

**400 MW MARIB GTPS PH - II, YEMEN
AIR CONDITIONING SYSTEM**

Annexure - A

BOQ-cum-PRICE FORMAT for Indian Bidders

S.No.	DESCRIPTION	Qty.	Unit	UNIT EX- WORK INCL. SEAWORTHY PACKING (₹)	TOTAL EX- WORKS INCL. SEAWORTHY PACKING (₹)	ED	CST	FREIGHT @ - % of Ex-works including SERVICE TAX @---% (₹)	UNIT RATE PER MANDAY (SUPERVISION OF E&C) (₹)	TOTAL PRICE OF SUPERVISION OF E&C (FOR 60 MANDAYS) (₹)	SERVICE TAX @---% ON SUPERVISION OF E&C (₹)	TOTAL SUPERVISION CHARGES FOR 60 MANDAYS (₹)	TOTAL PRICE (FOR CHA GODOWN, MUMBAI PORT/ MUMBAI PORT + SUPERVISION OF E&C) (₹)
1	2 Total price for Equipment & Services as Specified, Comprising design & engineering, manufacture, inspection, testing at manufacturers or their sub-vendor's works, Painting and duly seaworthy packed for transportation, delivery upto CHA, Godown, Mumbai Port / Mumbai port, supervision of erection & commissioning, preparation and submission of as built drawing for the total scope of complete Air conditioning system as per Specification PE-TS-372-553-A001, Rev 02 including maintenance tools & tackles, commissioning spares etc. All necessary fittings and accessories required for complete erection of various equipments at site like bolts, nuts, washers, gaskets, vibration isolation pads, duct supports, pipe supports and supports for equipment like split unit indoor and outdoor unit of split AC, AHU, Condensing unit, fresh air fans, hanging arrangements for ducts, pipes and other equipments etc as per approved engineering drawing required for complete installation shall be provided with respective equipment in adequate quantities. If any accessory item is not covered in the list above, the same shall not relieve the bidder to include that particular item required to make the installation complete in all respect.	3	4		6	7	8	9	10	11	12	(13 = 11+12)	(14 = 6+9+13)
1.0						NIL against ARE-1 & CT-1 form to be provided by BHEL	NIL against ARE-1 & CT-1 form to be provided by BHEL						
2.0	Breakup prices for items covered in clause 1.0 above.												
2.1	AC Plant -1 (Main control room areas and 400 KV control area at EL 6.2 m)												
2.1.1	DX type, air cooled condensing unit of 100 TR (ACTUAL) capacity. The refrigerant compressor shall be Reciprocating / Scroll, Open / Semi-hermetic type suitable for Refrigerant R-134a / R-407c / R-410a environment friendly HFC refrigerants with drive package (for open type compressor only), 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, cadmium plated foundation bolts, nuts, washers etc complete in all respect.	2	No										
2.1.2	Sheet metal cabinet type air handling units (double skin as per specification) The draw through horizontal AHUs shall comprise of Mixing box, Dampers, Filters (pre filter and fine filters with DP gauge across filters), DX- cooling coil, Electric heating coil, Electric steam humidifier and Fan section with fan & TEFC sq cage induction motor, drive set, face and bypass damper with modulating motor, condensate drain pan, thermostatic controls and other accessories to meet the AC load of control room areas at EL 5.2m	1	Lot			NIL against ARE-1 & CT-1 form to be provided by BHEL	NIL against ARE-1 & CT-1 form to be provided by BHEL						
2.1.3	G1 medium class drain piping insulated and clad up to the nearest drain point.	1	Lot										
2.1.4	Winter heating kit comprising of strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat sensors etc.(Heaters shall be provided in the AHU chamber)	1	Lot										

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2.1.5	Electric steam humidifier for each AHU complete with humidistat, fittings and installation accessories (Humidifiers shall be provided in the AHU chamber).	1	Lot										
2.1.6*	Fire dampers for ACP 1 & 2.												
2.1.6.1*	Fire damper having 90minutes fire rating as per UL-555 with auto resetting, limit switches, indication lamps, UL etc.	5	SQM*										
2.1.6.2*	Motorized actuator with single phase power supply for the above fire damper.	6	Nos*										
2.1.7*	Ducting, diffuser/ grill, thermal insulation for duct for (These items are common for ACP 1 & 2)												
2.1.7.1*	Finished GSS Ducting with supporting structure etc. complete with hangers, supports, splitters, volume control damper and all other accessories as required for complete installation.												
2.1.7.1.1*	18 G	250	SQM*										
2.1.7.1.2*	20 G	500	SQM*										
2.1.7.1.3*	22 G	600	SQM*										
2.1.7.1.4*	24 G	800	SQM*										
2.1.7.2*	Extruded aluminium powder coated adjustable double louvered Grilles with front adjustable opposed blades sheet metal (black painted) volume control damper. Grilles shall be complete with fixing screws and other accessories as required for complete installations per specifications.	10	SQM*										
2.1.7.3*	Extruded Aluminium powder coated adjustable eyelash deflection blade type diffusers with front adjustable opposed blades sheet metal (black painted) volume control damper. Diffusers shall be complete with fixing screws and other accessories as required for complete installation as per specifications.	10	SQM*										
2.1.7.4*	Acoustic insulation of the first 6 of ducting from AHU outlets.	1	Lot										
2.1.7.5*	Thermal insulation of supply air duct & return air duct with finish as specified.	2350	SQM*										
2.1.8	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), dampers etc.	2	Nos										
2.1.9	Relay based control panel for ACP 1 & 2 with all controls, interlocks, including the local control panels as required for individual AHU rooms for control of AHU, Heater, Fire Dampers etc as required and specified.	1	Lot										
2.1.10	Field instruments as specified for ACP 1 & 2	1	Lot										

NIL
against
ARE-1 &
CT-1 form
to be
provided
by BHEL

NIL
against
"H" form
to be
provided
by BHEL

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2.2	AC Plant -2 (Switchgear hall at EL 0 m)												
2.2.1	DX type, air cooled condensing unit of 60 TR (ACTUAL) capacity. The refrigerant compressor shall be Reciprocating / Scroll, Open / Semi-hermetic type suitable for Refrigerant R-134a / R-407c / R-410a environment friendly HFC refrigerants with drive package (for open type compressor only). 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, cadmium plated foundation bolts, nuts, washers etc complete in all respect.	2	No										
2.2.2	Sheet metal cabinet type air handling units (double skin as per specification) The draw through horizontal AHUs shall comprise of Mixing box, Dampers, Filters (pre filter and fine filters with DP gauge across filters), DX- cooling coil, Electric heating coil, Electric steam humidifier and Fan section with fan & TEFC sq cage induction motor, drive set, face and bypass damper with modulating motor, condensate drain pan, thermostatic controls and other accessories to meet the AC load of control room areas at EL 5.2m	1	Lot										
2.2.3	GI medium class drain piping insulated and clad upto the nearest drain point.	1	Lot										
2.2.4	Winter Heating kit comprising of strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat sensors etc. (Heaters shall be provided in the AHU chamber)	1	Lot										
2.2.5	Electric steam humidifier for each AHU complete with humidistat, fittings and installation accessories (Humidifiers shall be provided in the AHU chamber).	1	Lot										
2.3	Air conditioning system for Auxiliary control rooms etc as specified.												
2.3.1*	Air-cooled package type AC units consisting of condensing unit & evaporating unit including refrigerant pipes & fittings with insulation etc.												
2.3.1.1*	15.0 TR capacity.	2	Nos*										
2.3.1.2*	10.0 TR capacity.	2	Nos*										
2.3.1.3*	Inlet Louvres with pre & fine filter for fresh air arrangement of Package AC Room	2	SQM*										
2.3.2*	Air-cooled split type AC units consisting of condensing unit & evaporating unit including refrigerant pipes & fittings with insulation, isolation switch (MCB), cabling from MCB to indoor and outdoor units with minimum 4 star rating as per BEE.												

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2.3.2.1*	5.0 TR capacity (ductable type, 400 V, 3 phase with isolation switch, i.e., MCB of required rating along with socket box, plug and cabling as required).	4	Nos*										
2.3.2.2*	2.0 TR capacity (non-ductable type, 240 V, 1 phase isolation switch, i.e., MCB of required rating along with socket box, plug and cabling as required).	54	Nos*										
2.3.2.3*	1.5 TR capacity (non-ductable type, 240 V, 1 phase isolation switch, i.e., MCB of required rating along with socket box, plug and cabling as required).	203	Nos*			NIL against ARE-1 & CT-1 form to be provided by BHEL	NIL against "H" form to be provided by BHEL						
2.4	Any other item not indicated above, but required to complete Airconditioning package as per system requirements including commissioning spares.	1	Lot										
2.5	Total lump sum prices for commissioning spares (bidder to furnish lists of spares with item wise prices separately along with the price bid).	1	Lot										
2.6	Total lump sum prices for special tools for erection and maintenance (bidder to furnish lists of spares with item wise prices separately along with the price bid).	1	Lot										
3.0	SUPERVISION OF ERECTION AND COMMISSIONING												
3.1*	No of mandays	60	Nos*										
TOTAL													
NOTES													
1	The bidder shall furnish unit rates for variable items (marked *) like finished ducting, thermal insulation, diffusers / grilles, fire dampers, split ACs, for necessary adjustment (plus or minus) variation during detailed engg.												
2	The above BOQ is indicative for Price Purpose only and not exhaustive. The equipment / items as required for system requirements shall be provided with no commercial implication.												
3	Bidder must submit prices in the Pro Forma duly filled in signed and stamped on every page without any ambiguity. The price shall be written against each item. Term such as "refer covering letter" etc. are not acceptable. Extra sheet may be attached if the space provided is not sufficient.												
4	Price format shall not be changed by the bidder.												
5	Bidder to note that total price indicated above at 1.0 shall be considered for evaluation and hence should be complete in all respect for the full scope defined and considering all terms and conditions agreed.												
6	In case, price indicated above at 1.0 does not match with the total of item wise break-up given above at 2.0, the highest price so calculated shall be considered for evaluation but in case of order, the same shall be placed at the lowest price.												
7	Unit Prices per manday mentioned against clause no. 3.1 above will be taken for price adjustment due to change in number of mandays required for supervision of E&C, if any, at actual site condition than mentioned here.												

Devraj
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