall be equipped with tinned copper bus bars of suitable size, duly provided with heat shrink PVC sleeves mounted on suitable support insulators. Separate bus bars for incoming and outgoing with cable entry at bottom of panel with removable gland plate separately for incoming and outgoing cables, panel lifting hooks, base frame etc.</p>						
<p>Battery charger comprising of</p>						
<p>a) Transformer</p>						
<p>b) Rectifier</p>						
<p>c) DC Ammeter</p>						
<p>d) DC Voltmeter</p>						
<p>e) Charging rate selector</p>						
<p>f) Circuit Breaker</p>						
<p><b>d)</b> 350 litres fuel oil tank complete with strainer, breather cum filter, drain plug, delivery line with gate valve, fuel level indicator. Motorized fuel oil pump is to be supplied.</p>						
<p><b>e)</b> Supply and laying of MS fuel line connection between fuel tank and the engine with suitable supports</p>						
<p><b>f)</b> Mounting of starting batteries on suitable platform with necessary supports.</p>						
<p><b>g)</b> Supply of residential silencer</p>						

	h) Acoustic hood for housing the above DG set to be mounted on a concrete platform. The acoustic enclosure shall be of suitable size as per norms prescribed by Central Pollution Control Board (CPCB). The guaranteed noise level shall not exceed 75 decibels at 1 metre distance.						
	The enclosure shall be totally weather, vermin and dust proof to enable the generator to operate at an ambient temperature of 48°C. The outer casing of the container shall be of sheet steel of suitable thickness. The total container shall be of powder coated.						
	i) The base frame shall be of fabricated MS channel frame of rigid welded construction for mounting the generator set						
	j) providing ducting for hot air (if necessary)						
2	<b>Erection, Testing and commissioning of 320KVA Diesel generator set.</b>						
a	Providing suitable foundation for accommodating the 320 KVA DG set. The drawings in this regard furnishing detailed specification for the foundation of the DG set as recommended by the DG set manufacturer shall be got approved by the UIIC / consultant before erection of the work.						
b	Supply and installation of M.S. cable adopter box (made of 14 SWG sheet steel) with suitable copper bus extension link from alternator. The adopter box shall have tinned copper bus bar of suitable size for phases and neutral with suitable holes for cable termination (2 x 3.5 core, 240 Sq.mm Aluminium Armoured Cable). Necessary rubber gaskets between alternator and cable box shall be provided to avoid vibration between adopter box and alternator.	1	No.				
c	Insulation for the residential silencer	1	set				

d	Supply and installation of MS exhaust pipe of suitable thickness with 150mm dia from the silencer complete with necessary supports, brackets etc. The support shall have intervals of not more than 2.5m. The details of support proposed for the lengthy MS exhaust pipe shall be got approved by the UIIC/Consultant. The entire steel work required for supporting the exhaust pipe shall be included. <b>No separtate payment shall be made in this regard for this supports to the exhaust pipe.</b>	8	Mtrs.				
e	Supply and installation of MS exhaust pipe of suitable thickness with 200mm dia complete with MS wall / ceiling support, etc. The support shall have intervals of not more than 2.5m. The details of support proposed for the lengthy MS exhaust pipe shall be got approved by the UIIC/Consultant. The entire steel work required for supporting the exhaust pipe shall be included. <b>No separtate payment shall be made in this regard for this supports to the exhaust pipe.</b>	30	Mtrs.				
f	Supply and installation of exhaust pipe thermal insulation lagging with mineral wool as per IS 3677 / 1973 reinforced with chicken mesh and cladded with aluminium sheet of 26 SWG and thermal insulation with 64 Kg/Cu. Mtr. Density.	38	Mtrs.				
g	Supply and installation of stainless stell rain hood / rain cap / bend at top of the exhaust pipe to prevent rain water entry to exhaust pipe with provision of drain plug in the system.	1	set				
h	Supply and fixing of SS flexible bellows	2	nos				
<b>CABLING &amp; END TERMINATIONS</b>							

3	Supply and laying / clamping of 3.5 core 240 Sq.mm. PVC insulated LT UG armoured aluminium cable from alternator to control panel and control panel to the proposed to the main panel. If necessary the cables are to be laid in a trench to be excavated at a depth of 0.75m, putting 0.15m layer of sand and covering the three sides of the cable with bricks and sands refilling the earth to make good /to be laid in 150mm dia hume pipe.	150	Mtrs.				
4	Supply and providing cable end termination of 3.5 x 240 Sq. mm PVC insulated LT UG Aluminium armoured cable with necessary aluminium cable sockets by crimping etc. with electrical connection complete.	8	Nos.				
5	Supply and fixing of brass cable gland for 3.5 core x 240 Sq.mm PVC armoured LT UG cable with earth connection.	8	Nos.				
<b>EARTHING &amp; EARTH CONNECTIONS</b>							
6	Supply and run of 25mm x 3mm tin coated coper flat from the earthing to the control panel / alternator body earthing and interconnection of earthings .	50	Mtrs.				
7	Supply and run of 25mm x 6mm tin coated coper flat from the earthing to the neutral of the alternator.	20	Mtrs.				
8	Supply and run of 2 of No.8 tin copper for earth connection.	50	Mtrs.				
9	Earthing as per the ISI specification with an earth electrode of 2.1 mtr class 'B' GI pipe of dia not less than 40mm, with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements including supply and providing of required quantity of salt and charcoal with necessary masonry work and with 40mm RCC cover / CI cover slab for the brick masonry.	4	Nos.				

10	Earthing with copper earth plate 600 x 600 x 3 mm thick with an earth electrode of 2.1 mtr class 'B' GI pipe of dia not less than 40mm, with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements including supply and providing of required quantity of salt and charcoal with necessary masonry work and with 40mm RCC cover / CI cover slab for the brick masonry.	2	Nos.				
<b>TRIAL RUN OF DG SET</b>							
11	Trial run of DG set with consumables (including first charging of lubricating oil & necessary fuel) for 3 days@ 5 hours per day at load. (Diesel for testing shall be supplied by the client).	1	LS				
<b>OVERHAULING OF 630A MAIN SWITCH IN THE TRANSFORMER ROOM</b>							
12	Completer overhauling, painting, renewal of cable box and extension of bus including modification of existing bus chamber to suit the site conditions covering the entire arrangements with 14 SWG MS Sheet and earth connections with 2 runs of No. 8 SWG copper for earth connection the existing main switch in the transformer room.	1	No.				
<b>SUPPLY AND LAYING OF CONTROL CABLES</b>							
13	Supply and laying of 4 core 2.5 sq. mm PVC sheathed and armoured copper cable from alternator to the proposed DG panel in the existing cable trenches/hume pipe.	300	Mtrs.				
<b>CHANGE OVER PANEL</b>							



14	<p>Supply and erection of 630 Amps capacity floor mounting panel board (Cubicle type) with bus bar chamber made up of 16 SWG MS sheet for 3 phase 4 wire system with 50mm x 10mm tin coated copper flat for phases and 25mm x 10mm tin coated copper flat for neutral; cable chamber, switch chamber and with 2 Nos. 25mmx3mm tinned copper flat for the earth bus on the rear side of the panel board; necessary interconnections by copper flat of suitable sizes; suitable PVC colour sleeves for the interconnecting copper flats / rigid copper wire; earth connections to all switches / bus bar by copper flats of suitable sizes from the earth bus; hylam sheet separation between bus bar and switches; 1set LED pilot lamps with switches, fuse units, suitable angle iron frame size of 40mmx 40mmx 6mm with powder coated painting over one coat of red primer and with numbering; superscription of cables sizes, capacity of switches etc and incorporating the following:</p>					
	<p><b>Incoming:</b> 2 nos. 630A 35KA FP MCCB with all protective devices and mechanical interlocking with these two incomers.</p> <p><b>Outgoings:</b> 9 nos. 125A 15KA TPN MCCB with all protective devices 2 no. 63A 15KA TPN MCCB with all protective devices.</p> <p>Bus capacity: 630A 3 phase 4 wire system with copper bus Dummy provision - 1 No.</p>					
	<p>1set LED pilot lamps with fuse units, switches and interconnections; inter connection to the bus bar by 50mm x 10mm TC copper flat for phases and 25mm x 10mm TC copper flat for neutral from 630A 35KA MCCB to the bus; interconnection by 25mm x 3 mm for TC copper flat for phases and neutral from the bus to the 125A TPN MCCB; SWG No.6 TC copper flat for phases and neutral from the 63A TPN MCCB: 6mm thick hylam sheet separation between bus bar chamber and switches chamber; insulators for the support for the bus; superscribing on the panel board the size, capacity of cable, switches, location etc. 2 nos. metallic danger boards (In Ground Floor)</p>	1	No.			

15	Removal of existing 630 amps breaker (presently used as an incomer in the existing panel from the DG set) including the interconnection between breaker and bus and also supply and fixing of 630 A TPN 35 KA MCCB with interconnection with copper flats of suitable sizes in the existing location. This will serve as outgoing MCCB from the old panel.(Cables 2 Runs X 3.5C X 240 sq mm XLPE cable from this MCCB shall be taken to the incomer of the proposed 630 A panel.	1	No.				
<b>CABLE TRAY</b>							
16	Supply and fixing of perforated cable trays of sizes as given below made out of 14 SWG CRCA sheet steel and hot dip galvanized with supports and at every 1.2 mtr. interval using supports of MS angle of suitable size. The supports shall be painted with Red-oxide primer and two quotes of aluminium paints.						
	a) 300 x 50 mm	60	Mtrs.				
	b) 200 x 50 mm	60	Mtrs.				
<b>DISTRIBUTION CABLE LAYING</b>							
17	Supply and laying of PVC / XLPE, conductor 1.1KV grade armoured, MV cable of the following sizes in the existing cable trays / trenches as required generally confirming to IS: 1554/Part - I / 1970 from the existing MV panel to the proposed 630A change over panel and from the same to the existing panel for connection to the load.						
	Note: If necessary the cables are to be laid in ground / in a trench to be excavated at a depth of 0.75 Mtr. putting 0.15 Mtr. layer of sand and covering the cable completely with brick and sand and refilling the earth to make good/to be laid in 150mm dia hume pipe.						
	a) 3.5 c x 95 sqmm aluminium cable	150	Mtrs.				
	b) 3.5 x 70 sqmm aluminium cable	150	Mtrs.				
18	Supply and fixing of brass cable gland for XLPE armoured LTUG cable for following sizes with earth connection.						
	a) 3.5 c x 95 sqmm aluminium cable	24	Nos.				

	b) 3.5 x 70 sqmm aluminium cable	24	Nos.				
19	Supply and providing cable end termination of following sizes of XLPE armoured LTUG Aluminium cable with necessary aluminium cable sockets by crimping etc. with electrical connection complete.						
	a) 3.5 c x 95 sqmm aluminium cable	24	Nos.				
	b) 3.5 x 70 sqmm aluminium cable	24	Nos.				
20	Supply and providing cable straight through joining suitable for 3.5c X 95 sq mm/ 70 sq mm aluminium armoured cable with heat shrinkable jointing kits.	10	Nos				
<b>APPROVAL BY CEA/CEIG</b>							
21	Preparation of necessary drawings for approval by Chief Electrical Inspector to Government / CEA, obtain approval for the same, arrange for the inspection by the Electrical Inspectorate Officials and obtain safety certificate from them for commissioning the installation (This building is fed by HT power supply) <b>including approval for Drawing.</b>	1	LS				
<b>TOTAL</b>							
<b>TOTAL Supply + Erection- A</b>							
<b>ANNUAL MAINTENANCE CONTRACT</b>							
<b>(Non-Comprehensive)</b>							
<b>(to be considered for Tender Evaluation purposes)</b>							
	Scope of AMC: AMC shall include supply of required lub oil, greasing, oiling, replacement of filters viz., Air filter, Oil filter, Fuel filter, etc., at periodical intervals of 4 times in a year for every 300 hours of running .						
22	AMC for the 1st year after the guarantee period / D.L.P. of two years.						
23	AMC for the 2nd year after the guarantee period / D.L.P. of two years.						
24	AMC for the 3rd year after the guarantee period / D.L.P. of two years.						

	<b>Total (inclusive of service contracts )</b>						
<b>NOTE</b>							
<b>1</b>	<b>The rate quoted shall be inclusive of excise duty, CST, Service Tax, VAT etc.,</b>						
<b>2</b>	<b>All the civil works required for the erection of DG set, control panel, exhaust pipe, change over panel, laying of cables etc., are deemed to be included in this BOQ.</b>						