OIL INDIA LIMITED
(A Government of India Enterprise)
CONTRACTS DEPARTMENT
P.O. : Duliajan- 786602, Assam

CORRIGENDUM – 2

CORRIGENDUM dated 18.09.2018 to Tender No. CDI8622P19

This Corrigendum is issued to all concerned bidders of Tender No. CDI8622P19 to notify the following:-

1. Date & Time for Closing of Bid Sale of the above mentioned tender is extended to **27.09.2018 (15:30 Hrs IST).**

2. Bid Closing / Opening Date & Time for the above mentioned tender is extended to **04.10.2018 (11:00 Hrs / 14:00 Hrs IST).**

3. Clauses of BEC/BRC, SCC and Annexure-SLA have been amended and uploaded in "Amendments" folder of e-tender portal as "**Amendments-Annexure A**".

4. Clauses of "Specification and Compliances" have been amended and uploaded in "Amendments" folder of e-tender portal as "**Amendments- Annexure B**". New excel sheet "Specification and Compliance_revised" has also been uploaded in the "Amendments" folder of e-tender portal. Bidders are requested to fill up this excel sheet and upload the same along with other technical bid documents of the tender.

18/9/18

(J.S. Mazumdar)
GM Contracts – Civil
For **CGM - Contracts**
For **RESIDENT CHIEF EXECUTIVE**

Corrigendum 2 to Tender No. CDI8622P19 dated: 18.09.2018 **ANNEXURE -A**

SL No	Page/Clause Ref #	Original Clause	Modified Clause
		BEC-BRC	
1	Pg-21 / Clause - 1.1.3, BEC	The bidder should have at least one CDCP certified personnel, one electrical engineer (having electrical supervisory license from any government agency) and one certified personnel in project management from PMI/IPMA on their payroll. (Relevant Certificates to be enclosed).	The bidder should have at least one CDCP certified personnel, one electrical engineer (having electrical supervisory license from any government agency) and one certified personnel in project management from PMI/IPMA/IIT on their payroll. (Relevant Certificates to be enclosed).
		SCC	
2	Pg-72/ Clause - 5.0 Manpower Requirement	Project Manager Min. 5 years in similar role, B.E / B.Tech / MBA, PMP certified.	Project Manager Min. 5 years in similar role, B.E / B.Tech / MBA, PMP Certified or Project Mgmt Certification from IIT.
3		Technical Consultant – Data Centre physical infrastructure Minimum 3 years, B.E. / B.Tech, Certified Data Centre Professional(CDCP)	Technical Consultant – Data Centre physical infrastructure Minimum 3 years, B.E. / B.Tech/MBA, Certified Data Centre Professional(CDCP)
4	Part III SCC Point 2.0 SITC	2. Supply, Installation, Testing and Commissioning	2. Supply, Installation, Testing and Commissioning The SOQ list is exhaustive but however any items/services required additionally to complete the project has to be provisioned/facilitated by the bidder at no extra cost.
		Annexure-SLA	
5	SLA Range of services Point 5	Vendor management services to manage the suppliers of any other hardware/software, which were not in the scope of the contract for establishing the Data Centre, so as to provide maintenance and operational support for those hardware/software items.	~~Vendor management services to manage the suppliers of any other hardware/software, which were not in the scope of the contract for establishing the Data Centre, so as to provide maintenance~~ ~~and operational support for those hardware/software items.~~

SL No	Page/ Clause Ref #	Original Clause	Modified Clause
Technical Specification(ELECTRICAL DISTRIBUTION SYSTEM in Specification and Compliance excel sheet)			
1	B 4.1	All power shall be PVCA copper cable conforming to relevant BIS codes. Sizing of cable shall be as per panel incomer size. Note: Power cable from USS and DG set to LT cable shall be provided by OIL. All other cables shall be in scope of bidder.	All power shall be PVCA copper cable conforming to relevant BIS codes. Sizing of cable shall be as per panel incomer size. Note: ~~Power cable from USS and DG set to LT cable shall be provided by OIL. All other cables shall be in scope of bidder.~~ The supply and commissioning of all the power and necessary cables shall be in the bidders scope.
Technical Specification(DG in Specification and Compliance excel sheet)			
2	C 1.1	The Diesel engine should be a four stroke, multi cylinder, turbocharged/Natural aspirated, heat exchanger/ radiator cooled having electric (battery) starting system rated for continuous power and capable of developing at least 290 Net Brake Horse power at 1500 rpm.	The Diesel engine should be a four stroke, multi cylinder, turbocharged/Natural aspirated, heat exchanger/ radiator cooled having electric (battery) starting system rated for continuous power and capable of developing at least 290 Net Brake Horse power at 1500 rpm. **Make : Kirloskar/Cummins/Caterpillar/Greaves**
3	C 1.2	The engine mounted instrument panel shall consist of a shock-mounted formed and welded enclosure. The instrument panel should include the following: • Lubricating Oil pressure gauge • Lubricating oil temperature gauge • Water temperature gauge • Starting Switch • Mechanical/Digital tachometer and hour meter • Circuit Breaker • Ampere meter • Electric service meter	The engine mounted instrument panel shall consist of a shock-mounted formed and welded enclosure. The instrument panel should include the following: • Lubricating Oil pressure ~~gauge~~ display • Lubricating oil temperature ~~gauge~~ display • Water temperature ~~gauge~~ display • Starting Switch • Mechanical/Digital tachometer and hour meter • Circuit Breaker • Ampere meter ~~• Electric service meter~~
4	C 1.14	• 1 No. M.C. Voltmeter, 1.0% accuracy, 96 sq. mm, 0 - 500 V **(AEL/L&T make)** • 1 No. Voltmeter selector switch **(Kaycee/ Salzer / L&T make)** • 1 No. M.C Ammeter, 1.0% accuracy, 96 sq. mm, 0-500 Amps, C.T. operated (AEL/L&T make) • 1 No. Ammeter selector switch **(Kaycee/ Salzer / L&T make)** • 1 No. Digital frequency meter, 48 X 96 mm, scaled 0-100 Hz, suitable for 240 V AC operations, with a single pole ON / OFF switch **(AEL/ Rishab Instruments make)** • 1 No. MC KW meter, Dynamometer type, 3 ph, 3 element, 96 sq.mm, 1.0% accuracy 0 - 300 KW **(AEL/L&T make)**	• 1 No. M.C. Voltmeter, 1.0% accuracy, 96 sq. mm, 0 - 500 V **(AEL/L&T make/or any other certified by DG OEM)** • 1 No. Voltmeter selector switch **(Kaycee/ Salzer / L&T make/or any other certified by DG OEM)** • 1 No. M.C Ammeter, 1.0% accuracy, 96 sq. mm, 0-500 Amps, C.T. operated (AEL/L&T make) • 1 No. Ammeter selector switch **(Kaycee/ Salzer / L&T make/or any other certified by DG OEM)** • 1 No. Digital frequency meter, 48 X 96 mm, scaled 0-100 Hz, suitable for 240 V AC operations, with a single pole ON / OFF switch **(AEL/ Rishab Instruments make/or any other certified by DG OEM)** • 1 No. MC KW meter, Dynamometer type, 3 ph, 3 element, 96 sq.mm, 1.0% accuracy 0 - 300 KW **(AEL/L&T make/or any other certified by DG OEM)**
5	C 1.15	• The control panel should have following indication lamps mounted on panel front door. All lamps shall be of LED type, having long life and low energy consumption. Lamps shall remain ON after MCCB trips to indicate the type of fault. Lamp reset button shall be pressed to switch off the lamps. **Binay /L&T Make** long life industrial	• The control panel should have following indication lamps mounted on panel front door. All lamps shall be of LED type, having long life and low energy consumption. Lamps shall remain ON after MCCB trips to indicate the type of fault. Lamp reset button shall be pressed to switch off the lamps. **Binay /L&T Make/or any other**

		type LED Lamps. 1. Earth leakage Trip. 2. Generator under/overvoltage 3. Engine fault. Faults like low lube oil press, high water temp, over-speed. LED voltage as per engine battery voltage. 4. Set running. 5. Set on load 6. Low engine speed.	**certified by DG OEM** long life industrial type LED Lamps. 1. Earth leakage Trip. 2. Generator under/overvoltage 3. Engine fault. Faults like low lube oil press, high water temp, over-speed. LED voltage as per engine battery voltage. 4. Set running. 5. Set on load 6. Low engine speed.
6	C 1.16	• Panel should have one set of TP & N electrolytic grade, high conductivity, tinned copper bus-bars, made from electrolytic grade copper of 99.0 % purity, rated 800 amps (Free air rating at 40°C ambient) and supported at required intervals to withstand short circuit fault levels up to 50 KA for 1 sec. Bus-bar support shall be non- hygroscope SMC / FRP and the Bus-bar shall be insulated with heat shrinkable PVC sleeves. Rating of neutral bar 50% of phase bar rating. Incoming and outgoing power cable shall terminate on tinned copper links. The outgoing link shall be suitable for termination of either one no. 3.5x300 sq mm power cable. However it shall also have termination arrangement for three nos. 4x50 sqmm power cables. Suitable terminating holes shall be provided in the terminal link. • 1No. 630 Amps TP & N CFS units, fused 400 Amps, type: CMM 630 **(GE make)**. Handle shall be operated without opening the panel door. • One Neutral earthing switch for isolating neutral bus from earth system. Switch rating 200 amp. Switch handle accessible after opening panel door only.	• Panel should have one set of TP & N electrolytic grade, high conductivity, tinned copper bus-bars, made from electrolytic grade copper of 99.0 % purity, rated 800 amps (Free air rating at 40°C ambient) and supported at required intervals to withstand short circuit fault levels up to 50 KA for 1 sec. Bus-bar support shall be non- hygroscope SMC / FRP and the Bus-bar shall be insulated with heat shrinkable PVC sleeves. Rating of neutral bar 50% of phase bar rating. Incoming and outgoing power cable shall terminate on tinned copper links. The outgoing link shall be suitable for termination of either one no. 3.5x300 sq mm power cable. However it shall also have termination arrangement for three nos. 4x50 sqmm power cables. Suitable terminating holes shall be provided in the terminal link. • 1No. 630 Amps TP & N CFS units, fused 400 Amps, type: CMM 630 **(GE make/or any other certified by DG OEM)**. Handle shall be operated without opening the panel door. • One Neutral earthing switch for isolating neutral bus from earth system. Switch rating 200 amp. Switch handle accessible after opening panel door only.
7	C 1.17	• 1 No. 630 Amps, 4 poles, MCCB, 36 KA breaking, with inbuilt electronic type adjustable overload & short circuit protection. 240v AC shunt trip coil is required for external tripping. Front Drive kit with door interlocking facility to ensure that the door can be opened only when the MCCB is in the OFF position. MCCB with electronic trip release, Adjustable: 160-630 amp. MCCB shall have motorized spring charging mechanism and 240v AC closing coil for automatic closing of MCCB after genset starts and all parameters are in normal operating range. All terminals of MCCB shall have spreader links for connection to incoming and outgoing side terminal bars **(make of spreader link same as MCCB make)**. **Make of MCCB: Legrand/ Merlin-Gerin/Siemens/GE.** • One overvoltage, under voltage protection relay with time lag for protection of generator winding. Range: Voltage 75-115% adjustable, Time 0-5 sec adjustable. **Make: Telemecanique/ L&T/Siemens/Areva.**	• 1 No. 630 Amps, 4 poles, MCCB, 36 KA breaking, with inbuilt electronic type adjustable overload & short circuit protection. 240v AC shunt trip coil is required for external tripping. Front Drive kit with door interlocking facility to ensure that the door can be opened only when the MCCB is in the OFF position. MCCB with electronic trip release, Adjustable: 160-630 amp. MCCB shall have motorized spring charging mechanism and 240v AC closing coil for automatic closing of MCCB after genset starts and all parameters are in normal operating range. All terminals of MCCB shall have spreader links for connection to incoming and outgoing side terminal bars **(make of spreader link same as MCCB make)**. **Make of MCCB: Legrand/ Merlin-Gerin/Siemens/GE/or any other certified by DG OEM.** • One overvoltage, under voltage protection relay with time lag for protection of generator winding. Range: Voltage 75-115% adjustable, Time 0-5 sec adjustable. **Make: Telemecanique/ L&T/Siemens/Areva/or any other certified by DG**

			OEM.
8	C 1.18	• One Earth-leakage: EL protection shall be provided with separate CBCT & ELR . EL current Range: 0-3 A, adjustable in preferred steps of 100mA • Trip Time Range: 0-3 sec, adjustable in preferred steps of 100ms. • The relay shall have indication LEDs, test push button, reset push button and shall be duly wired up to trip MCCB in case of earth leakage. • **Make: Merlin Gerin/ GE/MDS-Legrand** • 1 No. Under Frequency Relay, solid state type, with electronic timer (0- 10 sec adjustable delay) for tripping the MCCB if the generator frequency is less than the set value (45hz to 49hz, adjustable in steps) for more than 5 sec. The relay should be EMC and immune to EMI and approved by ISI/IEC. **Make: GE/ABB/Merlin Gerin/Legrand/ Schneider/ L&T/Siemens for relay and L&T/GEPC/Siemens for timer.**	• One Earth-leakage: EL protection shall be provided with separate CBCT & ELR . EL current Range: 0-3 A, adjustable in preferred steps of 100mA • Trip Time Range: 0-3 sec, adjustable in preferred steps of 100ms. • The relay shall have indication LEDs, test push button, reset push button and shall be duly wired up to trip MCCB in case of earth leakage. • **Make: Merlin Gerin/ GE/MDS-Legrand/or any other certified by DG OEM.** • 1 No. Under Frequency Relay, solid state type, with electronic timer (0- 10 sec adjustable delay) for tripping the MCCB if the generator frequency is less than the set value (45hz to 49hz, adjustable in steps) for more than 5 sec. The relay should be EMC and immune to EMI and approved by ISI/IEC. **Make: GE/ABB/Merlin Gerin/Legrand/ Schneider/ L&T/Siemens for relay and L&T/GEPC/Siemens/or any other certified by DG OEM for timer.**
9	C 1.19	• 1 No. KWH meter integrating, electronic type with digital display and suitable for balanced and unbalanced loads, C.T. operated, 3 ph, 4 wire. **Alsthom/L&T make.** • Bar Primary Resin cast CT of 200/5 ratio , 15 VA , class-1 conforming to IS 2705 **(AEL / Kappa make)**. No. of CTs as per circuit requirement. • Auxiliary Relay/ Contactor with minimum two spare contacts for engine protection wiring and control system. Quantity should be as per the control circuit requirement. **(L&T /Siemens/ Schnieder make)** • HRC instrument fuse holders NS type phenol moulded with suitable fuses & links for different circuits. Separate fuses and neutral links shall be provided for control circuit indicating system lamps, instruments, enclosure illumination and tripping circuit **(GEPC make)**.	• 1 No. KWH meter integrating, electronic type with digital display and suitable for balanced and unbalanced loads, C.T. operated, 3 ph, 4 wire. **Alsthom/L&T make/or any other certified by DG OEM.** • Bar Primary Resin cast CT of 200/5 ratio , 15 VA , class-1 conforming to IS 2705 **(AEL / Kappa/or any other certified by DG OEM make)**. No. of CTs as per circuit requirement. • Auxiliary Relay/ Contactor with minimum two spare contacts for engine protection wiring and control system. Quantity should be as per the control circuit requirement. **(L&T /Siemens/ Schnieder/or any other certified by DG OEM make)** • HRC instrument fuse holders NS type phenol moulded with suitable fuses & links for different circuits. Separate fuses and neutral links shall be provided for control circuit indicating system lamps, instruments, enclosure illumination and tripping circuit **(GEPC/or any other certified by DG OEM make)**.
10	C 1.21	• Wiring for Engine protection system should be done with 2.5 sq.mm, heat and oil resistant PVC insulated 650v grade flexible copper cable. Engine protection wiring shall operate from starter battery. Wires must be approved by IS for engine wiring. All the cables for engine protection system and for connection between engine and control panel are to be supplied and connected by the bidder with approved ferrules and lugs. Wiring scheme for engine protection switches shall be such that the protection circuit is enabled after starting the generator. This is required to prevent tripping of MCCB due to LLOP before	• Wiring for Engine protection system should be done with 2.5 sq.mm, heat and oil resistant PVC insulated 650v grade flexible copper cable. Engine protection wiring shall operate from starter battery. Wires must be approved by IS for engine wiring. All the cables for engine protection system and for connection between engine and control panel are to be supplied and connected by the bidder with approved ferrules and lugs. Wiring scheme for engine protection switches shall be such that the protection circuit is enabled after starting the generator. This is required to prevent tripping of MCCB due to LLOP before starting.

		starting. **Make: Finolex/ Havells.**	**Make: Finolex/ Havells/or any other certified by DG OEM.**
10	C 1.22	• Control panel inside wiring shall be done with 2.5 sq.mm flexible copper, 1100v grade PVC insulated wires approved by ISI, TAC, FIA. All wiring will have copper lugs & terminal blocks as required. Engine protection wiring working on starter battery supply shall be suitably colour coded inside the control panel and separated from 240vAC control wiring for safety reasons. There shall be separate TB provided for connecting trip contacts of remote tripping device or switch. **Make: Finolex/ Havells. Colour code for wires shall be as per IS.**	• Control panel inside wiring shall be done with 2.5 sq.mm flexible copper, 1100v grade PVC insulated wires approved by ISI, TAC, FIA. All wiring will have copper lugs & terminal blocks as required. Engine protection wiring working on starter battery supply shall be suitably colour coded inside the control panel and separated from 240vAC control wiring for safety reasons. There shall be separate TB provided for connecting trip contacts of remote tripping device or switch. **Make: Finolex/ Havells/or any other certified by DG OEM. Colour code for wires shall be as per IS.**
11	C 1.23	• Output from the Alternator shall be connected to control panel input with heavy duty 3.5 X 300 sq.mm, 1100v grade, PVC insulated and PVC sheathed, armored, stranded copper cable approved by IS-1554. Flexible copper cable of specified size in heavy duty metallic conduit may also be used but the conduit entry at enclosure side shall be with suitable couplers, clamps. This cable to be supplied & connected by the bidder. **Make: NICCO, CCI, Finolex, Havells.** • AVR shall also be wired from alternator terminal box to control panel by the party using heavy duty PVC insulated and PVC sheathed, 1100 v grade armoured, stranded, IS-1554 approved copper cable of suitable size. Cables for AVR supply and exciter control to be supplied and terminated by the bidder. **Make: NICCO, CCI, Finolex, Havells.**	• Output from the Alternator shall be connected to control panel input with heavy duty 3.5 X 300 sq.mm, 1100v grade, PVC insulated and PVC sheathed, armored, stranded copper cable approved by IS-1554. Flexible copper cable of specified size in heavy duty metallic conduit may also be used but the conduit entry at enclosure side shall be with suitable couplers, clamps. This cable to be supplied & connected by the bidder. **Make: NICCO, CCI, Finolex, Havells/or any other certified by DG OEM.** • AVR shall also be wired from alternator terminal box to control panel by the party using heavy duty PVC insulated and PVC sheathed, 1100 v grade armoured, stranded, IS-1554 approved copper cable of suitable size. Cables for AVR supply and exciter control to be supplied and terminated by the bidder. **Make: NICCO, CCI, Finolex, Havells/or any other certified by DG OEM.**
12	C 1.24	• Similar cable as mentioned above and of suitable size shall be provided and wired by the party for enclosure blower motor. • Heavy duty Single Compression Cable Glands shall be used at all cable entries for power and control cables. Cable Glands shall also be provided for the outgoing power cable. All cable glands to be supplied by the party. **Make: Baliga/ GMI/Dowells.** • All power and control cable terminal ends will have suitable heavy duty crimping lugs of tinned copper. All lugs supplied by the party. **Make: Dowells.** • Engine control wiring will run from engine to control panel in heavy duty ISI approved galvanized flexible MS conduit supplied by the party. Else 1100v grade, PVC insulated and PVC sheathed armored, stranded, IS-1554 approved copper cable of 2.5 sq mm size shall be used.	• Similar cable as mentioned above and of suitable size shall be provided and wired by the party for enclosure blower motor. • Heavy duty Single Compression Cable Glands shall be used at all cable entries for power and control cables. Cable Glands shall also be provided for the outgoing power cable. All cable glands to be supplied by the party. **Make: Baliga/ GMI/Dowells/or any other certified by DG OEM.** • All power and control cable terminal ends will have suitable heavy duty crimping lugs of tinned copper. All lugs supplied by the party. **Make: Dowells/or any other certified by DG OEM.** • Engine control wiring will run from engine to control panel in heavy duty ISI approved galvanized flexible MS conduit supplied by the party. Else 1100v grade, PVC insulated and PVC sheathed armored, stranded, IS-1554 approved copper cable of 2.5 sq mm size shall be used.
13	C 1.26	• Enclosure will have three nos. of 20w FTL type luminaire mounted on enclosure wall and wired	• Enclosure will have three nos. of 20w FTL type luminaire mounted on enclosure wall and wired

		with heavy duty PVC insulated and PVC sheathed armored, stranded copper cable approved by IS. Lights will be switched from individual MCBs, 6amp, C curve, mounted on control panel cover & have back-up HRC fuse and neutral link of 16 amp rating. One no. industrial type metallic plug socket of 20amp rating with 10 amp SP MCB as switch shall also be fed from lighting circuit fuse. The socket should be mounted on the enclosure side. Power for lighting circuit and socket outlet should be taken from the main bus. **Make: Philips for luminaire & Legrand/ Merlin-Gerin/ Havells for MCB/ Metallic plug socket.**	with heavy duty PVC insulated and PVC sheathed armored, stranded copper cable approved by IS. Lights will be switched from individual MCBs, 6amp, C curve, mounted on control panel cover & have back-up HRC fuse and neutral link of 16 amp rating. One no. industrial type metallic plug socket of 20amp rating with 10 amp SP MCB as switch shall also be fed from lighting circuit fuse. The socket should be mounted on the enclosure side. Power for lighting circuit and socket outlet should be taken from the main bus. **Make: Philips/or any other certified by DG OEM for luminaire & Legrand/ Merlin-Gerin/ Havells/or any other certified by DG OEM for MCB/ Metallic plug socket.**
14	C 1.27	1. The earthing scheme for the unit should be as per IS-3043. 2. Two nos. 50x6mm GI straps shall be suitably fixed near the unit skid. Galvanization thickness should be min. 85 micron and as per IS. Alternator earth terminals, control panel earth terminals, enclosure and truck chassis shall each be connected with two nos. separate cables to both the straps with independent connections at separate points. The neutral of the alternator will be earthed by connecting two nos. of earthing cables from neutral switch inside the panel. Suitable provision is required in the panel base plate for safe entry of earth cable. Heavy duty PVC insulated, stranded, single core, IS approved copper cables of 120 sq.mm size shall be used for each enclosure earth and neutral earth connection. The cables to be terminated with lugs and suitably protected against mechanical damage. Earth cable shall be protected to avoid any damage and to be run in galvanized, flexible MS conduit. **Make: Finolex/ Havells for cable.**	1. The earthing scheme for the unit should be as per IS-3043. 2. Two nos. 50x6mm GI straps shall be suitably fixed near the unit skid. Galvanization thickness should be min. 85 micron and as per IS. Alternator earth terminals, control panel earth terminals, enclosure and truck chassis shall each be connected with two nos. separate cables to both the straps with independent connections at separate points. The neutral of the alternator will be earthed by connecting two nos. of earthing cables from neutral switch inside the panel. Suitable provision is required in the panel base plate for safe entry of earth cable. Heavy duty PVC insulated, stranded, single core, IS approved copper cables of 120 sq.mm size shall be used for each enclosure earth and neutral earth connection. The cables to be terminated with lugs and suitably protected against mechanical damage. Earth cable shall be protected to avoid any damage and to be run in galvanized, flexible MS conduit. **Make: Finolex/ Havells/or any other certified by DG OEM for cable.**
15	C 1.33	The following components shall be fitted in the panel: 1. 415v, four pole, 250 amp Motorized Spring Control Changeover MCCB. 2. Automatic electronic controller for line changeover. The controller shall monitor the supply voltage and on failure of supply mains, start the genset and changeover the supply to generator after buildup of generator voltage. Similarly on restoration of supply mains the controller shall changeover to the mains and sends a stop command to the genset. All logics shall be adjustable and have adjustable time control for. During failure of mains means shall be provided for operation of controller. UPS or battery shall be provided in ATS panel for operation of controller during mains power failure.	The following components shall be fitted in the panel: 1. 415v, four pole, 250 amp Motorized Spring Control Changeover MCCB. 2. Automatic electronic controller for line changeover. The controller shall monitor the supply voltage and on failure of supply mains, start the genset and changeover the supply to generator after buildup of generator voltage. Similarly on restoration of supply mains the controller shall changeover to the mains and sends a stop command to the genset. All logics shall be adjustable and have adjustable time control for. During failure of mains means shall be provided for operation of controller. UPS or battery shall be provided in ATS panel for operation of controller during mains power failure.

<table>
<tr><td></td><td></td><td>3. Terminal links of tinned copper for all power cables.
4. Terminals for termination of control cables. Make of ATS and Controller- Legrand/ Merlin Gerin/ Siemens.</td><td>3. Terminal links of tinned copper for all power cables.
4. Terminals for termination of control cables. Make of ATS and Controller- Legrand/ Merlin Gerin/ Siemens/or any other certified by DG OEM.</td></tr>
<tr><td colspan="4">Technical Specification(UPS SYSTEM (Auxiliary for other loads) in Specification and Compliance excel sheet)</td></tr>
<tr><td>16</td><td>D
2.1</td><td>2X10 KVA parallel load balanced Hi-Performance On Line UPS system with Isolation Transformer and battery bank of 30 minutes using 12V, Sealed Maintenance Free Batteries.</td><td>2X10 KVA parallel load balanced Hi-Performance On Line UPS system with Isolation Transformer and battery bank of 30 minutes using 12V, Sealed Maintenance Free Batteries.
Preferred makes: Vertiv/APC/Luminous/Eaton</td></tr>
<tr><td>17</td><td>D
2.3 to 2.6</td><td>Battery bus voltage : Rated ±240V

Float charge voltage : 2.25V/cell(selectable from 2.2V/cell～
2.35V/cell)
Constant current and constant voltage charge mode
Temperature compensation : -3.0(selectable:0~-5.0)
Ripple voltage : ≤ 1%
Ripple current : ≤ 5%
Equalized charge voltage : 2.4V/cell(selectable from : 2.30V/cell~2.45V/cell)
Final discharging voltage : 1.75V/cell(selectable from: 1.65V/cell~1.8V/cell)
Battery Charging Power Max Current : 10%* UPS capacity (selectable from : 0~20% * UPS capacity)
Rated capacity : 10 KVA
Rated AC voltage : 230V AC – Single Phase output
Rated Frequency : 50/60
Frequency Regulation : 50/60 Hz ± 0.1 %
Voltage precision : ± 1.5 (0 ~ 100 % load)
Overload : 110% for 60min;
125% for 10min;
150% for 1min;
> 150%,for 200ms</td><td>~~Battery bus voltage : Rated ±240V~~
-
~~Float charge voltage : 2.25V/cell(selectable from 2.2V/cell～~~
~~2.35V/cell)~~
~~Constant current and constant voltage charge mode~~
~~Temperature compensation : -3.0(selectable:0~-5.0)~~
~~Ripple voltage : ≤ 1%~~
~~Ripple current : ≤ 5%~~
~~Equalized charge voltage : 2.4V/cell(selectable from : 2.30V/cell~2.45V/cell)~~
~~Final discharging voltage : 1.75V/cell(selectable from: 1.65V/cell~1.8V/cell)~~
~~Battery Charging Power Max Current : 10%* UPS capacity (selectable from : 0~20% * UPS capacity)~~
~~Rated capacity : 10 KVA~~
~~Rated AC voltage : 230V AC – Single Phase output~~
~~Rated Frequency : 50/60~~
~~Frequency Regulation : 50/60 Hz ± 0.1 %~~
~~Voltage precision : ± 1.5 (0 ~ 100 % load)~~
~~Overload : 110% for 60min;~~
~~125% for 10min;~~
~~150% for 1min;~~
~~> 150%,for 200ms~~</td></tr>
</table>

		Synchronized Range : Settable, ±0.5Hz ~ ±5Hz, default ±3Hz		~~Synchronized Range : Settable, ±0.5Hz ~ ±5Hz, default ±3Hz~~
		Synchronized Slew Rate : Settable, 0.5 Hz/S ~ 3 Hz/S, default 0.5 Hz/S		~~Synchronized Slew Rate : Settable, 0.5 Hz/S ~ 3 Hz/S, default 0.5 Hz/S~~
		Output Power Factor : 0.9		~~Output Power Factor : 0.9~~
		Transient Response : < 5% for step load (20% - 80% -20%)		~~Transient Response : < 5% for step load (20% - 80% -20%)~~
		Transient recovery : < 30ms for step load (0% - 100% -0%)		~~Transient recovery : < 30ms for step load (0% - 100% -0%)~~
		Output Voltage THDu : < 1% from 0% to 100% linear load. < 6% full non-linear load according to IEC/EN62040-3		~~Output Voltage THDu : < 1% from 0% to 100% linear load. < 6% full non-linear load according to IEC/EN62040-3~~
		Rated AC voltage : 230V AC single Phase		~~Rated AC voltage : 230V AC single Phase~~
		Rated AC Current : 52 Amps		~~Rated AC Current : 52 Amps~~
		Overload : 110% Long term operation 110%~125% for 5min; 125%~150% for 1min 150%~400% for 1s; > 400% ,less than 200ms		~~Overload : 110% Long term operation 110%~125% for 5min; 125%~150% for 1min 150%~400% for 1s; > 400% ,less than 200ms~~
		Current rating of neutral cable : 52 Amps		~~Current rating of neutral cable : 52 Amps~~
		Rated frequency : 50/60		~~Rated frequency : 50/60~~
		Switch time (between bypass and inverter) : Synchronized transfer: 0ms		~~Switch time (between bypass and inverter) : Synchronized transfer: 0ms~~
		Bypass voltage range : Settable, default -20%~+15%		~~Bypass voltage range : Settable, default -20%~+15%~~
		Bypass frequency range : Settable, ±1Hz, ±3Hz, ±5Hz		~~Bypass frequency range : Settable, ±1Hz, ±3Hz, ±5Hz~~
		Synchronized Range : Settable ±0.5Hz~±5Hz, default ±3Hz		~~Synchronized Range : Settable ±0.5Hz~±5Hz, default ±3Hz~~
		Normal mode(dual conversion) : > 93%		~~Normal mode(dual conversion) : > 93%~~
		Battery mode : > 94%		~~Battery mode : > 94%~~
Technical Specification(PRECISION AIR CONDITIONERS in Specification and Compliance excel sheet)				
18	E 1.1	• The AC system shall be designed to maintain the temperature of Server room within the range of 16-20 deg C +/- 1 deg C- with relative Humidity of 45% ± 5%. The grill outlet temperature of de-humidified air set at <18 deg C. The inlet air to servers is in between 18- 21 deg C. against ambient temp: 48 DegC (max 50 DegC). Max RH : 90-95%. • The units should be of continuous duty rating, since PAC system shall run round the clock during the complete year (24 x 7 x 365), while maintaining specified conditions. • Refrigerant – R407C/R410A		• The AC system shall be designed to maintain the temperature of Server room within the range of ~~16-20 deg C +/- 1 deg C-~~ 24 deg C +/- 1 deg C with relative Humidity of 45% ± 5%. The grill outlet temperature of de-humidified air set at <18 deg C. The inlet air to servers is in between 18- 21 deg C. against ambient temp: ~~48 DegC~~ 45 DegC (max 50 DegC). Max RH : 90-95%. • The units should be of continuous duty rating, since PAC system shall run round the clock during the complete year (24 x 7 x 365), while maintaining specified conditions. • Refrigerant – R407C/R410A

		• Compressor – Digital Scroll • Air Cooled condenser • Filtration – Filter panels shall be integral to the unit, and withdraw able. • Humidifier – Humidifier shall be integral to the unit, withdraw able and serviceable.	• Compressor – Digital Scroll • Air Cooled condenser • Filtration – Filter panels shall be integral to the unit, and withdraw able. • Humidifier – Humidifier shall be integral to the unit, withdraw able and serviceable.
19	E 1.2	16 to 20DegC; +/- 1 DegC & 45% RH	~~16 to 20DegC; +/- 1 DegC & 45% RH~~ 24 DegC; +/- 1 DegC & 50% RH
20	E 1.3	48 DegC, with an expected max of 50 DegC	~~48 DegC, with an expected max of 50 DegC~~ 45 DegC, with an expected max of 50 DegC
21	E 1.5	Top Discharge, front return	~~Top~~ Bottom Discharge, ~~front~~ top return
22	E 1.11	Single circuit direct expansion type and incorporate hermetic scroll compressors, complete with crankcase heaters. Cooling steps shall be a maximum of 50% of total unit cooling capacity for one and two compressor models. The system shall include a manual reset high pressure control; auto reset low temperature switch, thermostatic / electronic expansion valve, high sensitivity refrigerant sight glass, large capacity filter drier and charging/access ports in each circuit. ~~Each refrigeration circuit shall include rigidly mounted isolation valves in the discharge and liquid lines to aid servicing and installation (air cooled units only).~~ For dual refrigeration circuits, it shall include rigidly mounted isolation valves in the discharge and liquid lines to aid servicing and installation (air cooled units only).	Single circuit direct expansion type and incorporate hermetic scroll compressors, complete with crankcase heaters. Cooling steps shall be a maximum of 50% of total unit cooling capacity for one and two compressor models. The system shall include a manual reset high pressure control; auto reset low temperature switch, thermostatic / electronic expansion valve, high sensitivity refrigerant sight glass, large capacity filter drier and charging/access ports in each circuit. ~~Each refrigeration circuit shall include rigidly mounted isolation valves in the discharge and liquid lines to aid servicing and installation (air cooled units only).~~ For dual refrigeration circuits, it shall include rigidly mounted isolation valves in the discharge and liquid lines to aid servicing and installation (air cooled units only).
23	E 1.17	• **Precision Air Conditioners :** VERTIV / Emerson • **Grille/diffuser:** Servex /Ravistar/ Core /Dynacraft/Mapro • **Floor/ Underdeck Insulation (Closed Cell Elastomeric Nitrile Rubber along with adhesive)** : Armacell – Armaflex (UK / German)/ Eurobatex – Union Foam (Italy)/ K- Flex/ Superlon • **Fans :** Axial / Centrifugal / Propeller Fans: Kruger/GEC (Alstom)/ NADI / Nicotra / Crompton • **Pipes :** MS / ERW / GI Zenith / Jindal / Tata / SAIL / ITC • **Fittings :** G.I Leader (ISI marked) / Zoloto (ISI marked) / Unique (ISI marked) • **False Flooring Tiles:**M-Floor/ KEBCO/ DONN / UNIFLAIR/ DMC	• **Precision Air Conditioners :** VERTIV / Emerson / schneider • **Grille/diffuser:** Servex /Ravistar/ Core /Dynacraft/Mapro • **Floor/ Underdeck Insulation (Closed Cell Elastomeric Nitrile Rubber along with adhesive)** : Armacell – Armaflex (UK / German)/ Eurobatex – Union Foam (Italy)/ K- Flex/ Superlon • **Fans :** Axial / Centrifugal / Propeller Fans: Kruger/GEC (Alstom)/ NADI / Nicotra / Crompton • **Pipes :** MS / ERW / GI Zenith / Jindal / Tata / SAIL / ITC • **Fittings :** G.I Leader (ISI marked) / Zoloto (ISI marked) / Unique (ISI marked) • **False Flooring Tiles:**M-Floor/ KEBCO/ DONN / UNIFLAIR/ DMC/ UNITILE / EVEREST
Technical Specification(IP CCTV SURVELLIANCE SYSTEM in Specification and Compliance excel sheet)			
24	L 1	IP CCTV SURVELLIANCE SYSTEM	IP CCTV SURVELLIANCE SYSTEM(QTY: 24 numbers)
25	L 1.1	1/3 Inch interline transfer CCD, 2.0 MP, Day / Night Color Dome Camera, ONVIF compliant, PoE and IR with fixed lens and SD5 imaging technology, complete with power supply and accessories. Video Compression: H.264, MJPEG both must be supported.	1/3 Inch interline transfer CCD, 2.0 MP, Day / Night Color Dome Camera, ONVIF compliant, PoE and IR with fixed lens and SD5 imaging technology, complete with power supply and accessories. IR range : minimum 30 metre. Protection : IP66,IK10.

		Protocols: IPv4, IPv6, TCP, HTTP, HTTPS, ICMP, SNMP. Ethernet: 10/100 Base-T, auto-sensing, half/full duplex, RJ45. Operating Temperature: 0-50 degree C. Power Supply: PoE (IEEE 802.3af compliant) Certifications: UL, CE, FCC certified as on date of submission of bid. Other Accessories: All necessary accessories for fixing of camera to Wall/Ceiling must be supplied.	Video Compression: H.264, MJPEG both must be supported. Protocols: IPv4, IPv6, TCP, HTTP, HTTPS, ICMP, SNMP. Ethernet: 10/100 Base-T, auto-sensing, half/full duplex, RJ45. Operating Temperature: 0-50 degree C. Power Supply: PoE (IEEE 802.3af compliant) Certifications: UL, CE, FCC certified as on date of submission of bid. Other Accessories: All necessary accessories for fixing of camera to Wall/Ceiling must be supplied.
26	L 1.1	16-channel Network Video Recorder with 10 TB storage, expandable. IP Video Input: The solution must support Video input from minimum 32 Nos of IP HD cameras. VGA Output: One HDMI Output: One Audio Output: One Storage Capacity: Minimum 10 TB Network Interface: 2 RJ45 100/1000 M USB Interface: One USB Interfaces Power Supply: AC 230V, 50Hz Working Temperature: 0- 50 degree C	~~16-channel~~ 32 channel Network Video Recorder with 10 TB storage, expandable. IP Video Input: The solution must support Video input from minimum 32 Nos of IP HD cameras. VGA Output: One HDMI Output: One Audio Output: One Storage Capacity: Minimum 10 TB Network Interface: 2 RJ45 100/1000 M USB Interface: One USB Interfaces Power Supply: AC 230V, 50Hz Working Temperature: 0- 50 degree C
27	L 1.1	PoE Switch-Minimum 16 port 100/1000 M PoE plus fully 802.3at compliant) switch with two Nos 1G SFP ports	2 nos of PoE Switch-Minimum 16 port 100/1000 M PoE plus fully 802.3at compliant) switch with two Nos 1G SFP ports
Technical Specification(Building Management System in Specification and Compliance excel sheet)			
28	P 1	Make: Vendor must specify Model: Vendor must specify	Make: Vendor must specify Model:Vendor must specify **Preferred makes: Siemens/ Honeywell/ schneider/ Atmos / Trane**