

SUGGESTIVE PRICE FORMAT				Doc No:		PE-PF-426-553-A001	
				Rev No:		0	
				Date of issue		29.05.2019	
NAME OF PROJECT:			1X660MW PANKI TPS				
NAME OF PACKAGE:			AIR CONDITIONING SYSTEM				
TECHNICAL SPECIFICATION No:			PE-TS-426-553-A001				
S. No.	DESCRIPTION			UNIT	QTY	HSN/SAC CODE	
1	Total lump sum firm price for Supply part, Services part and Mandatory spares comprising of design (i.e.preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables, mandatory spares alongwith spares for erection, startup and commissioning as required, forwarding, proper packing, shipment and delivery at site, unloading, handling, transportation & storage at site, in-site transportation, assembly, erection & commissioning, final painting at site, minor civil work, trial run at site and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), training of customer/client O&M staff and handover in flawless condition of the package to the end customer complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order.			LOT	1		
2	MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.						
2.1	Total lump sum firm price for Supply part comprising of design (i.e.preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables alongwith spares for erection as required, startup and commissioning spares as required, forwarding, proper packing, shipment and delivery at site for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-I)			LOT	1	84158290	
2.2	Total lumpsum firm prices for Services part comprising of service part for unloading, handling, transportation & storage at site, in-site transportation, assembly, erection & commissioning, final painting at site, minor civil work, trial run at site and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), training of customer/client O&M staff and handover in flawless condition of the package to the end customer complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-I)			LOT	1	995463	
2.3	Total lumpsum firm price for Mandatory spares comprising of manufacture, fabrication, assembly, inspection / testing (as applicable) at vendor's & sub-vendor's works, painting, forwarding, proper packing, shipment, delivery at site & guarantee as per tender technical specification above, amendment & agreements till placement of order. (Price break up of mandatory spares is to be furnished as per Annexure- II)			LOT	1	84159000	
Note: 1) PG to consider and suitably incorporate taxes, duties and other commercial aspects. 2) Bidder to quote the Prices in 'figures' along with corresponding 'words'.							
Particulars of bidder / authorised representative							
	Name	Designation	Signature	Date		Company Seal	

SUGGESTED PRICE FORMAT ANNEXURE - I						Doc No:	PE-PF-426-553-A001
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TECHNICAL SPECIFICATION No:				PE-TS-426-553-A001			
SL NO	DESCRIPTION	UNIT	Qty				
A	AC-Plant-1: CENTRAL CHILLED WATER SYSTEM FOR MAIN CR AREAS.UPS ROOM &SWAS ROOM						
1	Water Chilling packages, each of minimum 150 TR (actual) capacity consisting of Vapour Absorption Machine complete with high temperature generator, low temperature generator/ condenser assembly, Evaporator/ absorber assembly with eliminators, regenerative heat exchangers, purge recovery units, absorbent pumps, refrigerant pumps all interconnecting piping, valve and other accessories, micro processor based control panel incorporating controls safety & interlocks, required charge of lithium bromide solution and refrigerant for all the units, cooling/heating switch valves, structural mounting base for all the components etc. and accessories as specified including PRDS, condensate tank, desuperheating pump etc.	NO	1				
2	Microprocessor controlled, water cooled chiller package each of minimum capacity 75 TR (actual) consisting of Hermetically sealed Screw type refrigerant compressor operating on R134a / R407C refrigerant complete with motor, unit mounted starter, complete with suction and discharge shut off valves, HP / LP cut-outs, oil pressure failure switch, gauge panel, automatic capacity control; Condenser, relief valve, chiller, controls such as thermostatic/electronic expansion valve, cooling thermostat, antifreeze thermostat, water flow switch, integral refrigerant pipes & fittings, strainer, sight glass, isolating valves, chiller drain valve, chiller insulation, refrigerant piping insulation, first charge of gas and oil, base frames, vibration isolators, integral wiring, unit mounted isolator / fuse switch and other accessories as specified.	NO	2				
3	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, VFD driven centrifugal blower, TEFC sq. cage induction motor, filters (pre filter) control valve with thermostatic controls and other accessories to meet the AC load of the main CR areas at 17.0m. Fine Filters (99.5 p.c efficiency to 5 microns) at discharge for individual AHUs shall also be included.	NO	2				
4	Sheet metal cabinet type air handling units (double skin as per specification), consisting of chilled water cooling coil, VFD driven centrifugal blower, TEFC sq. cage induction motor, filters (pre filter), control valve with thermostatic controls and other accessories to meet the AC load of the main CR areas 8.5m. Fine Filters (99.5 efficiency to 5 microns) in discharge for individual AHUs shall also be included.	NO	2				
5	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan, motor, FRP basin, nozzles, make-up water & quick fill water connection, Level witch, drains, piping, valves, strainers, ladder & all accessories as specified.	NO	3				
6	Centrifugal pumps for condenser water recirculation complete with TEFC motor & all accessories as specified.	NO	3				
7	Centrifugal pumps for chilled water recirculation complete with TEFC motor & all accessories, as specified.	NO	3				
8	Make up water cum storage tank, for cooling towers MS (spray galvanised from inside) with accessories as required. Capacity of each tank is 8 m3	NO	2				
9	MS (spray galvanised from inside)/HDPE Expansion Tank for chilled water with all accessories as required, capacity 1 m3.	NO	1				
10	Skid mounted softening plant (2 x 60 %) with associated piping,valves, instruments, pumps for softening plant & regeneration pumps & tanks as applicable with suitable rubber lining & as per tender requirement , Along with chemicals/consumables for dosing and with all accessories as required to meet system requirements and as specified **	LOT	1				
11	Pumps motor set along with accessorie for supply of soft water to service building	No	2				
12	Pumps motor set along with accessories with for pumping of softening plant reject and cooling tower blow down to CMB	No	2				
13	HDPE Piping (3 ") complying to IS 4984, PN 10, PE80 carbon black, UV rating) along with valves for transferring softening plant reject and cooling tower blow down to CMB (ETP)	m*	380				
14	Online Non Chemical scale preventer, with all accessories as required to meet system requirements	No	1				
15	Condenser water piping with necessary fittings, strainers, valves including piping from TP of soft water storage tank to pan humidifiers of AHU room, condenser water pumps as specified/required.	LOT	1				

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16	Chilled water piping from AC plant to AHU rooms within power house building complete with valves supports, fittings, strainers, insulation with finish as per specification.	LOT	1				
17	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	LOT	1				
18	Pan type humidifiers for each AHU room	LOT	1				
19	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), dampers etc.	LOT	1				
B	AC-Plant-2:WATER COOLED DX CONDENSING TYPE AC for ESP-FGD CONTROL BLD.						
1	DX type, water cooled condensing unit of minimum 45 TR (ACTUAL) capacity. The refrigerant compressor shall be Scroll, hermetic / Semi-hermetic type suitable for Refrigerant R-134a / R-407c / R-410a environment friendly HFC refrigerants with drive package, Suction and discharge valves, capacity control system, expansion valve, crank case heater etc. A control panel shall be provided to house all gauges and controls. The panel shall contain all necessary terminal strips to facilitate external wiring. The unit shall be complete with expansion valve, all necessary fittings, accessories, insulated refrigerant piping to and from AHUs, foundation bolts, nuts, washers etc. complete in all respect.	NO	2				
2	Sheet metal cabinet type air handling units (double skin as per specification) The draw through horizontal AHUs shall comprise of , Dampers, pre filter, Fine Filters (99.5 efficiency to 5 microns) , DX-cooling coil, Electric heating coil, Electric steam humidifier and Fan section with fan (VFD driven) & TEFC sq. cage induction motor, condensate drain pan, thermostatic controls and other accessories, like ladder along with supporting structure for filter and plenum, etc. to meet the AC load of control room area as per specification.	NO	2				
3	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan (VFD driven), motor, FRP basin, nozzles, make-up water & quick fill water connection, Level witch, drains, piping, valves, strainers, ladder & all accessories as specified.	NO	2				
4	Centrifugal pump set for condenser water recirculation complete with TEFC motor & all accessories as specified	NO	2				
5	Make up water cum storage tank, for cooling towers of HDPE/MS (spray galvanised from inside) with accessories as required. Capacity of each tank shall be 6 m3	NO	2				
6	Condenser water piping with necessary fittings like tee, reducer, expander, elbow, flange, all types of valves with flanges, strainer with flange, air vent, etc. as per specification.	LOT	1				
7	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	LOT	1				
8	Pan type humidifier for AHU room.	LOT	1				
9	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), dampers etc.	LOT	1				
10	Skid mounted softening plant (2 x 100 %) with associated piping,valves, instruments, pumps for softening plant & regeneration pumps & tanks as applicable with suitable rubber lining & as per tender requirement , Along with chemicals/consumables for dosing and with all accessories as required to meet system requirements and as specified **	LOT	1				
11	Pumps motor set along with accessories with suitable rubber lining for pumping of softening plant reject and cooling tower blow down to CMB	No	2				
12	HDPE Piping (1 ") complying to IS 4984, PN 10, PE80 carbon black, UV rating) along with valves for transferring softening plant reject and cooling tower blow down to CMB (ETP)	M*	550				
C	AC-Plant-3: CENTRAL CHILLED WATER SYSTEM FOR SERVICE BLD.						
1	Microprocessor controlled, water cooled chiller package each of minimum capacity 200 TR (Actual) consisting of Hermetically sealed Screw type refrigerant compressor operating on R134a / R407C refrigerant complete with motor, unit mounted starter, complete with suction and discharge shut off valves, HP / LP cut-outs, oil pressure failure switch, gauge panel, automatic capacity control; Condenser, relief valve, chiller, controls such as thermostatic/electronic expansion valve, cooling thermostat, antifreeze thermostat, water flow switch, integral refrigerant pipes & fittings, strainer, sight glass, isolating valves, chiller drain valve, chiller insulation, refrigerant piping insulation, first charge of gas and oil, base frames, vibration isolators, integral wiring, unit mounted isolator / fuse switch and other accessories as specified. Chiller shall be complete in all respect in compliance to all mandatory requirement of GRIHA.	NO	2				

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2	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, VFD driven centrifugal blower, TEFC sq. cage induction motor, filters (pre filter control valve with thermostatic controls and other accessories to meet the AC load of each floor of service building. Fine Filters (99.5 efficiency to 5 microns) at discharge for individual AHUs shall also be included. VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA.	No*	5						
3	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan (VFD driven), motor, basin, nozzles, make-up water & quick fill water connection, Level Switch, drains, piping, valves, strainers, ladder & all accessories as specified.VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA.	NO	2						
4	Centrifugal pumps (VFD driven) for condenser water recirculation complete with TEFC motor & all accessories as specified.	NO	2						
5	Primary Centrifugal pumps for chilled water recirculation complete with TEFC motor & all accessories, as specified.	NO	2						
6	Secondary Centrifugal pump (VFD driven) sets for chilled water recirculation complete with TEFC motor & all accessories, as specified.VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA. .	NO	2						
7	Make up water cum storage tank (soft water), for cooling towers of HDPE/MS (spray galvanised from inside) with accessories as required. Capacity of each tank is 10 m3.	NO	2						
8	MS (spray galvanised) Expansion Tank (insulated) for chilled water with all accessories as required, capacity 1 m3.	NO	1						
9	Condenser water piping with necessary fittings, strainers, valves including piping from TP of soft water storage tank to pan humidifiers of AHU room, condenser water pump as specified.	LOT	1						
10	Chilled water piping from AC plant to AHU rooms within power house building complete with valves supports, fittings, strainers, insulation with finish as per specification.	LOT	1						
11	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	LOT	1						
12	Pan type humidifiers	LOT	1						
13	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters, dampers etc.	LOT	1						
D	AC-Plant-4: CENTRAL CHILLED WATER SYSTEM FOR ADMINISTRATIVE BLD.								
1	Microprocessor controlled, water cooled chiller package each of minimum capacity 200 TR (Actual) consisting of Hermetically sealed Screw type refrigerant compressor operating on R134a / R407C refrigerant complete with motor, unit mounted starter, complete with suction and discharge shut off valves, HP / LP cut-outs, oil pressure failure switch, gauge panel, automatic capacity control; Condenser, relief valve, chiller, controls such as thermostatic/electronic expansion valve, cooling thermostat, antifreeze thermostat, water flow switch, integral refrigerant pipes & fittings, strainer, sight glass, isolating valves, chiller drain valve, chiller insulation, refrigerant piping insulation, first charge of gas and oil, base frames, vibration isolators, integral wiring, unit mounted isolator / fuse switch and other accessories as specified.Chiller shall be complete in all respect in compliance to all mandatory requirement of GRIHA.	NO	2						
2	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, centrifugal blower, TEFC sq. cage induction motor, filters (pre filter control valve with thermostatic controls and other accessories to meet the AC load of each floor of administrative building. Fine Filters (99.5 efficiency to 5 microns) in discharge for individual AHUs (VFD driven) shall also be included. VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA.	No*	3						
3	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan (VFD driven), motor, basin, nozzles, make-up water & quick fill water connection, Level Switch, drains, piping, valves, strainers, ladder & all accessories as specified. VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA.	NO	2						
4	Centrifugal pump (VFD driven) sets for condenser water recirculation complete with TEFC motor & all accessories as specified.	NO	2						
5	Centrifugal pump sets for chilled water recirculation complete with TEFC motor & all accessories, as specified.	NO	2						

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SL NO	DESCRIPTION	UNIT	Qty				
6	Skid mounted softening plant (2 x 60 %) with associated piping,valves, instruments, pumps for softening plant & regeneration pumps & tanks as applicable with suitable rubber lining & as per tender requirement , Along with chemicals/consumables for dosing and with all accessories as required to meet system requirements and as specified **	LOT	1				
7	Pumps motor set along with accessories with suitable rubber lining for pumping of softening plant reject and cooling tower blow down to CMB	No	2				
8	HDPE Piping (2 ") complying to IS 4984, PN 10, PE80 carbon black, UV rating) along with valves for transferring softening plant reject and cooling tower blow down to CMB (ETP)	M*	200				
9	Make up water cum storage tank, for cooling towers of HDPE/MS (spray galvanised from inside) with accessories as required. Capacity of each tank is 10 m3	NO	2				
10	MS (spray galvanised) Expansion Tank (insulated) for chilled water with all accessories as required, capacity 1 m3.	NO	1				
11	Condenser water piping with necessary fittings, strainers, valves including piping from TP of soft water storage tank to pan humidifiers of AHU room, condenser water pump as specified.	LOT	1				
12	Chilled water piping from AC plant to AHU rooms within power house building complete with valves supports, fittings, strainers, insulation with finish as per specification.	LOT	1				
13	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	LOT	1				
14	Pan type humidifiers	LOT	1				
15	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters, dampers etc.	LOT	1				
E	AC Plant -5, For Training Centre.						
1	DX type, water cooled condensing unit of minimum 45 TR (ACTUAL) capacity. The refrigerant compressor shall be Scroll, hermetic / Semi-hermetic type suitable for Refrigerant R-134a / R-407c / R-410a environment friendly HFC refrigerants with drive package, Suction and discharge valves, capacity control system, expansion valve, crank case heater etc. A control panel shall be provided to house all gauges and controls. The panel shall contain all necessary terminal strips to facilitate external wiring. The unit shall be complete with expansion valve, all necessary fittings, accessories, insulated refrigerant piping to and from AHUs, foundation bolts, nuts, washers etc. complete in all respect.DX type, water cooled condensing unit shall be complete in all respect in compliance to all mandatory requirement of GRIHA.	NO	2				
2	Sheet metal cabinet type air handling units (double skin as per specification) The draw through horizontal AHUs shall comprise of , Dampers, pre filter, Fine Filters (99.5 efficiency to 5 microns) , DX-cooling coil, Electric heating coil, Electric steam humidifier and Fan section with fan (VFD Driven) & TEFC sq. cage induction motor, condensate drain pan, thermostatic controls and other accessories, like ladder along with supporting structure for filer and plenum, etc. to meet the AC load of control room area as per specification. VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA.	NO	1				
3	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan (VFD driven), motor, FRP basin, nozzles, make-up water & quick fill water connection, Level witch, drains, piping, valves, strainers, ladder & all accessories as specified. VVVFD shall be complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption and current in compliance to all mandatory requirement of GRIHA.	NO	2				
4	Centrifugal pump (VFD driven) sets for condenser water recirculation complete with TEFC motor & all accessories as specified..	NO	2				
5	Make up water cum storage tank, for cooling towers Make up, of HDPE/MS (spray galvanised from inside) with accessories as required. Capacity of each tank is 6 m3	NO	2				
6	Condenser water piping with necessary fittings, strainers, valves including piping from soft water storage tank to pan humidifiers of AHU room as specified.	LOT	1				
7	Skid mounted softening plant (2 x 100 %) with associated piping,valves, instruments, pumps for softening plant & regeneration pumps & tanks as applicable with suitable rubber lining & as per tender requirement , Along with chemicals/consumables for dosing and with all accessories as required to meet system requirements and as specified **	LOT	1				
8	Pumps motor set along with accessories with suitable rubber lining for pumping of softening plant reject and cooling tower blow down to CMB/PIT/TANKER.	No	2				

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9	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	LOT	1				
10	Pan type humidifier for each AHU room.	LOT	1				
11	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), dampers etc.	LOT	1				
F	ITEMS COMMON TO ALL AC PLANTS						
1*	FAN COIL UNIT consisting of chilled water cooling coil, blower, motor, drive set, filters (prefilter), motorised mixing valve with thermostatic controls and other accessories as per specifications						
a*	3 TR	NO*	4				
b*	2TR	NO*	1				
c*	1.5 TR	NO*	1				
2*	Fire damper.						
a*	Fire damper with auto resetting, limit switches, indication lamps etc.	SQM*	25				
b*	Motorized actuator with single phase power supply for the above fire damper / volume control dampers.	NO*	28				
3*	GSS zinc coating 275 gms/ m2 ducting complete with hangers/ supports, dampers, grilles, diffusers (with & without VCD) etc.						
a*	18G.	SQM*	850				
b*	20G.	SQM*	850				
c*	22G.	SQM*	2500				
d*	24G.	SQM*	4200				
e*	Supply air diffuser with VCD (Extruded Aluminium).	SQM*	70				
f*	Return air diffuser without VCD (Extruded Aluminium).	SQM*	105				
g*	GI Volume control dampers for Duct	SQM*	14				
4	Acoustic insulation of the first 5 of ducting from AHU/PAC outlets.	LOT	1				
5*	Thermal insulation of supply air duct & return air duct with finish as specified.	SQM*	8820				
7*	MS medium class drain piping upto nearest drain point with and without insulation						
a*	50mm	Rmt*	100				
b*	40mm	Rmt*	100				
8	Field instruments like gauges, switches, meters and transmitters for measurement of pressure, temperature, differential pressure, flow, velocity sensor, static pressure sensors, LIE/LIR, and other required instruments as per specifications, including necessary control panel for individual equipment's for hook up with main DDCMIS as per specifications	LOT	1				
9*	Fibre optic cable.	Rmt*	100				
G	AC System for Aux. buildings						
1*	Air-cooled split type AC units consisting of outdoor unit (having compressor condenser coil with fan and motor), indoor unit (having evaporator coil, filter, fan with motor), inter connecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator/MCB, fixing frame for indoor & out door unit, stabilizer etc.(Minimum BEE Rating 5 Star as per BEE guideline 2018)						
a*	Air-cooled split type AC units consisting of outdoor unit (having compressor condenser coil with fan and motor), indoor unit (having evaporator coil, filter, fan with motor), inter connecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator/MCB, fixing frame for indoor & out door unit, stabilizer etc. for 5.0 TR capacity (ductable type, 415 V, 3 phase with isolation switch)	NO*	2				
b*	2.0 TR capacity (non-ductable type, 240 V, 1 phase isolation switch) with isolation switch , i.e. MCB of suitable rating and stabiliser as specified. (Minimum BEE Rating 5 Star for non ductable units)	NO*	120				
c*	1.5 TR capacity (non-ductable type, 240 V, 1 phase isolation switch) with isolation switch , i.e. MCB of suitable rating and stabiliser as specified (Minimum BEE Rating 5 Star for non ductable units)	NO*	40				
d*	Hi-Wall Cassette Ac-2TR((non-ductable type, 240 V, 1 phase) with isolation switch , i.e MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure and refrigerant piping to suite actual site condition, drain piping upto nearest drain etc.)	NO*	5				
e*	Hi-Wall Cassette Ac-3TR((non-ductable type, 240 V, 1 phase) with isolation switch , i.e. MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure and refrigerant piping to suite actual site condition, drain piping upto nearest drain etc.)	NO*	2				
2	3 Ton capacity electric hoist with monorail	NO*	3				
3	1 Ton capacity chain pulley block with travelling trolley and monorail arrangement	NO*	1				
4	Manually operated, platform trolley of 1 Ton capacity with base area 2m x 1.5m	No*	1				
5*	Occupancy sensor	No*	17				

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6*	CO2 sensor	No*	10					
7*	BTU Meter complete in all respect like provision of energy consumption measuring and data storing facility of energy consumption of at least 1 year with sufficient memory space.	No*	3					
8*	Variable air volume (VAV) box complete with damper, differential pressure sensor, motorised damper, actuator, cooling / heating thermostat with ON / OFF control, differential pressure sensor, 24 V power supply unit, controller capable of accepting analogue signal from CO2 sensor/ occupancy sensor/ thermostat and output to damper actuator, distribution board floor wise for green building like Service building, Admin. building, and Training Center suitable for following air flow capacity							
a*	50-990 cfm	No *	5					
b*	1000- 1990 cfm	No *	5					
c*	2000 - 2990 cfm	No *	5					
d*	3000 - 4990 cfm	No *	5					
9	Total lump sum price for special tools & tackles for maintenance inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up-As per Appendix A).	LOT	1					
10	Total lump sum price for commissioning spares inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up-As per Appendix B).	LOT	1					
11	Total lump sum cost for FAT of DDCMIS	MAND AYS	21					
12	Any other items as applicable	Lot	1					

- NOTE
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The bidder shall furnish unit rates for variable item (marked *) for necessary adjustment (plus or minus) variation during detailed engg. stage. The unit rates quoted above shall be considered and no separate unit rates shall be quoted. Unit rates shall be valid throughout the contract.
- 2

Bidder to note that above BOQ for this tender has to be read in conjunction with tender specification. Any item, if not mentioned in above BOQ but indicated in tender specification and required for completion of the system shall deemed to be included in above price.
- 3

*** = Bidder to refer tender specification clause no. 7.10 of Section I-Sub Section C1 for water sofetning plant and its chemical/consumables details.
- 4

Any other item / system required for green building such as Service building, Admin. building, and Training Center to make the building green building in compliance to mandatory requirement of GRIHA shall be deemed to be inlcuded in quoted prices of respective building.

Partic								
	Name	Desig nation		Signature		Date	Company Seal	

SUGGESTED PRICE FORMAT APPENDIX - A Special tools & tackles for maintenance				Doc No:	PE-PF-426-553-A001
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1	FLAT D WRENCH - 6 MM TO 32 MM (12 Pcs)	SET	1		
2	BOX WRENCHES - 6 MM TO 22 MM (14 Pcs)	SET	1		
3	RING SPANNER - 6 MM TO 32 MM (12 Pcs)	SET	1		
4	ALLEN KEYS - 2 MM TO 10 MM	SET	1		
5	CRESCENT SCREW SPANNER	NO.	1		
6	SCREW DRIVER	NO.	1		
7	OFFSET SCREW DRIVER	NO.	1		
8	INSULATED PLIER	NO.	1		
9	TORCH LIGHT FOR 2 CELL	NO.	1		
10	HAMMER 1 LB	NO.	1		
11	OIL CAN	NO.	1		
12	POCKET THERMOMETER - 0 TO 50 DEG. C)	NO.	1		
13	INSULATION TAPE ROLL	NO.	1		
14	STEEL FOOT RULE - 12"	NO.	1		
15	FEELER GAUGE 9 BLADES	NO.	1		
16	PIPE WRENCH	NO.	1		
17	FLARE NUT (1/4")	NOS.	6		
18	FLARING TOOL	NO.	1		
19	TUBE CUTTER	NO.	1		
20	GAS CHARGING PIPE	NO.	1		
21	NITROGEN CHARGING ADAPTER	NO.	1		
22	FREON PRESSURE GAUGE (2 1/2" DIA DIAL)) 0 - 300 MM PSI	NO.	1		
23	FREON PRESSURE GAUGE (2 1/2" DIA DIAL)) 30 - 150 MM PSI	NO.	1		
24	PSYCHRO METER	NO.	1		
25	LOCK WITH KEY FOR TOOL BOX	NO.	1		
26	RATCHET 1/4"	NO.	1		
27	MS TOOL BOX	NO.	1		
NOTE S					
1	ABOVE IS THE MINIMUM LIST. ANY OTHER TOOL / TACKEL REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.				
Particulars of bidder / authorised representative					
	Name	Designation	Signature	Date	Company Seal

SUGGESTED PRICE FORMAT APPENDIX - B Commissioning spares				Doc No:	PE-PF-426-553-A001
				Rev No:	0
				Date of issue	29.05.2019
NAME OF PROJECT:		1X660MW PANKI TPS			
NAME OF PACKAGE:		AIR CONDITIONING SYSTEM			
TECHNICAL SPECIFICATION No:		PE-TS-426-553-A001			
SL NO	DESCRIPTION	UNIT	Qty		
1	AHU FAN BELTS	SET	1		
2	PRESSURE GAUGE	NO.	1		
3	TEMPERATURE GAUGE	NO.	1		
4	FILTER	SET	1		
5	COMPRESSOR OIL	Ltr.	1 Lot		
6	REFRIGERANT	Kg	1 Lot		
NOTES					
1	ABOVE IS THE MINIMUM LIST. ANY OTHER COMMISSIONING SPARE REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.				
Particulars of bidder / authorised representative					
	Name	Designation	Signature	Date	Company Seal

SUGGESTED PRICE FORMAT ANNEXURE-II LIST OF MANDATORY SPARES		Doc No:	PE-PF-426-553-A001			
		Rev No:	0			
		Date of issue	29-05-2019			
NAME OF PROJECT:						
NAME OF PACKAGE: AIR CONDITIONING SYSTEM		AIR CONDITIONING SYSTEM				
TECHNICAL SPECIFICATION: PE-TS-426-553-A001		PE-TS-426-553-A001				
S. No.	DESCRIPTION	UNIT	Qty	AMOUNT (Ex-Works)		
	Mechanical					
2.01.00	Screw Compressor Chilling Machine					
2.01.01	Oil filter	1 set				
2.01.02	Oil filter O ring	1 set				
2.01.03	Refrigerant filter	1 set				
2.01.04	Ref filter O ring	1 set				
2.01.05	EXV valve	1 set				
2.01.06	Differential pressure switch	1 no.				
2.01.07	Solenoid valve 2 way	1 no.				
2.01.08	Solenoid valve coil	1 set				
2.01.09	Solenoid valve O- ring	1 set				
2.01.10	Solenoid valve gasket	1 set				
2.01.11	Master solenoid valve	1 no.				
2.01.12	Master solenoid valve coil	1 set.				
2.01.13	Master solenoid gasket	1 set				
3.01.00	Air handling unit (for each model)					
3.01.01	Impeller / Blower with Motor	1 No				
3.01.02	V-belts for AHU Blower	4 Sets				
3.01.03	AHU Blower bearing	2 Sets				
3.01.04	Blower motor bearing	2 Sets				
3.01.05	Filters at suction and discharge of AHU	50% of installed population				
4.01.00	Controls (for each model)					
4.01.01	HP/LP cut out	1 No.				
4.01.02	Anti-freeze thermostat	2 Nos.				
5.01.00	Cooling Tower (for each model)					
5.01.01	Nozzles for cooling towers	20 Nos				
5.01.02	Float valve assembly	1 No				
6.01.00	Valves (For each type & size) for A/C system					
6.01.01	One (1) No. where total quantity of a particular type & size of valve is less than or equal to 10 (ten)	1 No				
6.01.02	Two (2) Nos. where total quantity of a particular type and size of valve is less than 40 but more than 10	2 Nos				
6.01.03	10% of the total quantity (to nearest whole no. of a particular type & size where the total quantity of a particular type & size of valve is more than 40	10%				
7.00.00	Humidity sensors	one (1) no.				
8.00.00	Geysersstat	Two (2) nos.				
9.00.00	Antifreeze thermostat	one (1) no.				
10.00.00	Local Humidity Indicator	one (1) no.				
11.00.00	Electric Hoists (FOR EACH TYPE & CAPACITY)					
11.01.00	All Bearings	1 set of each type / rating				
11.02.00	Brake assembly and its liners	1 set of each type / rating				
11.03.00	Wire rope	1 complete length				
11.04.00	Limit switch	2 nos of each type & rating				
12.00.00	Mechanical spares for Manual hoist					
12.01.00	Manual Hoists(Chain Pulley Block) (FOR EACH TYPE & CAPACITY)					
12.01.01	a) All Bearings	1 set of each type / rating				
12.01.02	b) Brake assembly and its liners (as applicable)	1 set of each type / rating				
	Electrical					
1.01.00	415 V Motors					
1.01.01	Terminal plates	10 Nos. each for small motors upto 30 kW & 4 Nos. each for more than 30 kW				
1.01.02	Heaters	2 sets				
1.01.03	Greasing arrangements	4 sets each type of motor				
1.01.04	Motor of each type and rating	10% of the installed quantity or minimum 1 number whichever be higher				
1.01.05	Bearings (DE and NDE) for each type and rating of motors.	4 sets				
1.01.06	Stator winding coils for all type of LT motors	One (1) set				
1.01.07	Dust seals and gaskets for each type of motors	Three (3) sets				
	Control & Instrumentation					
1.01.00	Measuring & Field Instruments					
1.01.01	Indicators, Recorders, Electrical Metering and Skid Mounted Instruments					
(i)	Indicators, recorders and meters offered from each model for the project. These instruments shall be supplied with three sets of blank scales.	10 % of Installed of each type/Model or a minimum of one number for each model and type, whichever is more				

(ii)	For skid mounted instruments	10% of total number of instruments for each Type and model or a minimum of one number for each model and type, whichever is more			
(iii)	Panel and Wall mounted Indicators	10% of total number of instruments or a minimum of one number for each type, model, range etc. whichever is more			
1.01.02	Temperature Elements and Thermowells				
(i)	Thermocouple/RTD elements	5% of total duplex thermocouple element assemblies and duplex RTD assemblies (with head assembly, terminal block and nipple) of each type and length whichever is more. The element assembly shall be suitable for direct replacement in the corresponding thermowell.			
(ii)	Thermowells	10% for each type of temperature sensors or a minimum of one for each type & size, whichever is more			
1.01.03	Temperature Transmitters and Electronic Transmitters of all type, range and model no. (For Pressure, DP, Temp, Flow, Level), Process Transmitters, Radar type level transmitter, 3D type level Transmitter with local display, Magnetic/Electromagnetic flow meter with local display, mass flow meter with local display., Process meters, Junction Box, Position Transmitter, Transducer or any other instrument etc.	10% of total number of instruments/transducers offered for each model and type, rating or a minimum of one number for each model, rating and type , whichever is more.			
1.01.04	Process actuated switch Devices- As applicable for each package as per following:	5% of total nos. or 1 no. of each make, model, range and type whichever is more			
	1. Temperature Switches				
	2. Differential pressure Switches				
	3. Pressure switches				
	4. Flow switches				
	5. Level Switches				
	6. Safety Protection Switches				
1.01.05	Local Gauges like temperature gauges, pressure gauges, differential Pressure gauges, flow gauges, flow meters with local display etc.	10% of total number of instruments/transducers offered for each model and type, rating or a minimum of one number for each model, rating and type , whichever is more.			
1.01.06	All type of Rota meters & Sight Flow Indicator.	1 no. of each range and type			
1.01.07	PD Type flow transmitters with local display.	1 no. of each type and model			
1.01.08	Any other instruments not indicated in the tender P&ID but required for control, monitoring and operation of the equipment/plant/systems	10% or 2 nos. of each type whichever is more			
1.01.09	Level Gauges				
	a) 10% or 2 nos. whichever is more of each type of illuminators with holder and reflector				
	b) 20% or 5 nos. whichever is more of each type of bulb.				
	c) 10% or 2 nos. whichever is more of each type of bi color rollers.				
	d) 10% or 2 nos. whichever is more of each type of glass along with pair of gaskets (cushion & wet gaskets).				
	e) 10% or 2 nos. whichever is more of each type of gaskets for gauge cocks/valve bonnet/ packing.				
	f) 10% or 2 nos. whichever is more of each type scale.				
1.01.10	Erection hardware mounted in field, LIE & LIR				
1.01.10.01	Instrument valves, manifold, fittings, impulse pipe, impulse tubes, drains pipes etc.	Ten (10) percent of each type, rating, model number and size of devices.			
1.01.10.02	Condensate pots of each type & Size installed	Ten (10) percent of total number of Installed or four numbers whichever is higher.			
1.01.10.03	Manifold 2 way, 3 way, 5 way valve manifolds	Ten (10) percent of each type & Size installed			
1.01.10.04	Fittings	Ten (10) percent of each type & Size installed			
1.01.10.05	Purge meters	Ten (10) percent of each type & Size installed			
1.01.10.06	Air Filter cum Regulator	Ten (10) percent of each type, make and model installed			
1.01.10.07	MCB, and Power sockets used in LIE/LIR.	Ten (10) percent of each type			
1.01.10.08	Fuses used in LIE/LIR.	Fifty (50) percent of each type of			
1.01.11	Mandatory spares not covered above				

	10% or 1 no. (whichever is more) of each type of sensor/instrument, analysers /special instruments/ Electronic card, instrumentation/ mechanical fittings etc for any other electronic system,				
1.01.12	Spares for Electric actuators of Discharge Butterfly valves				
a)	Complete actuating assembly	1 set			
1.01.13	Microprocessor based control system				
a)	Complete set including integral microprocessor based control system along with system & application software and special cables.	10% or 1 set of each type/model whichever is more			
Notes: a) Mandatory spares listed above is bare minimum requirement. In case any additional mandatory spares requirement is covered elsewhere in the tender specification apart from specified above, same shall be deemed to have been covered in bidders scope of supply. b) One set corresponds to actual quantity of components and devices as installed for the equipment at Site. c) All mandatory spares shall be supplied as per the requirement of the specifications. In case any spare indicated in the specification is "not applicable" for particular equipment, then suitable applicable alternate spare has been offered / shall be supplied by the bidder without any financial implication." d) Any item which is quoted as "not applicable" by the bidder in the above list and is found to be "applicable" at a later date shall be supplied by the bidder without any commercial and delivery implication. e) Any cell left blank in the unpriced schedule shall be treated as "Quoted" and is included in total price					
Particulars of bidder / authorised representative					
	Name	Designation	Signature	Date	Company Seal