

	2X660 MW ENNORE STPP	
	SPECIFIC TECHNICAL REQUIREMENTS (C&I)	
1. The control of CPU shall be DDCMIS based which shall be in BHEL's scope. DDCMIS panels, OWS, Local control panel, GIU, UPS, Printers shall be provided by BHEL. 2. The Contractor shall provide complete Instrumentation for control, monitoring and operation of entire CPU. The requirements given are to be read in conjunction with detailed technical specification enclosed in the specification. Further in case of any discrepancy in the requirement noted by the bidder in the specification, the same will be brought to the notice of BHEL in the form of pre- bid clarification. In absence of any pre-bid clarification, the more stringent requirement as per BHEL's interpretation shall be complied by the bidder during contract stage without any commercial implication to BHEL. 3. The instrumentation to be provided for CPU shall be as per the technical specification document / drawings wherever provided for the respective systems as a minimum requirement for bidding purpose. However for completeness of the system and its associated equipment, Bidder shall also provide all the necessary instruments to the process requirement even if not indicated in the given technical Specification document /drawings. During detail engineering if any additional instruments are required for safe & reliable operation of plant, bidder shall supply the same without any technical, commercial and delivery implication to BHEL. 4. The make/model of various instruments/items/systems shall be subject to approval of owner/purchaser during detailed engineering stage. No commercial implication in this regard shall be acceptable. 5. All the instruments/equipment/electrical items shall be provided & designed with maximum star rating as available in line with energy conservation policies notified by BEE, GOI at the time of supply. 6. All field instruments shall be weatherproof, drip tight, dust tight and splash proof suitable for use under outdoor ambient conditions prevalent in the subject plant. All field-mounted instruments shall be mounted in suitable locations where maximum accessibility for maintenance is achieved. The enclosures of all electronic instruments shall conform to IP-65 unless otherwise specified and an anticorrosive paint shall be applied to the field mounted enclosures / instruments. All the field instruments shall also be provided with SS tag nameplate and double compression type Nickel-plated brass cable gland. Gaskets, Fasteners, Counter and mating flange shall also be included wherever required with the field instruments.		

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7. The necessary root valves, impulse piping, drain cocks, gauge-zeroing cocks, valve manifold and all the other accessories required for mounting/ erection of these local instruments shall be furnished, even if not specifically asked for, on as required basis. The proposal shall include the necessary cables, flexible conduits, junction boxes and accessories for the above purpose. Double root valves shall be provided for all pressure tapping where the pressure exceeds 40 Kg / Cm². 8. All the instruments/drives shall be terminated on JB's in field. JB's shall be in Bidder's scope. Bidder to consider minimum 10 nos. of JB's. 9. All local gauges, transmitters and switches shall be mounted on suitable enclosures, racks subject to owner's approval. The same shall be in Bidder's scope. All transmitters shall be HART compatible. 10. All the instruments indicated in P&ID are minimum requirement and it is mandatory to use sensors/signals/measurements with 2 out of 3 logic for critical control & protection (Analog & Binary). Application/service and sensors with 1 out of 2 logic for all other control & interlock (Analog & Binary) application/service. Dual sensors shall be provided for instruments required for auto starting of LT driven pumps or LT driven pump tripping due to very low level of water/discharge pressure very low. Dual measurement shall be employed for the measurements used for analog control functions. 11. All the instruments/ sensors/transmitters/switches meant for redundant applications shall have completely separate and independent impulse pipes/ root valves etc. No redundant instrument shall share a single process tapping. There will be separate and independent tapping for every individual instrument. 12. RTD's shall be of duplex type. Temperature transmitters are envisaged for RTD for monitoring services/application only. 13. Instrument installation shall be as per the attached Instrument Installation Drawing. 14. All motorised valves of 200NB or more than 200NB size shall be provided with integral motorized bypass valves on all process lines. 15. All motorised actuator shall be provided with conventional actuators with integral starter for ON/OFF valves. Non-contact type electronic 2- wire		

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position transmitters shall be provided for all inching type motorised valves. The detailed specification is attached elsewhere in the specification. 16. Valve end position (Open & Close) shall be monitored for the manual critical valves, wherever provided. 17. Bidder to comply with codes and standards as mentioned in the specification. 18. Bidder must offer general tools and tackles and special calibration instruments required during start-up, trial run, operation and maintenance of the system. 19. All approval/Inspection are to be carried out by Owner or owner appointed agency only. 20. Bidder shall provide erection hardware as per installation drawings. 21. Bidder to provide mandatory spares as per mandatory spares list attached elsewhere in the specification. 22. Bidder to perform tests of C&I items/instruments/systems as per Quality plans/type test attached in the specification. 23. Power Supply Requirement: Power supply for instruments, analysers etc. shall be provided at a single point which shall be decided during detail engineering. Further any electrical distribution shall be in bidder's scope. Any other voltage requirement for instruments, analysers etc. to be arranged/derived by bidder by providing suitable control transformer. 24. All cables terminated in the terminal block, power distribution scheme instruments shall be ferruled. Ferruling shall be double cross ferruling (i.e.) source and destination addresses shall be marked on both sides of the tube ferruling. 25. Scope of Instrumentation cables (Screened Control Cables), Fibre Optic cable & Control cables shall be as per Electrical Cable scope matrix in Electrical portion of specification. 26. Each pneumatic device requiring air supply and intended for field mounting shall include a filter regulator air set with gauge, to owner's approval. 27. Bidder's presence is required for 3 Man days (Excluding travel time) at EDN Bangalore during FAT of DDCMIS for certifying correctness & completeness of implementation of Control logic. Intimation to attained FAT shall be informed		

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in 2 days advance. All the expenses like boarding, lodging and travel, Air fare etc. shall be in bidder's scope. 28. Contractor's C&I representative shall be present at BHEL-PEM for 3 man-days, for preparation of Control scheme of CPU. All the expenses like boarding, lodging and travel, Air fare etc. shall be in bidder's scope. 29. Bidder's presence is required for 15 Man days (in three visit) at site during commissioning of DDCMIS for assistance related to process correctness. Three visit with total 15 Man days (Excluding travel time) in which one visit shall be of 5 Man days each. All the expenses like boarding, lodging and travel, Air fare etc. shall be in bidder's scope. 30. Bidder to ensure participation of their senior personnel and experts in discussions with Owners and other equipment bidders during various stages of contract implementation as required by the Owner.		

CUSTOMER SPECIFICATION REQUIREMENT

Open and Close limit switch feed backs of valves are to be connected to DCS for remote viewing and for interlocks and protection.

Remote and local indications of various parameters to the process requirement shall be provided. (The same can be decided during detailed engineering)

The instruments shall be offered as per the process requirement for complete auto operation.

Necessary instruments pressure gauges, Temperature gauges, DP instruments, Pressure transmitters, Radar Level transmitters, Differential pressure transmitters, Temperature Elements Various analysers, Magnetic type level indicators, shall be provided. The junction boxes and instruments / electronics housing used shall be Non – corrosive material.

Flow transmitters for each stream of CPU are to be provided for monitoring the performance and accountability

The bidder shall furnish required list and type of instruments during detail



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engineering subject to the approval of owner.

Pneumatic actuators with all accessories shall be controlled using solenoid valves, which shall be energized from OWS / Control Panel. The opening and closing of these valves is based on system requirement, which is programmed in the Control system. Feed backs to the control system regarding the valve open / close position are set through the limit switches.

- 1.A panel mounted cation conductivity indicator shall be interlocked to prevent advancing of the automatic sequence until the rinse down is complete.
- 2.A differential pressure switch installed between the influent and effluent headers shall on a high signal cause an annunciator alarm.
- 3.Panel mounted cation conductivity indicators shall be provided to monitor the polishing system influent and effluent streams as well as the discharge of each service vessel.
- 4.On Plant DDCMIS failure, it shall be possible to operate the valves by means of manual operation of solenoid valves also.