

**TAMILNADU GENERATION AND DISTRIBUTION
CORPORATION LIMITED.**

**2X660MW ENNORE SEZ COAL BASED STPP AT ASH
DYKE OF NCTPS, CHENNAI**

AMENDMENT NO – 01

FUEL OIL UNLOADING SYSTEM

SPECIFICATION NO.: PE-TS-412-166-A001



BHARAT HEAVY ELECTRICALS LTD

POWER SECTOR

PROJECT ENGINEERING MANAGEMENT

NOIDA

	ENNORE SEZ COAL BASED STPP (2 X 660 MW) FUEL OIL UNLOADING SYSTEM	SPEC. No: PE-TS-412-166-A001	
		AMENDMENT NO. - 1	
		DATE	16.03.2017
		SHEET 1 OF 1	

AMENDMENT / addition TO EXISTING CLAUSES OF fohs TECHNICAL SPECIFICATION. Bidder to note that existing discription as appearing in the specification stands deleted / modified or added and clauses / details as mentioned in “ammendment (to be Read as)” column shall be applicable and complied by the bidder.

S.no.	Existing clauses	Amendment/ Addition	Modification
1.0	Sub vendor list ANNEXURE-III (Page No. 69 of 644)	ADDITION	Sub vendor list of flow meter and steam tracer attached under Annexure-I.
2.0	4.0.0 TERMINAL POINT (Page No.10 of 644) 1. Aux. Steam Steam header at 16 kg/cm2 by BHEL-PC at 2000mm from FO unloading & pressurizing building. 2. Effluent from Oil Water Separators: Vendor's TP at the guard pond in ETP area 3.Terminal points for PRDS Spray water 4.Instrument air line	AMENDMENT	1. Aux. Steam: Steam header at 16 kg/cm2 by BHEL-PC at 5m from FO unloading & pressurizing building towards pipe rack. 2. Effluent from Oil Water Separators: Terminal point shall be 5m from ETP area. As marked in plot plan (attached) Further Bidder to calculate the pump head considering pipes length of 150m inside ETP area and static head of 7m . 3. PRDS spray water terminal Point : Near dyke area around 20 m. Exact location shall be informed during detail engineering. 4. 5m from dyke area.
3	Datasheet for Motorized valve actuator is (Page No. Page 539 of 644	AMENDMENT	Datasheet is enclosed with this amendment.
4	Customer vendor list (page 562of 644)	AMENDMENT	C&I sub vendor list is enclosed with this document.
5	TECH SPEC_Part1, Pg. No. 10 of 322, Cl. No: 2.3.0 Exclusions :d)Control/IO panel for Fuel Oil pump ho uses	ADDITON	The Local Control Panel is under bidder's scope of supply. The required details (extract from the Customer's specification) w.r.t the Local Control Panel are enclosed with amendment, which shall be read along with the specification.

NOTE:

1. REPLIES TO PRE-BID QUERIES ARE ATTACHED AS ANNEXURE- II TO THIS AMENDMENT AND SHALL BE BINDING ON BIDDERS.

	ENNORE SEZ COAL BASED STPP (2 X 660 MW) FUEL OIL HANDLING SYSTEM	SPEC. No: PE-TS-412-166-A001	
		AMENDMENT NO. - 1	
		DATE	14.03.2017

Bidder to compliance on the following points/requirement :-

1. "SCOPE OF C&I FOR FUEL OIL UNLOADING & STORAGE SYSTEM" has been revised w.r.t. the following changes :-

- (a) Sensor Redundancy :: For sensor redundancy, 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 as explained below :-

DUAL MEASUREMENT SCHEME: For binary and analog inputs required for other modulating control, protection and interlock purpose of other equipment and other critical monitoring application etc., min. dual sensors shall be provided. 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.

- (b) Explosion proof enclosure – All the instruments, motorized valve actuators, JB, LCP, etc. shall be explosion proof/intrinsically safe.

2. Local Control Panel :: Please find enclosed the attachment for "LOCAL CONTROL PANEL" which includes technical requirement w.r.t Local control panel and its Protection Class. The same has to be read along with the specification.

2X660 MW ENNORE SEZ Supercritical Thermal Power Project

SCOPE OF C&I FOR FUEL OIL UNLOADING & STORAGE SYSTEM

1. FUEL OIL UNLOADING & STORAGE SYSTEM shall be operated from DCS (BHEL's scope).
2. The Contractor shall provide complete Instrumentation for control, monitoring and operation of entire FOHS. 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 within the same section 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 interpretation of customer shall prevail without any commercial implication.
3. The make/model of various instruments/items/systems shall be as per the Customer/BHEL's approved vendor list. List of BHEL approved vendors has been enclosed which shall be subject to Customer's approval. No commercial and delivery implication in this regard shall be acceptable.
4. In case of any conflict and repetition of clauses in the specification, the more stringent requirements among them are to be complied with.
5. All instruments shall be terminated on JB/LCP in field and both instrument and JB/LCP are in bidder scope.
6. For cable scope refer to electrical scope between BHEL and vendor defined in electrical specification.
7. Bidder to provide mandatory spares as per mandatory spares list enclosed in the specification.
8. Electrical Actuators with integral starter shall be provided for all on/off and inching type valves along with necessary interface units for linking to corresponding Control System as applicable, typical Hook-up diagram of drives is included for reference
9. The specifications for instruments mentioned in the specification are minimum requirements. The detail specifications shall be finalized during detail engineering.
10. All the instruments, motorized valve actuators, JB, LCP, etc. shall be explosion proof/intrinsically safe.
11. All the instruments for oil services viz. PG/DPG/PS/PT,etc. shall have chemical/diaphragm seal. Level transmitters shall be Radar type.
12. The bidders shall specifically mention any deviation they would like to take on the C&I specification. In absence of only deviation a No deviation certificate is to be furnished.
13. The quantity of instruments for the system shall be as per tender P & ID wherever provided of the respective system as a minimum, for bidding purpose. However, Bidder shall also include in his proposal all the instruments and devices that are needed for the completeness of the plant auxiliary system/ equipment supplied by the bidder, even if the same is not specifically appearing in the P & ID. During detail engineering if any additional instruments are required for safe & reliable operation of plant, bidder shall supply the same without any price implication.
14. Bidder to terminate all instrumentation and control elements in junction boxes. bidder to provide input/output list, drives list, junction box schedule and termination details, recommended control logics / write-up etc. the list of documents to be submitted after award of contract is to be referred by bidder.
15. All local gauges, transmitters and switches shall be mounted on suitable enclosures, racks subject to owner's approval. All transmitters shall be HART compatible.

2X660 MW ENNORE SEZ Supercritical Thermal Power Project

16. Bidder to perform tests of C&I items/instruments/systems as per Quality plans/type test attached in the specification. However, if any test not specified in the quality plan but specified in specification Tests for I&C equipment included elsewhere in specification will have to perform by Bidder without any cost implication.
17. Instrument installation and accessories required for the same shall be in Bidder's scope and shall be submitted after award of contract. However any instrument/ analyzer installation not covered in the same shall be subject to customer and BHEL approval during detailed engineering.
18. Bidder to furnish electrical load data during detailed engineering
19. Bidder to provide temperature transmitter along with compensating cable, JB/Rack & other erection hardware
20. 415 V AC/230 V AC supply shall be provided by BHEL at a single point, further distribution to various instruments/Equipment of the system shall be in bidder scope. Bidder to include necessary power distribution board in his scope. Any power supply other than the above, if required by any instrument/equipment has to be derived by the bidder from the above supply & all necessary hardware for the same shall be in bidder scope. Bidder to submit the power requirement along with the bid.
21. 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 attend FAT shall be informed in 2 days advance. All the expenses like boarding, lodging and travel, Air fare etc. shall be in bidder's scope.
22. Contractor's C&I representative shall be present at BHEL-PEM for 3 man-days, for preparation of Control scheme of FOHS. All the expenses like boarding, lodging and travel, Air fare etc. shall be in bidder's scope.
23. 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.
24. Contractor shall furnish Instrument Schedule, I/O list, Drive list, Cable Schedule, Cable interconnection, JB grouping, Annunciation list, SOE list, List of Instruments/devices for HART in BHEL approved format. Also reusable database format like MS Excel, MS Access etc. of these documents shall also be provided by Contractor in BHEL approved format. Soft copy of the formats shall be provided to the successful bidder.
25. Local control panel shall be in bidder's scope.
26. Sensor Redundancy-For sensor redundancy, it is mandatory to use sensors/signals/measurement 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 as explained below :-DUAL MEASUREMENT SCHEME: For binary and analog inputs required for other modulating control, protection and interlock purpose of other equipment and other critical monitoring application etc., min. dual sensors shall be provided. 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.

LOCAL CONTROL PANEL**4.05.08****RELAY BASED LOCAL CONTROL PANEL/DESK**

Local control panel shall be of 2.5 mm steel construction, free standing type, totally enclosed dust and vermin proof with enclosure protection class of IP-55 as per IS: 13947 and colour shall be as per shade no. RAL 7032/7035. Panel shall be mounted on vibration dampers secured to steel frame on to the floor. Equipment and relays mounted on the panel shall be easily accessible. The panel shall be supplied completely wired upto terminal blocks for connecting external cables entering the panel from the bottom. Blank removable gland plate shall be provided with double compression type cable glands/conduits knockout along with the panel.

Terminal block shall be rated 600 volts minimum and shall have strap cage clamp type screw less terminals suitable for connection with 2x2.5 sq mm copper conductors on each side. Terminal block shall be provided with white marking strips. Fuses shall not be mounted on terminal blocks. At least 20 percent spare unused terminals shall be provided on terminal block.

Contactors, Relays, timers and other devices mounted on the panel shall have clearly visible identification marking. Separate contactors shall be provided for start & stop command. Common contactor for start & stop command are not acceptable. All fuses shall be HRC semiconductor type of AC supply. HRC link & fuse shall be of removable type having 45 kA rupturing capacity (min) for protection of various circuits.

The panel shall be provided with a 50x6 mm tinned copper earthing strip running throughout the length of the panel at the bottom. Panel shall be provided with space heaters with isolating DPN MCB, and thermostats. LED based illuminating lamps, complete with door switches; and 1 no. 6 pin 5/15amps sockets with DPN MCB.

Panel shall be provided with LED illuminating lamps with door switch and 6 point 5/15A, 240V AC socket with switch for maintenance purposes. Panel shall have removable lifting eye bolts for safe lifting from top during handling. Control power supply shall be provided from dual redundant feeders with auto change over scheme, surge protection devices and Power/Volt/AM meter.

The panel shall be provided with push buttons, indicating lamps, annunciators, indicating instruments, interlock/ deinterlock switches etc., required for the complete system. General details as specified in chapter 6 shall also be referred for engineering and design of relay panel/desk.

Coloured Mimic with 6mm thickness sheet for respective plant lay out shall be provided as specified in Annexure A, control system philosophy.



20% spare relays of each type and rating shall be mounted and wired in relays control panel/Desk. All contacts of relays shall be terminated in terminal blocks of relay control panel/Desk, Additionally in the relay control panel/Desk, 20% spare terminal blocks shall be 'provided so that additional relays can be mounted and wired.

The annunciation system shall consist of panel mounted audio-visual windows of 50x75 mm provided with plug-in-type solid-state logic 16 nos. high intensity LEDs in parallel. EACH relay based control panel shall be provided with 30 nos min. facia windows. Initiating contacts may be either NO or NC; a jumper or switch shall be provided in each card to make it suitable for either type of contact. A set of acknowledge, reset and test push buttons shall be provided on the panel. All printed circuit boards shall be of epoxy fibre glass construction.

The sequence of annunciation shall be as follows:

Condition	Visual	Audible
Normal	OFF	OFF
Alarm	Flashing	ON
Acknowledge	Steady	OFF

Return to Normal:

a.	Before acknowledge	Flashing	ON
b.	After acknowledge	Steady	OFF

Reset:

a.	Alarm condition	No change	No change
b.	Return to normal	OFF	OFF



2.06.00 PROTECTION, CLASS OF CABINETS / PANELS, ENCL.OSURES ETC.

- a) All panels, desks cabinets, consoles & enclosures furnished at least comply with the requirements of protection classes as indicated below.
 - 1. In-door Air-conditioned (A.C.) areas - IP32/42 (min.)
 - 2. In-door Non A.C. areas:
 - (a) Ventilated enclosures - IP42
 - (b) Non Ventilated. IP 54
 - 3. Out-door IP55 / IP65
(As per the requirement)
- b) Distribution boxes, junction boxes, cold junction compensation boxes, terminal boxes and all other field mounted equipment to be furnished as per this specification shall have weather protection conforming to IP 65.
- c) The design of panels, cabinets, enclosures and packaging density of components mounted therein shall be such that the temperature rise does not exceed 10 deg. C above the ambient under the worst conditions.
- d) The panels housing electronic hardware shall be provided with flame and smoke detectors by bidder.
- e) Enclosures for peripheral equipments like printers, etc. shall take care of noise and shall ensure minimum possible noise disturb to the working personnel.

2.06.01 Guards, barriers and access doors, covers of plates shall be marked to indicate the hazard, which may occur upon removal of such devices. Danger or caution signs shall be used to warn of specific hazards such as voltage or current. The marking shall be permanently affixed to the equipment.



SPECIFICATION
FOR
MOTORISED
VALVE ACTUATOR

	SPECIFICATION FOR MOTORISED VALVE ACTUATOR		SPECIFICATION NO.: PE-DG-412-145-I902	
			VOLUME II B	
			SECTION D	
			REV. NO. 01	DATE: 14.02.17
			SHEET 1	OF 3
Data Sheet A & B				
DATA SHEET-A (TO BE FILLED BY PURCHASER)			DATA SHEET-B (TO BE FILLED-UP BY BIDDER)	
GENERAL*	* PROJECT	2x 660 MW ENNORE SUPERCRITICAL TPP		
	OFFER REFERENCE			
	* TAG NO. SERVICE			
	* DUTY	☒ ON / OFF ☒ INCHING		
	* LINE SIZE (inlet/outlet): MATERIAL			
	* VALVE TYPE	☐ GLOBE ☐ GATE ☐ REG. GLOBE ☐ BUTTERFLY		
	* OPENING / CLOSING TIME			
	* WORKING PRESSURE			
	AMBIENT CONDITION	SHALL BE SUITABLE FOR CONTINUOUS OPERATION UNDER AN AMBIENT TEMP. OF 0-55 DEG C AND RELATIVE HUMIDITY OF 0-95%		
	VALVE SEAT TEST PRESS	BIDDER TO SPECIFY		
	REQUIRED VALVE TORQUE	BIDDER TO SPECIFY		
	ACTUATOR RATED TORQUE	BIDDER TO SPECIFY		
CONSTRUCTION AND SIZING	CONSTRUCTION	TOTALLY ENCLOSED, WEATHER PROOF, IP:68		
	MECHANICAL POSITION INDICATOR	TO BE PROVIDED FOR 0-100% TRAVEL		
	BEARINGS	DOUBLE SHIELDED, GREASE LUBRICATED ANTI-FRICTION.		
	GEAR TRAIN FOR LIMIT SWITCH/TORQUE SWITCH OPERATION	METAL (NOT FIBRE GEARS). SELF-LOCKING TO PREVENT DRIFT UNDER TORQUE SWITCH SPRING PRESSURE WHEN MOTOR IS DE-ENERGIZED.		
	SIZING	OPEN/CLOSE AT RATED SPEED AGAINST DESIGNED DIFFERENTIAL PRESSURE AT 85% OF RATED VOLTAGE. FOR ISOLATING SERVICE THREE SUCCESSIVE OPEN-CLOSE OPERATIONS OR 15 MINS. WHICHEVER IS HIGHER. FOR INCHING SERVICE - 150 STARTS/HR MINIMUM & FOR REGULATING SERVICE - 600 STARTS/HR MINIMUM.		
HANDWHEEL	* REQUIRED	☒ YES ☐ NO		
	* ORIENTATION	☐ TOP MOUNTED ☐ SIDE MOUNTED		
	*TO DISENGAGE AUTOMATICALLY DURING MOTOR OPERATION.			
ELECTRIC ACTUATOR	ACTUATOR MAKE/MODEL	BIDDER TO SPECIFY		
	MOTOR MAKE / MODEL / TYPE / RATING (KW)	BIDDER TO SPECIFY		
	@ MOTOR TYPE	SQUIRREL CAGE INDUCTION MOTOR, STARTING CURRENT LIMITED TO SIX TIMES THE RATED CURRENT- INCLUSIVE OF I.S. TOLERANCE		
	ACTUATOR APPLICABLE WIRING DIAGRAM	☐ ENCLOSED (BIDDER TO CONFIRM) A: ☐ DRG. NO. 3-V-MISC-24227 R00 B: ☐ DRG. NO. 3-V-MISC-24550 R00 C: ☐ DRG. NO. 3-V-MISC-24283 R00 D: ☐ DRG. NO. 4-V-MISC-90271 R11 E: ☐ For Thyristor based Integral starter, Bidder/Vendor to furnish wiring diagram		
	COLOUR SHADE	☐ BLUE (RAL 5012) ☐		
	PAINT TYPE (## Refer Notes)	☐ ENAMEL ☒ EPOXY ☐		
	SHAFT RPM	BIDDER TO SPECIFY		
	OLR SET VALUE	BIDDER TO SPECIFY		
	@ STARTING / FULL LOAD CURRENT	BIDDER TO SPECIFY		
	NO. OF REV FOR FULL TRAVEL	BIDDER TO SPECIFY		
	@ PWR SUPP TO MTR / STARTER	415V, 3PH, AC		
	@ CONTROL VOLTAGE REQUIREMENT	TO BE DERIVED FROM THE POWER SUPPLY TO THE STARTER ☐ 230 V ☐ 110 V		

	SPECIFICATION FOR MOTORISED VALVE ACTUATOR		SPECIFICATION NO.: PE-DG-412-145-I902		
			VOLUME II B		
			SECTION D		
			REV. NO. 01	DATE: 14.02.17	
			SHEET 2	OF	3
Data Sheet A & B					
DATA SHEET-A (TO BE FILLED BY PURCHASER)				DATA SHEET-B (TO BE FILLED-UP BY BIDDER)	
	@ ENCLOSURE CLASS OF MOTOR	☒ IP 68 ☐ FLAME PROOF			
	@ INSULATION CLASS	CLASS-F TEMP. RISE LIMITED TO CLASS-B			
	@ WINDING TEMP PROTECTION	☒ THERMOSTAT (3 Nos., 1 IN EACH PHASE) ☐ -----			
	SINGLE PHASE / WRONG PHASE SEQUENCE PROTECTION	REQUIRED			
INTEGRAL STARTER	INTEGRAL STARTER	☒ REQUIRED ☐ NOT REQUIRED			
	TYPE OF SWITCHING DEVICE	☒ CONTACTORS ☐ THYRISTORS			
	TYPE	☒ CONVENTIONAL ☐ SMART (NON-INTRUSIVE)			
	STEP DOWN CONT. TRANSFORMER	☒ REQUIRED			
	OPEN / CLOSE PB	☒ REQUIRED ☐ NOT REQUIRED			
	STOP PB	☒ REQUIRED ☐ NOT REQUIRED			
	INDICATING LAMPS	☒ REQUIRED ☐ NOT REQUIRED			
	LOCAL REMOTE S/S	☒ REQUIRED ☐ NOT REQUIRED			
	STATUS CONTACTS FOR MONITORING	☒ REQUIRED ☐ NOT REQUIRED			
	INTEGRAL STARTER DISTURBED SIGNAL	REQUIRED (MOTOR THERMOSTAT TRIP, O/L RELAY OPERATED, CONT./POWER SUPPLY FAILED, PHASE LOSS, S/S IN LOCAL or OFF MODE, STOP PB OPTD, TORQUE OPEN/CLOSE CUTOFF)			
INTERPOSING RELAY/OPTO COUPLER (Applicable for integral Starter)	TYPE OF ISOLATING DEVICE	☐ INTERPOSING RELAY ☐ OPTO COUPLER ☐ EITHER			
	QUANTITY	☒ 2 NOS. ☐ 3 NOS.			
	DRIVING VOLTAGE	☒ 20.5 – 24V DC ☐ _____ V DC			
	DRIVING CURRENT	☒ 125mA MAX ☐ _____ mA MAX			
	LOAD RESISTANCE	☒ > 192 ohms - <25 k ohms ☐ > _____ ohms - < _____ ohms			
TORQUE SWITCH (Not Applicable for Smart Actuator) (\$\$ Refer Notes)	MFR & MODEL NO.	BIDDER TO SPECIFY			
	OPEN / CLOSE	☒ 1 No. ☐ 2Nos. / ☒ 1 No. ☐ 2Nos			
	CONTACT TYPE	2 NO + 2 NC			
	RATING	5A 240V AC AND 0.5A 220V DC			
	CALIBRATED KNOBS(OPEN&CLOSE TS)	REQUIRED FOR SETTING DESIRED TORQUE			
	ACCURACY	+3% OF SET VALUE			
LIMIT SWITCH (Not Applicable for Smart Actuator) (\$\$ Refer Notes)	MFR & MODEL NO.	BIDDER TO SPECIFY			
	OPEN : INT : CLOSE	☐ 1 No. ☒ 2 Nos.	2 Nos. (ADJ.)	☐ 1 No. ☒ 2Nos.	
	CONTACT TYPE	2 NO + 2 NC			
	RATING (AC / DC)	5A 240V AC AND 0.5A 220V DC			



SPECIFICATION FOR MOTORISED VALVE ACTUATOR

SPECIFICATION NO.: PE-DG-412-145-I902

VOLUME II B

SECTION D

REV. NO. 01

DATE: 14.02.17

SHEET 3

OF 3

Data Sheet A & B

DATA SHEET-A
(TO BE FILLED BY PURCHASER)

DATA SHEET-B
(TO BE FILLED-UP BY BIDDER)

POSITION TRANSMITTER	POSITION TRANSMITTER (For inching duty & other specific applications)	☒ REQUIRED ☐ NOT REQUIRED	
	MFR & MODEL NO.	BIDDER TO SPECIFY	
	TYPE	☐ ELECTRONIC (2 WIRE) R/I CONVERTER ☒ ELECTRONIC (2 WIRE) CONTACTLESS	
	SUPPLY	☒ 24V DC ☐	
	OUTPUT	☒ 4-20mA	
	ACCURACY	± 1% FS	
SPACE HEATER	@SPACE HEATER	REQUIRED	
	@ POWER SUPPLY (NON INTEGRAL)	230V AC, 1 PH., 50 Hz	
	@ POWER SUPPLY (INTEGRAL)	BIDDER TO SPECIFY	
	@ RATING		
TERMINAL BOX	ACTUATOR/MOTOR TERMINAL BOX	REQUIRED	
	ENCL CLASS ACTUATOR/MOTOR T.B.	@ ☒ IP 68 @ ☐	
	@ EARTHING TERMINAL	REQUIRED	
	PLUG & SOCKET (9 PIN) (FOR COMMD, LS/TS FEED BACK, PoT)	☐ REQUIRED ☒ NOT REQUIRED ☐ ☐ 2 NOS. ☐	
CABLE GLANDS	@ POWER CABLE GLAND	SIZE: suitable for 3Cx2.5sq mm Cu	
	@ SPACE HEATER CABLE GLAND	SIZE:-	
	OTHER CONTROL CABLE GLANDS	QUANTITY & SIZE: Cable gland suitable for 8Px0.5 sq mm & 2P x 0.5 sq mm cable.	
WEIGHT	TOTAL WEIGHT (ACTUATOR + ACCESSORIES)	BIDDER TO SPECIFY	_____ Kg.

NOTES:

1. **SCOPE:** DESIGN, MANUFACTURE, INSPECTION, TESTING AND DELIVERY TO SITE OF ELECTRIC ACTUATOR FOR INCHING OR OPEN / CLOSE DUTY.
2. **CODES & STANDARDS:** DESIGN AND MATERIALS USED SHALL COMPLY WITH THE RELEVANT LATEST NATIONAL AND INTERNATIONAL STANDARD. AS A MINIMUM, THE FOLLOWING STANDARDS SHALL BE COMPLIED WITH:
IS-9334, IS-2147, IS-2148, IS-325, IS-2959, IS-4691 AND IS-4722
3. ACTUATOR SHALL HAVE HARDWIRED CONTACTS FOR FOLLOWING SIGNALS (a) ACTUATOR IN LOCAL MODE (b) ACTUATOR IN REMOTE MODE
4. BIDDER TO ENSURE AVAILABILITY OF SPARE 1NO + 1NC LIMIT SWITCH & TORQUE SWITCH.
5. SS TAG NAME PLATE SHALL BE PROVIDED.
6. TEMPERATURE RISE SHALL BE RESTRICTED TO 70 DEG. C FOR AMBIENT TEMPERATURE OF 50 DEG C.
7. CABLE GLANDS OF DOUBLE COMPRESSION TYPE, Ni PLATED BRASS MATERIAL SHALL BE PROVIDED.
8. THE TORQUE SWITCHES SHALL BE PROVIDED WITH MECHANICAL LATCHING DEVICE TO PREVENT OPERATION WHEN UNSEATING FROM THE END POSITIONS. THE LATCHING DEVICE SHALL UNLATCH AS SOON AS THE VALVE LEAVES THE END POSITION. IF SUCH PROVISION IS NOT POSSIBLE, THE TORQUE SWITCHES SHALL BE BYPASSED BY END-POSITION LIMIT SWITCHES WHICH OPENS ON VALVE LEAVING END POSITION. THESE LIMIT SWITCHES ARE ADDITIONAL TO THE NUMBER OF LIMIT SWITCHES SPECIFIED ELSEWHERE.
9. THE MOTOR SHALL OPERATE SATISFACTORILY UNDER THE +/- 10% SUPPLY VOLTAGE VARIATION AT RATED FREQUENCY, -5% TO +3% VARIATION IN FREQUENCY AT RATED SUPPLY VOLTAGE, SIMULTANEOUS VARIATION IN VOLTAGE & FREQUENCY THE SUM OF ABSOLUTE PERCENTAGE NOT EXCEEDING 10%.
10. THE MOTOR SHALL BE SUITABLE FOR DIRECT ON LINE STARTING.
11. LOCAL DIGITAL POSITION INDICATOR SHALL BE PROVIDED FOR INCHING DUTY DRIVES.
12. COMMANDS SHALL BE LATCHED AT INTEGRAL STARTER END.
13. SWITCHES SHALL BE TERMINATED IN JB MOUNTED ON ACTUATOR.

\$\$ TORQUE SWITCH & LIMIT SWITCH SHALL ACT INDEPENDENT OF EACH OTHER. TANDEM OPERATION IS NOT ACCEPTABLE.

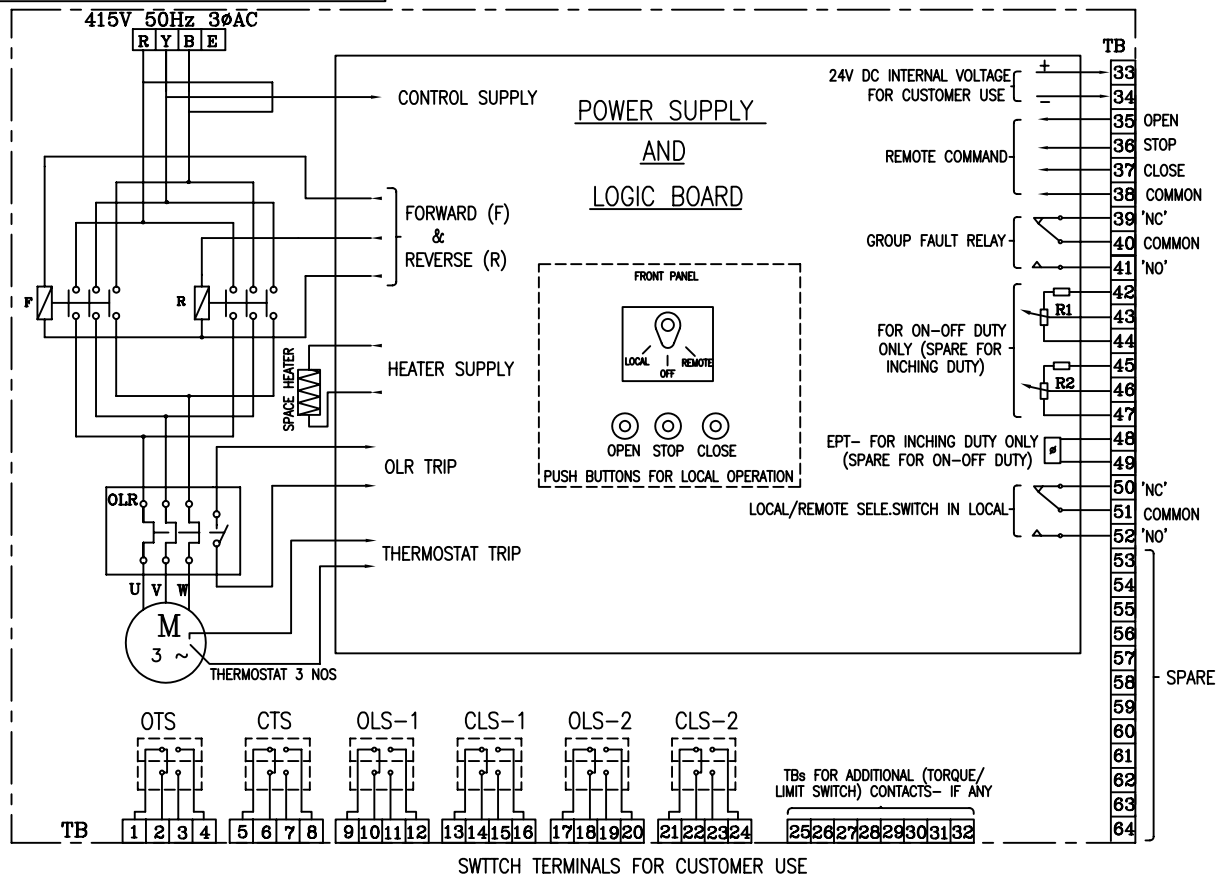
EPOXY PAINT IS RECOMMENDED FOR COASTAL AREAS

NAME SIGNATURE DATE	PREPARED BY	CHECKED BY	APPROVED BY	VENDOR COMPANY SEAL NAME SIGNATURE DATE
	SEEMA KHATRI	SURESH CHAND SHARMA	SURESH CHAND SHARMA	
	05.10.2016	05.10.2016	05.10.2016	

NOTES* = TO BE FILLED BY MPL (LEAD AGENCY). @ = TO BE FILLED BY ES

3-V-MISC-24227

DRAWING NO.



CONTACT DEVELOPMENT DIAGRAM

OTS	1-2	OPEN AT OVER TORQUE DURING OPENING TRAVEL				
	3-4	CLOSE AT OVER TORQUE DURING OPENING TRAVEL				
CTS	5-6	OPEN AT OVER TORQUE DURING CLOSING TRAVEL				
	7-8	CLOSE AT OVER TORQUE DURING CLOSING TRAVEL				
OLS-1	9-10					
	11-12					
CLS-1	13-14					
	15-16					
OLS-2	17-18					
	19-20					
CLS-2	21-22					
	23-24					
SWITCH	TERMINAL NO.	FULL OPEN	a	INTERMEDIATE	b	FULL CLOSE
		VALVE POSITION				
————— INDICATES CONTACT CLOSED - - - - - INDICATES CONTACT OPEN						
CONTACT RATING: 5A AT 250V AC & 0.5A AT 220V DC						

SETTING PROCEDURE OF POSITION LIMIT AND TORQUE SWITCH

VALVES	OPEN		CLOSE	
	MAIN	BACK UP	MAIN	BACK UP
GATE VALVE OF 100 mm AND ABOVE IN 1500 CL AND ABOVE RATINGS	OLS	OTS *	CLS	CTS
ALL OTHER GATE & GLOBE VALVES	OLS	OTS *	CTS	#
# - CLS NOT TO BE CONNECTED IN TRIP CIRCUIT				
* - BYPASS OTS FOR INITIAL 5% OF TRAVEL (FOR GATE VALVES ONLY)				

NOTE:-

- ALL TORQUE AND LIMIT SWITCHES (OTS, CTS, OLS1&2, CLS1&2) ARE WITH 2NO+2NC CONTACTS '1NO+1NC' IS TERMINATED IN TBS 1-24, REMAINING CONTACTS ARE FOR INTERNAL USE.
ANY SPARE CONTACTS WHICH ARE NOT USED INTERNALLY ARE TO BE TERMINATED IN TBS 25-32
- CTS - TORQUE SWITCHES FOR CW ROTATION (CLOSE)
- OTS - TORQUE SWITCHES FOR CCW ROTATION (OPEN)
- OLS-1, OLS-2 - LIMITSWITCHES FOR POSITION OPEN
- CLS-1, CLS-2 - LIMITSWITCHES FOR POSITION CLOSE
- EPT - ELECTRONIC POSITION TRANSMITTER (POTENTIOMETRIC TYPE, FOR INCHING DUTY)
- R1-R2-POTENTIOMETER 2 x 100 OHMS (FOR ON-OFF DUTY)
- FOR COMMANDS & EPT EITHER INTERNALLY GENERATED 24 VDC OR EXTERNAL SUPPLY OF 24VDC CAN BE USED
- M - MOTOR 3Φ 415V 50 Hz AC SUPPLY

REV	DATE	ALTERED
		CHD & APPD

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		ELECTRICAL VALVE ACTUATORS (AC) WITH INTEGRAL STARTERS (DRAWN FOR INTERMEDIATE POSITION OF VALVES)								
 365-121	BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.		DRN	N.P.ESWAR	SIGN	N.P.	DATE	07.10.04	NO.OF	VAR.
	DEPT	VL	CHD	D.DINAKARAN	D.D		07.10.04			
	CODE		APPD	K.ARUNACHALAM	K.A		07.10.04			
TITLE		CARD CODE		REFERENCE INFORMATION				NO. OF		ITEMS
WIRING DIAGRAM (TERMINAL PLAN) FOR ACTUATOR WITH INTEGRAL STARTER		U 01		DRAWING NO. 3-V-MISC-24227				REV		0

PEM REGISTERED VENDOR

SLNO	Package Code	Package Name	Vendor Code	Vendor Name	Reg Status	Grade	Vendor Address	Remarks
1	145-07000-A	ANALYTICAL INSTS.SAMPLE COOLER	J001	FORBES MARSHAL PVT. LTD.	REGULAR	NA	A-33/34, MIDC ESTATE, H-BLOCK, PIMPRI, PUNE-MAHARASHTRA-INDIA Phone- 27470171,27477472 Pincode : 411018 Email : nkaushal@forbesmarshall.com	, ,
2	145-07000-A	ANALYTICAL INSTS.SAMPLE COOLER	R002	EMERSON PROCESS MANAGEMENT (INDIA) PVT.LTD.	REGULAR	NA	Mr. Amit Paithankar/Vikram Raj Singh 206-210,BALARAMA BUILDING 2ND FLR. BANDRA EAST MUMBAI-MAHARASHTRA-INDIA Phone- 9619121500 Pincode : 400051 Email : vikramraj.singh@emerson.com	, ,
3	145-07000-A	ANALYTICAL INSTS.SAMPLE COOLER	S001	SIEMENS LIMITED	REGULAR	NA	Dr. Armin Bruck/Sandeep Mathur 130, Pandurang Budhkar Marg Worli Mumbai-Maharashtra-INDIA Phone- 0124 383 7377 Pincode : 400018 Email : ankit.varshney@siemens.com	, ,
4	145-23000-A	ANUBAR (DELTA TUBE)	S009	SWITZER PROCESS INSTRUMENTS PVT. LTD.	REGULAR	NA	B Kannan/V S Jayaprakash 9, SOUTH BOAG ROAD, II FLOOR, PB NO-1423, T.NAGAR, CHENNAI-TAMIL NADU-INDIA Phone- 044-24340999 / 24344 Pincode : 600017 Email : marketing@switzerinstrument.com	Name changed from "M/s Switzer Instrument Ltd." to "M/s Switzer Process Instruments Pvt. Ltd." w.e.f. 27.07.2016; , ,
5	145-23000-A	ANUBAR (DELTA TUBE)	S044	STAR-MECH CONTROLS (I) PVT.LTD.	REGULAR	B	SUSHILLOTAM, SUSHILLOTAM, 29/3A/3, SASANE NAGAR, HADAPSAR, PUNE-MAHARASHTRA-INDIA Phone- 02026970450 Pincode : 411028 Email : marketing@star-mech.net	, ,
6	145-23000-A	ANUBAR (DELTA TUBE)	M009	MICRO PRECISION PRODUCTS PVT. LTD.	REGULAR	NA	K.P. CHANDHOK/ATUL CHANDHOK 4, LINK ROAD, FARIDABAD-HARYANA-INDIA Phone- 9810265688 Pincode : 121002 Email : nal@microa1.com	, ,
7	145-23000-A	ANUBAR (DELTA TUBE)	D212	DYNAFLUID VALVES AND FLOW CONTROLS (P) LTD.	REGULAR	NA	Mr. Yogish M. Kulkarni Plot # 23, Udyambag, Belgaum-karnataka-India Phone- 0831-4210386 Pincode : 590008 Email : yogish@dynafluid.com	, ,
8	145-23000-A	ANUBAR (DELTA TUBE)	T108	TM TECNOMATIC SPA	REGULAR	NA	MR. ANTONIO NOVIELLO/Mrs. Enrica Bazzoc VIA DELLE INDUSTRIE, 36 CREMONA-ITALY Phone- 39037221574 Pincode : 26100 Email : info@tmtcnomatic.com	, ,
9	145-31000-A	Cold Junction Compensation Box (CJCB)	C048	CREATIVE INSTRUMENTS & CONTROLS	REGULAR	B	NO-17/1 , 1ST FLOOR , 11TH CROSS 1ST K BLOCK , RAJAJINAGAR, BANGALORE-560010 -- Phone- Pincode : Email : crinstruments@gmail.com	, ,

10	145-04000-A	CONTROL VALVE	C010	SPX Flow Technology (I) Pvt. Ltd.	REGULAR	NA	Survey No 275, Odhav Road, Odhav Ahmedabad-Gujarat-India Phone- +91 (0) 8939963099 Pincode : 382415 Email : siva.prakash@spx.com	Name changed from M/s DeZURIK-Copes Vulcan Ltd. to M/s SPX Corporation, USA as per 25th MISCC-Electrical and C&I dtd. 20.02.2014; Put on HOLD for 6 months w.e.f. 18.05.2012 & uplifted on 19.03.2014.; , POs to be placed on Indian subs.M/s SPX Flow Technology (I) Pvt. Ltd., Ahmedabad, India and the material will be supplied as per scope matrix[Available at CMM-->VD DOCUMENTS-->SCOPE
11	145-04000-A	CONTROL VALVE	D027	DRESSER VALVE INDIA PVT. LTD	REGULAR	NA	Mr. Raj Raman/Mr. Rajkumar Moria S.F. No: 608,Chettipalayam Road, Echanari Post, Coimbatore-Tamilnadu-INDIA Phone- +91-98451 19085 Pincode : 641021 Email : Anoop.Ramachandran@ge.c	, ,
12	145-04000-A	CONTROL VALVE	D057	Daume Regelarmaturen GmbH,	REGULAR	NA	Mr. Björn Carstensen Am Springbrunnen 23, Barleben--Germany, Phone- 9820805424, Pincode : 39179 Email : madhu@aumvn.com, info@daume-regelarmaturen.de,	GCC R.5 accepted by vendor. , Reviewed in MISCC dt. 21.07.2015 for non-response in 4 consecutive tender enquiry;
13	145-04000-A	CONTROL VALVE	F015	EMERSON PROCESS MANAGEMENT CHENNAI LIMITED	REGULAR	C	147, KARAPAKKAM VILLAGE, CHENNAI-TAMIL NADU-INDIA Phone- 23722184, 23716242 Pincode : 600096 Email : jatinder.singh@emerson.com	Vendor's name changed from "Fisher Sanmar Limited" to "Emersion Process Management Chennai Limited" w.e.f. 22.09.2011 , ,
14	145-04000-A	CONTROL VALVE	F030	FORBES MARSHALL ARCA PVT.LTD.	REGULAR	NA	A-34/35 , MIDC ESTATE, H-BLOCK, PIMPRI, PUNE,- MAHARASTRA-INDIA, Phone- 020-27442020, Pincode : 411018 Email : mnadgaundi@forbesmarshall.com	, Technical limit reviewed on 30.04.2014 and further revised on 29.12.2015; , Reviewed in MISCC dt. 21.07.2015 for non-response in 4 consecutive tender enquiry;
15	145-04000-A	CONTROL VALVE	H057	HOLTER REGELARMATUREN GmbH & Co.KG	REGULAR	NA	HOLTER REGELARMATUREN GmbH & Co.KG , Helleforthstrasse 58-60, D 33758 Schloss Holte-Stukenbrock Germany-- Phone- 0049-05207/88037 Pincode : Email : mail@hora.de	, HOLD due to non-responsse /non-participation w.e.f. 31.01.2013; Hold removed w.e.f. 16.10.2014.

16	145-04000-A	CONTROL VALVE	K048	Koso India Private Limited,	REGULAR	A	H 33 & 34, MIDC, Ambad, Nashik,-Maharashtra,-India, Phone- 91 944 744 3198 Pincode : 422010, Email : seemaanand_sa@koso.co.in	, The name has been changed from M/s KOSO FLUID CONTROLS (PVT) LTD to M/s Koso India Private Limited as per 11th MISCC Elect and C&I dated 30.07.2013. , Approved works at Control Valve Division, H-33&34, Ambad, Nashik w.e.f. 12.10.2015; Additional works at "J"-1,MIDC,Ambad, nashik-422010" approved w.e.f. 17.06.2016;
17	145-04000-A	CONTROL VALVE	M005	MIL CONTROLS LTD.	REGULAR	B	Mr.Jacob Cherian/Mr.Geo Jolly Meladoor, Annamanada P.O. MALA, Thrissur-KERALA INDIA Phone- 0480-2695700 Pincode : 680741 Email : biju.simon@ksb.com	, ,
18	145-04000-A	CONTROL VALVE	I006	INSTRUMENTATION LTD.	REGULAR	B	KANJIKODE WEST, PALAKKAD, PALAKKAD-KERALA-INDIA Phone- 2566127-130,2567128 Pincode : 678623 Email : icvldil@gmail.com;fa2@ilpgt.com	SICK PSU. BIFR CASE. , ,
19	145-04000-A	CONTROL VALVE	P203	PARCOL S.p.A	REGULAR	NA	Mr. Erminio Campanelli, Via Isonzo, 2, Canegrate MI--Italy Phone- 0349-7417774 Pincode : 200010 Email : mazurizio.para@parcol.com	Indian Representative-M/s Astrotech, 35, MV Compound, Bridge Way Colony, Tiruppur - 641607, Tamil Nadu, India, Ph. No.-+91 975 199 4989; Email- mani@astrotech india.in , ,
20	145-04000-A	CONTROL VALVE	R001	R.K.CONTROL INSTRUMENTS PVT. LTD.	REGULAR	NA	PLOT NO.A-250, OPP.POLICE STATION, WAGLE INDUSTRIAL ESTATE, THANE-MAHARASHTRA-INDIA Phone- 25820943/2331 Pincode : 400604 Email : rkcipl@vsnl.com ; rkcinpvt@bol.net.in	HOLD due to non-responsse /non-participation w.e.f. 10.01.2013.HOLD due to non-responsse /non-participation w.e.f. 01.02.2013.Hold is lifted w.e.f. 21.09.2013. , Reassessed on 26.02.2016; Technical limit added w.e.f. 26.02.2016; ,
21	145-04000-A	CONTROL VALVE	S237	SUZHOU DELAN ENERGY SCIENCE & TECHNOLOGY CO., LTD.	REGULAR	NA	No 566 Fangqiao Road Caohu Industrial Park, Xiangcheng Economic Development Zone, Suzhou-Jiangsu-China Phone- 008618012776062 Pincode : 215143 Email : huanlele@delan-valve.com	, ,

22	145-04000-A	CONTROL VALVE	V051	Valvitalia S.P.A. ,	REGULAR	NA	Mr. Salvatore Ruggeri Via Tortona 69, Rivanazzano (Pavia) --Italy, Phone- +39-03839459875 Pincode : 27055 Email : gianluca.angeleri@valvitalia.com	One Time Code accorded for "Control Valves" package for "1x500 MW Vindhayachal STPP Stage-V" project. , Supplier registered in permanent category as per 28th MISCC-Electrical and C&I dtd. 31.03.2014 , Deleted due to non-response in 4 consecutive tenders w.e.f. 27.07.2016; Decision revoked as per MISCC dt. 05.08.2016;
23	145-04000-A	CONTROL VALVE	W202	WALDEMAR PRUSS ARMATURENFABRIK GMBH	REGULAR	NA	Mr. Winfried Dremhel Schulenburgerlandstrasse 261, Hannover--Germany Phone- +49-511279260 Pincode : 30419 Email : dremhel@pruss.de; vogel@pruss.de	Indian Representative- M/s H S Engineering & Marketing Services, B2/73C Safdarjung Enclave, New Delhi - 110029, Ph No.-011-26193156/9313 007463; Email- joy@hsgroupdelhi.com , ,
24	145-47000-A	ELECTROMAGNETIC FLOW METER	E211	Electronet Equipments Pvt Ltd.	REGULAR	NA	Plot No. 84, 85 & 86, Tiny Industrial Estate Kondhwa Budruk, Pune-Maharashtra-India Phone- 020-2026932039 Pincode : 411048 Email : ho@eenindia.com	, ,
25	145-47000-A	ELECTROMAGNETIC FLOW METER	A216	Adept Fluidyne Pvt. Ltd.	REGULAR	NA	Vinayak Gadre Plot No 4,S.No.17/1-B Kothrud Industrial Estate Pune-Maharashtra-India Phone- 020 25464551 Pincode : 411038 Email : info@adeptfluidyne.com	, ,
26	145-12000-A	FLOW ELEMENT	S044	STAR-MECH CONTROLS (I) PVT.LTD.	REGULAR	C	SUSHILLOTAM, SUSHILLOTAM, 29/3A/3, SASANE NAGAR, HADAPSAR, PUNE- MAHARASHTRA-INDIA Phone- 02026970450 Pincode : 411028 Email : modulation@star-mech.net	, ,
27	145-12000-A	FLOW ELEMENT	I006	INSTRUMENTATION LTD.	REGULAR	C	KANJIKODE WEST, PALAKKAD, PALAKKAD-KERALA-INDIA Phone- 2566127-130,2567128 Pincode : 678623 Email : icvdlil@gmail.com;fa2@ilpgt.com	SICK PSU. BIFR CASE. , ,
28	145-12000-A	FLOW ELEMENT	M009	MICRO PRECISION PRODUCTS PVT. LTD.	REGULAR	C	K.P. CHANDHOK/ATUL CHANDHOK 4, LINK ROAD, FARIDABAD-HARYANA-INDIA Phone- 9810265688 Pincode : 121002 Email : nal@micro1.com	REGISTERED AS MSED VENDOR W.E.F.15.11.20 11 FOR FY 2011-12. , ,
29	145-12000-A	FLOW ELEMENT	T108	TM TECNOMATIC SPA	REGULAR	NA	MR. ANTONIO NOVIELLO/Mrs. Enrica Bazzoc VIA DELLE INDUSTRIE, 36 CREMONA-ITALY Phone- 39037221574 Pincode : 26100 Email : info@tmtecnomatic.com	, ,

30	145-44000-A	FLOW ELEMENT - NOZZLE	S165	SEIKO FLOW CONTROL GMBH	REGULAR	NA	Mr. Friedrich Rupprecht/ Mr. S. Subhash Zur Schleuse 5, 2000 Stockerau, Stockerau--Austria Phone- 9811047972 Pincode : Email : office@seiko-flowcontrol.com	Indian Representative: M/s Menon Associates, 118, Aurobindo Commercial Complex, New Delhi-110016 ,
31	145-44000-A	FLOW ELEMENT - NOZZLE	I006	INSTRUMENTATION LTD.	REGULAR	B	KANJIKODE WEST, PALAKKAD, PALAKKAD-KERALA-INDIA Phone- 2566127-130,2567128 Pincode : 678623 Email : icvdiil@gmail.com;fa2@ilpgt.com	SICK PSU. BIFR CASE. , ,
32	145-44000-A	FLOW ELEMENT - NOZZLE	M009	MICRO PRECISION PRODUCTS PVT. LTD.	REGULAR	B	K.P. CHANDHOK/ATUL CHANDHOK 4, LINK ROAD, FARIDABAD-HARYANA-INDIA Phone- 9810265688 Pincode : 121002 Email : pal@micro1.com	REGISTERED AS MSMD VENDOR W.E.F.15.11.20 11 FOR FY 2011-12. , ,
33	145-44000-A	FLOW ELEMENT - NOZZLE	M201	MINCO (INDIA) FLOW ELEMENTS PVT. LTD.	REGULAR	NA	Mr. Raghavendra M. Kulkarni D2-49/50, Tivim Industrial Estate, Karaswada Mapusa-Goa-India Phone- 0832-2257059 Pincode : 403526 Email : gicflowelement@giconindia.com	, ,
34	145-44000-A	FLOW ELEMENT - NOZZLE	S044	STAR-MECH CONTROLS (I) PVT.LTD.	REGULAR	B	SUSHILLOTAM, SUSHILLOTAM, 29/3A/3, SASANE NAGAR, HADAPSAR, PUNE-MAHARASHTRA-INDIA Phone- 02026970450 Pincode : 411028 Email : madkoting@star-mech.net	, ,
35	145-44000-A	FLOW ELEMENT - NOZZLE	D212	DYNAFLUID VALVES AND FLOW CONTROLS (P) LTD.	REGULAR	NA	Mr. Yogish M. Kulkarni Plot # 23, Udyambag, Belgaum-karnataka-India Phone- 0831-4210386 Pincode : 590008 Email : yogish@dyna-fluid.com	, ,
36	145-44000-A	FLOW ELEMENT - NOZZLE	H066	HYDROPNEUMATICS PVT. LTD.	REGULAR	NA	Mr. DM Bichu G/B, Hill Crown Apts., College Road Mapusa-Goa-India Phone- 0832-2360364 Pincode : 403507 Email : ajayrc@hydropneumatics.co.in	, ,
37	145-43000-A	FLOW ELEMENT - ORIFICE	H066	HYDROPNEUMATICS PVT. LTD.	REGULAR	NA	Mr. DM Bichu G/B, Hill Crown Apts., College Road Mapusa-Goa-India Phone- 0832-2360364 Pincode : 403507 Email : ajayrc@hydropneumatics.co.in	, ,
38	145-43000-A	FLOW ELEMENT - ORIFICE	F033	Flow Star Engineering Pvt. Ltd.,	REGULAR	A1	MR. KHALID AKHTAR/MR. TAPAN KUMAR JANA Plot No- 7 F/2, Northern India Industrial 20/3, Mathura Road FARIDABAD-HARYANA-INDIA Phone- 9818176380 Pincode : 121005 Email : khalid@flowstar.co.in	, ,
39	145-43000-A	FLOW ELEMENT - ORIFICE	D212	DYNAFLUID VALVES AND FLOW CONTROLS (P) LTD.	REGULAR	NA	Mr. Yogish M. Kulkarni Plot # 23, Udyambag, Belgaum-karnataka-India Phone- 0831-4210386 Pincode : 590008 Email : yogish@dyna-fluid.com	, ,
40	145-43000-A	FLOW ELEMENT - ORIFICE	S044	STAR-MECH CONTROLS (I) PVT.LTD.	REGULAR	B	SUSHILLOTAM, SUSHILLOTAM, 29/3A/3, SASANE NAGAR, HADAPSAR, PUNE-MAHARASHTRA-INDIA Phone- 02026970450 Pincode : 411028 Email : madkoting@star-mech.net	, ,
41	145-43000-A	FLOW ELEMENT - ORIFICE	M009	MICRO PRECISION PRODUCTS PVT. LTD.	REGULAR	B	K.P. CHANDHOK/ATUL CHANDHOK 4, LINK ROAD, FARIDABAD-HARYANA-INDIA Phone- 9810265688 Pincode : 121002 Email : pal@micro1.com	REGISTERED AS MSMD VENDOR W.E.F.15.11.20 11 FOR FY 2011-12. , ,

42	145-43000-A	FLOW ELEMENT - ORIFICE	I006	INSTRUMENTATION LTD.	REGULAR	NA	KANJIKODE WEST, PALAKKAD, PALAKKAD-KERALA-INDIA Phone- 2566127-130,2567128 Pincode : 678623 Email : icvdlil@gmail.com;fa2@ilpgt.com	SICK PSU. BIFR CASE. , ,
43	145-43000-A	FLOW ELEMENT - ORIFICE	I030	INSTRUMENTATION ENGINEERS PVT LTD	REGULAR	B	SH.N.V.RAM GOPAL/MS. N.NIHARIKA PLOTS 1,2,3, PHASE-III, IDA, JEEDIMETLA HYDERABAD-TELANGANA-INDIA Phone- 9848407365 Pincode : 500055 Email : jeedimetla@jeedimetla.com	, ,
44	145-45000-A	INSTRUMENT FITTINGS	P046	PRECISION ENGINEERING INDUSTRIES	REGULAR	NA	K. SITARAM/ K. SRINIVAS 7,SIDHAPURA INDUSTRIAL ESTATE S.V. ROAD,GOREGAON(W) MUMBAI-MAHARASHTRA-INDIA Phone- 022 42631700 Pincode : 400 062 Email : peiks@vsnl.com	, ,
45	145-45000-A	INSTRUMENT FITTINGS	P082	PANAM ENGINEERS	REGULAR	NA	Mr. Santosh Shukla 203, Jaisingh Business,Parsiwada, Sahar road,Andheri(East), Mumbai,-Maharashtra,-India, Phone- 9892179529, Pincode : 400099, Email : santosh@panamengineers.com,	, ,
46	145-45000-A	INSTRUMENT FITTINGS	P81	Perfect Instrumentation Control (India) Pvt. Ltd.	REGULAR	NA	MD Hussain Shaikh/Shahanawaz Khan Gala No. 168, Loheki Chwal,216/ 218, Maulana Azad Rd. Nagpada Junction Mumbai-Maharashtra-INDIA Phone- 91-9324383121 Pincode : 400008 Email : shahanawaz.khan@perfectinstrumentation.com	, ,
47	145-45000-A	INSTRUMENT FITTINGS	C067	Comfit & Valve Pvt. Ltd.	REGULAR	NA	Mr. Jeetu Jain/Mr. Vinay Sosa Survey No. 23/1, Part 2, Ahmedabad-Mehsana Highway Laxmipura, Nandasan-Gujarat-INDIA Phone- 02764-267036/37 Pincode : 382705 Email : madhukhina@com-fit.com	, ,
48	145-45000-A	INSTRUMENT FITTINGS	A079	AURA INCORPORATED	REGULAR	NA	NIRAJ SHARAN/SUJIT KUMAR W-167A, GREATER KAILASH-II NEW DELHI-DELHI-INDIA Phone- 9810182430 Pincode : 110048 Email : niraj@aurainc.com	, ,
49	145-45000-A	INSTRUMENT FITTINGS	A121	Arya Crafts & Engineering Pvt. Ltd.	REGULAR	NA	Mr.Sanjay Brahman/Mr.Shyam Vazirani 102, Vora Industrial Estate No.4 Navghar, Vasai Road (E) Dist.Thane, Mumbai-Maharashtra-INDIA Phone- +91-250-2392246 Pincode : 401210 Email : arya@aryaengg.com	, ,
50	145-45000-A	INSTRUMENT FITTINGS	F040	FLUIDFIT ENGINEERS PVT. LTD.	REGULAR	NA	Mr. Abbas Bhola Potia Building No. 2, Office No. 3,292, Bellasis Road,Mumbai Central (East) Mumbai-Maharashtra-India Phone- 9920044113 Pincode : 400008 Email : ab@fluidfitengg.com	Registered as per 22nd Electrical and C&I MISCC Meeting dtd. 15.01.2014 , ,
51	145-45000-A	INSTRUMENT FITTINGS	H61	HP VALVES & FITTINGS INDIA PVT. LTD.	REGULAR	C	S. Harichandran/P.S. Pandi B-11, Mugappair Industrial Estate, CHENNAI-Tamilnadu-INDIA Phone- 044 26252537 Pincode : 600037 Email : sales@hpvalvesindia.com	, ,

52	145-45000-A	INSTRUMENT FITTINGS	H024	Fluid Controls Pvt. Ltd.	REGULAR	NA	Sophie Y. Mochhala/Mayur Rajput J.V.PATEL, I.T.I CMPD, B.MADHUKAR MARG, ELPHINSTONE ROADSTN.(WR), MUMBAI-MAHARASHTRA-INDIA Phone- (022) 43338000 Pincode : 400013 Email : sales@fluidcontrols.com	Name changed from M/s Hyd-Air Valves Pvt. Ltd. to M/s Fluid Controls Pvt. Ltd. as per 25th MISCC-Electrical and C&I dtd. 20.02.2014 , ,
53	145-45000-A	INSTRUMENT FITTINGS	V039	VIKAS INDUSTRIAL PRODUCTS	REGULAR	NA	S.R.SINGH/NAVEEN SINGH B - 2, SECTOR - 6, NOIDA-UTTAR PRADESH-INDIA Phone- +91-9810122070 Pincode : 201301 Email : naveensingh@vsnl.com	, Financial limit reviewed on 05.06.2014 ,
54	145-38000-A	INSTRUMENTS PIPE FITTINGS	V039	VIKAS INDUSTRIAL PRODUCTS	REGULAR	A	S.R.SINGH/NAVEEN SINGH B - 2, SECTOR - 6, NOIDA-UTTAR PRADESH-INDIA Phone- +91-9810122070 Pincode : 201301 Email : naveensingh@vsnl.com	, ,
55	145-38000-A	INSTRUMENTS PIPE FITTINGS	H024	Fluid Controls Pvt. Ltd.	REGULAR	B	Sophie Y. Mochhala/Mayur Rajput J.V.PATEL, I.T.I CMPD, B.MADHUKAR MARG, ELPHINSTONE ROADSTN.(WR), MUMBAI-MAHARASHTRA-INDIA Phone- (022) 43338000 Pincode : 400013 Email : sales@fluidcontrols.com	, ,
56	145-38000-A	INSTRUMENTS PIPE FITTINGS	A079	AURA INCORPORATED	REGULAR	NA	NIRAJ SHARAN/SUJIT KUMAR W-167A, GREATER KAILASH-II NEW DELHI-DELHI-INDIA Phone- 9810182430 Pincode : 110048 Email : niraj@aurainc.com	, ,
57	145-38000-A	INSTRUMENTS PIPE FITTINGS	P046	PRECISION ENGINEERING INDUSTRIES	REGULAR	NA	K. SITARAM/ K. SRINIVAS 7,SIDHAPURA INDUSTRIAL ESTATE S.V. ROAD,GOREGAON(W) MUMBAI-MAHARASHTRA-INDIA Phone- 022 42631700 Pincode : 400 062 Email : peiks@vsnl.com	, ,
58	145-32000-A	INSTRUMENTS TUBE FITTINGS	P046	PRECISION ENGINEERING INDUSTRIES	REGULAR	C	K. SITARAM/ K. SRINIVAS 7,SIDHAPURA INDUSTRIAL ESTATE S.V. ROAD,GOREGAON(W) MUMBAI-MAHARASHTRA-INDIA Phone- 022 42631700 Pincode : 400 062 Email : peiks@vsnl.com	, ,
59	145-32000-A	INSTRUMENTS TUBE FITTINGS	A079	AURA INCORPORATED	REGULAR	C	NIRAJ SHARAN/SUJIT KUMAR W-167A, GREATER KAILASH-II NEW DELHI-DELHI-INDIA Phone- 9810182430 Pincode : 110048 Email : niraj@aurainc.com	, ,
60	145-32000-A	INSTRUMENTS TUBE FITTINGS	H024	Fluid Controls Pvt. Ltd.	REGULAR	B	Sophie Y. Mochhala/Mayur Rajput J.V.PATEL, I.T.I CMPD, B.MADHUKAR MARG, ELPHINSTONE ROADSTN.(WR), MUMBAI-MAHARASHTRA-INDIA Phone- (022) 43338000 Pincode : 400013 Email : sales@fluidcontrols.com	, ,
61	145-32000-A	INSTRUMENTS TUBE FITTINGS	V039	VIKAS INDUSTRIAL PRODUCTS	REGULAR	NA	S.R.SINGH/NAVEEN SINGH B - 2, SECTOR - 6, NOIDA-UTTAR PRADESH-INDIA Phone- +91-9810122070 Pincode : 201301 Email : naveensingh@vsnl.com	, ,

62	145-25000-A	JUNCTION BOX	S114	Shrenik & Company,	REGULAR	NA	Mr. Mitesh Shah/Mr. Pulin Shah 39 A/3 ,Panchratna Industrial Estate, Sarkhej-Bavla Road Ahmedabad-Gujarat-India Phone- 9825024921 Pincode : 382213 Email : sales@pustron.com, pulin@pustron.com	Registered for FRP JB's AND METAL JB's. , Technical limit reviewed on 30.04.2014; ,
63	145-25000-A	JUNCTION BOX	F201	FLEXPRO ELECTRICALS PVT. LTD.	REGULAR	NA	Mr. Dineshbhai Zaveri C-1/ 27&37, GIDC, Kabilpore, Navsari-Gujarat-India Phone- 02637-265140,265003 Pincode : 396424 Email : flexpro@flexproltd.com	Technical limit reviewed on 12.10.2015; , ,
64	145-25000-A	JUNCTION BOX	A101	AJMERIA INDUSTRIAL & ENGINEERING WORKS	REGULAR	C	JIGNESH MAHENDRA AJMERIA DENA BANK BLDG.,SHREE NAGESH INDL. ESTATE,STATION ROAD, MUMBAI-MAHARASHTRA-INDIA Phone- 022 67973578 Pincode : 400 088 Email : ajmeria@ajmeria.net, jmajmeria@yahoo.com	Reviewed in MISCC dt. 21.07.2015 for non-response in 4 consecutive tender enquiry; , APPROVED FOR GALVANIZED AND FRP JUNCTION BOXES; Technical limit reviewed on 30.04.2014 ,
65	145-25000-A	JUNCTION BOX	K043	K.S.INSTRUMENTS PVT.LTD.	REGULAR	A	S Raghavan No. 72, 3rd Main, 1st Stage Industrial Suburb, Yeshwanthpur Bangalore-Karnataka-India Phone- 9880385770 Pincode : 560022 Email : sales1@ksinstruments.net	, ,
66	145-25000-A	JUNCTION BOX	S095	SUCHITRA INDUSTRIES	REGULAR	A	NO-2,OPP-27 AECS LAYOUT 2ND STG REJAMAHALVILAS EXTN 2ND STG BANGALORE -- Phone- Pincode : Email : suchitra.industriesblr@gmail.com	, ,
67	145-11000-A	LEVEL GAUGE	S008	SIGMA INSTRUMENTS CO.	REGULAR	NA	Gopal Kannan/R Gopinath 201, ANANDRAJ INDUSTRIAL ESTATE, OFF.LBS MARG, SONAPUR LANE, BHANDUP (W) MUMBAI-MAHARASHTRA-INDIA Phone- +919821038162 Pincode : 400078 Email : sales@sigmainstruments.co.i	, ,
68	145-11000-A	LEVEL GAUGE	B077	BLISS ANAND PVT. LTD.	REGULAR	NA	Mr. Vikas Anand/ Mr.RGRajan 92B & 93 B , IMT MANESAR Gurgaon-Haryana-India Phone- 0124-4366000 TO 9 Pincode : 122001 Email : sales@blissanand.com	, ,
69	145-11000-A	LEVEL GAUGE	T001	TOSHNIWAL BROTHERS PVT.LTD.	REGULAR	NA	WORKS:TOSHNIWAL IND.PVT.LTD, INDUSTRIAL ESTATE MAKHUPURA, AJMER-RAJASTHAN-INDIA Phone- 441171 Pincode : 305002 Email : toshniwalprocess@gmail.com	, ,
70	145-35000-A	LEVEL SWITCH- CAPACITANCE TYPE	S123	Sapcon Instrument Pvt Ltd.	REGULAR	NA	131, PALSHIKAR COLONY Contact Person- Mr. Ashwin (9826080207) INDORE-MP-INDIA Phone- +91-731-4085751, Pincode : 452004 Email : sales@sapconinstruments.co	, ,

71	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	W017	Baumer Technologies India Pvt. Ltd.	REGULAR	NA	Mr. Shyam Warilani/Mr. V Suresh Babu 36, DAMJI SHAMJI INDUSTRIAL COMPLEX, OFF.-MAHAKALI CAVES ROAD, ANDHERI(E) MUMBAI-Maharashtra-INDIA Phone- +91 99589 25151 Pincode : 400093 Email : sales.in@baumer.com	, NAME HAS BEEN CHANGED FROM M/S WAAREE INSTRUMENTS LTD. TO M/S BAUMER TECHNOLOGIES INDIA PVT. LTD. W.E.F. 12.06.2012
72	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	V040	V. AUTOMAT & INSTRUMENTS (P) LTD.	REGULAR	NA	Mr. R. K. BASSI/Mr. PRAVEEN KUMAR F-61, OKHLA INDL.AREA, PH-1 NEW DELHI-DELHI-INDIA Phone- 9810005826 Pincode : 110 020 Email : sales@vautomat.com	, ,
73	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	B077	BLISS ANAND PVT. LTD.	REGULAR	NA	Mr. Vikas Anand/Mr.RGRajan 92B & 93 B , IMT MANESAR Gurgaon-Haryana-India Phone- 0124-4366000 TO 9 Pincode : 122001 Email : sales@blissanand.com	, ,
74	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	F033	Flow Star Engineering Pvt. Ltd.,	REGULAR	A1	MR. KHALID AKHTAR/MR. TAPAN KUMAR JANA Plot No- 7 F/2, Northern India Industrial 20/3, Mathura Road FARIDABAD-HARYANA-INDIA Phone- 9818176380 Pincode : 121005 Email : khalid@flowstar.co.in	VENDOR IS REGISTERED IN MSED (MICRO) W.E.F.30.11.2011 FOR FY 2011-12 , ,
75	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	S008	SIGMA INSTRUMENTS CO.	REGULAR	NA	Gopal Kannan/R Gopinath 201, ANANDRAJ INDUSTRIAL ESTATE, OFF.LBS MARG, SONAPUR LANE, BHANDUP (W) MUMBAI-MAHARASHTRA-INDIA Phone- +919821038162 Pincode : 400078 Email : sales@sigmainstruments.co.i	, ,
76	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	S010	SOR INC.	REGULAR	NA	LARRY DEGARMO/Avdesh Chandra, 14685 W. 105TH STREET LENEXA-KANSAS-USA Phone- 09810905139, Pincode : 66215 Email : ldegarmo@sorinc.com, avdesh@sherman-jedia.com	, ,
77	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	L005	LEVCON INSTRUMENTS PVT. LTD.	REGULAR	NA	Mr Shayak Gupta/Badal Jana Rajkamal', 7th floor, 13, Camac Street KOLKATA- WEST BENGAL-INDIA Phone- 0 33 2283 2766 Pincode : 700017 Email : b_jana@levcongroup.com	, ,
78	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	P068	Pune Techtrol Pvt. Ltd.	REGULAR	NA	N.P.Khatan/Sudhakar Badiger S-18, MIDC Bhosari, Pune-Maharashtra-INDIA Phone- 9850560042 Pincode : 411 026 Email : ho@punetechtrol.com	, ,
79	145-35000-A	LEVEL SWITCH-CAPACITANCE TYPE	N035	NIVO CONTROLS PVT. LTD.	REGULAR	NA	MR.PRAVEEN TOSHNIWAL/MR. NITIN TAMHANE 104-115, ELECTRONIC COMPLEX, INDORE-MAHARASHTRA-INDIA Phone- 07314081300 Pincode : 452010 Email : sales@nivocontrols.com	, ,
80	145-36000-A	LEVEL SWITCH-CONDUCTIVITY TYPE	L005	LEVCON INSTRUMENTS PVT. LTD.	REGULAR	NA	Mr Shayak Gupta/Badal Jana Rajkamal', 7th floor, 13, Camac Street KOLKATA- WEST BENGAL-INDIA Phone- 0 33 2283 2766 Pincode : 700017 Email : b_jana@levcongroup.com	, ,

81	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	S010	SOR INC.	REGULAR	NA	LARRY DEGARMO/Avdhesh Chandra, 14685 W. 105TH STREET LENEXA-KANSAS-USA Phone- 09810905139, Pincode : 66215 Email : Ldegarmo@sorinc.com, avdhesh@sherman-india.com	, ,
82	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	S008	SIGMA INSTRUMENTS CO.	REGULAR	NA	Gopal Kannan/R Gopinath 201, ANANDRAJ INDUSTRIAL ESTATE, OFF.LBS MARG, SONAPUR LANE, BHANDUP (W) MUMBAI-MAHARASHTRA-INDIA Phone- +919821038162 Pincode : 400078 Email : sales@sigmainstruments.co.i	, ,
83	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	R047	RAMAN INSTRUMENTS PVT.LTD.	REGULAR	NA	Mr. N R Shenoy/Mr G B Vijh 8, First Floor.Plot : 160A Bait-Ush-Sharaf, 29th Road,Bandra(W) MUMBAI-Maharashtra-India Phone- 09892331381 Pincode : 400050 Email : ramanbhai@vsnl.com	Technical limit reviewed on 12.10.2015; , Technical limit reviewed on 30.04.2014; ,
84	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	H047	HI-TECH SYSTEMS & SERVICES LTD.	REGULAR	NA	Mr. Vikash Agrawal/Mr. Tarun Debnath 119, PARK STREET , KOLKATA-West Bengal-India Phone- 033-22290045 Pincode : 700016 Email : saaddeen@hitech.in	Technical limit reviewed on 12.10.2015; , Technical limit reviewed on 30.04.2014; ,
85	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	B077	BLISS ANAND PVT. LTD.	REGULAR	NA	Mr. Vikas Anand/ Mr.RGRajan 92B & 93 B , IMT MANESAR Gurgaon-Haryana-India Phone- 0124-4366000 TO 9 Pincode : 122001 Email : sales@blissanand.com	, ,
86	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	V040	V. AUTOMAT & INSTRUMENTS (P) LTD.	REGULAR	NA	Mr. R. K. BASSI/Mr. PRAVEEN KUMAR F-61, OKHLA INDL.AREA, PH-1 NEW DELHI-DELHI-INDIA Phone- 9810005826 Pincode : 110 020 Email : sales@vautomat.com	, ,
87	145-36000-A	LEVEL SWITCH- CONDUCTIVITY TYPE	S123	Sapcon Instrument Pvt Ltd.	REGULAR	NA	131, PALSHIKAR COLONY Contact Person- Mr. Ashwin (9826080207) INDORE-MP-INDIA Phone- +91-731-4085751, Pincode : 452004 Email : sales@sapconinstruments.co	, ,
88	145-37000-A	LEVEL SWITCH-FLOAT TYPE	V040	V. AUTOMAT & INSTRUMENTS (P) LTD.	REGULAR	NA	Mr. R. K. BASSI/Mr. PRAVEEN KUMAR F-61, OKHLA INDL.AREA, PH-1 NEW DELHI-DELHI-INDIA Phone- 9810005826 Pincode : 110 020 Email : sales@vautomat.com	, ,
89	145-37000-A	LEVEL SWITCH-FLOAT TYPE	W017	Baumer Technologies India Pvt. Ltd.	REGULAR	NA	Mr. Shyam Warilani/Mr. V Suresh Babu 36, DAMJI SHAMJI INDUSTRIAL COMPLEX, OFF.-MAHAKALI CAVES ROAD, ANDHERI(E) MUMBAI-Maharashtra-INDIA Phone- +91 99589 25151 Pincode : 400093 Email : sales.in@baumer.com	, NAME HAS BEEN CHANGED FROM M/S WAAREE INSTRUMENTS LTD. TO M/S BAUMER TECHNOLOGIES INDIA PVT. LTD. W.E.F. 13.06.2013
90	145-37000-A	LEVEL SWITCH-FLOAT TYPE	B077	BLISS ANAND PVT. LTD.	REGULAR	NA	Mr. Vikas Anand/ Mr.RGRajan 92B & 93 B , IMT MANESAR Gurgaon-Haryana-India Phone- 0124-4366000 TO 9 Pincode : 122001 Email : sales@blissanand.com	, ,
91	145-37000-A	LEVEL SWITCH-FLOAT TYPE	D046	D.K. INSTRUMENTS PVT.LTD.	REGULAR	NA	N.SIKDAR/ SUMIT SIKDAR 76/2,SELIMPUR RD DHAKURIA Kolkata-West Bengal-India Phone- 033-2415-1310. Pincode : 700031 Email : dkiost@vsnl.net	, ,

92	145-37000-A	LEVEL SWITCH-FLOAT TYPE	G060	GENERAL INSTRUMENTS CONSORTIUM	REGULAR	NA	Mr. Amarendra Kulkarni 194/195, Gopi Tank Road, Off. Pandurang Naik Marg, Mahim Mumbai-Maharashtra India Phone- 9323195251 Pincode : 400016 Email : amarendra@general- gauges.com	Workas at- GAUGES BOURDON INDIA PVT. LTD. (A MFG. UNIT OF GENERAL INSTRUMENTS CONSORTIUM , PLOT NO-4, 5 & 6, JAWAHAR Co-op. INDUSTRIAL ESTATE, KAMOTHE, PANVEL- 410 209 , ,
93	145-37000-A	LEVEL SWITCH-FLOAT TYPE	S008	SIGMA INSTRUMENTS CO.	REGULAR	C	Gopal Kannan/R Gopinath 201, ANANDRAJ INDUSTRIAL ESTATE, OFF.LBS MARG, SONAPUR LANE, BHANDUP (W) MUMBAI-MAHARASHTRA- INDIA Phone- +919821038162 Pincode : 400078 Email : sales@sigmainstruments.co.i n	Vendor shall source import contents of Level Switch (Conductivity Type) from Mobrey Measurement, an operating unit of Morbey Ltd., Slough, Berkshire, United
94	145-37000-A	LEVEL SWITCH-FLOAT TYPE	S010	SOR INC.	REGULAR	NA	LARRY DEGARMO/Avdesh Chandra, 14685 W. 105TH STREET LENEXA-KANSAS- USA Phone- 09810905139, Pincode : 66215 Email : Ldegarmo@sorinc.com, avdesh@sherman- india.com	, ,
95	145-37000-A	LEVEL SWITCH-FLOAT TYPE	S106	SBEM PVT. LTD.	REGULAR	NA	MR.N.K. BEDARKAR/MR. VISHWANATH KARANDIK 39, ELECTRONIC CO.OP. ESTATE, PUNE SATARA ROAD PUNE,- MAHARASHTRA-INDIA Phone- 912041030100 Pincode : 411009 Email : pawdalk@sbem.co.in	, ,
96	145-37000-A	LEVEL SWITCH-FLOAT TYPE	L005	LEVCON INSTRUMENTS PVT. LTD.	REGULAR	NA	Mr Shayak Gupta/Badal Jana Rajkamal', 7th floor, 13, Camac Street KOLKATA- WEST BENGAL-INDIA Phone- 0 33 2283 2766 Pincode : 700017 Email : b_jana@levcongroup.com	, ,
97	145-37000-A	LEVEL SWITCH-FLOAT TYPE	P068	Pune Techtrol Pvt. Ltd.	REGULAR	NA	N.P.Khatan/Sudhakar Badiger S-18, MIDC Bhosari, Pune-Maharashtra-INDIA Phone- 9850560042 Pincode : 411 026 Email : ho@punetechtrol.com	, ,
98	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	F016	FORBES MARSHALL (HYD) LTD.	REGULAR	NA	MR SAIKESH PATALAY/MR. M K SRINIVASAN PLOT NO.A- 19/2, & T-4/2, IDA, NACHARAM, HYDERABAD- TELANGANA-INDIA Phone- 9849913704 Pincode : 500 076 Email : mksrinivasan@forbesmarshall.com	, ,
99	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	H040	H.GURU INSTRUMENTS (SOUTH INDIA) P. LTD	REGULAR	B	32,INDUSTRIAL SUBURB YESWANTHAPUR BANGALORE-KARNATAKA- www.hgurusouth.com Phone- 080-23370300, Pincode : 560022 Email : info@hgurusouth.com	, ,
100	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	H023	H.GURU INDUSTRIES	REGULAR	NA	Mr. G. D. Hazra/Mr. P. K. Mitra 10 B, HO-CHI-MINH SARANI, KOLKATA-WEST BENGAL-INDIA Phone- 033 2282 2463 / 1637 Pincode : 700071 Email : mguru@vscpl.net	, Financial limit reviewed on 05.06.2014; ,

101	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	G071	GAUGE BOURDON INDIA PVT. LTD.	REGULAR	NA	194/195, Gopi Tank Road, Off Pandurang Naik Marg, Mahim Mumbai,- Maharashtra,-India, Phone- 011-41607463, Pincode : 400016, Email : gicdelhi@general- gauge.com	Registered as per 26th MISCC- Electrical and C&I dtd. 06.03.2014. , ,
102	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	B083	BOSE PANDA INSTRUMENTS PVT.LTD.	REGULAR	NA	Mr. Partha Bose 44, Saheed Hemanta Kumar Bose, Sarani, Kolkata-West Bengal India Phone- +91 33 2548 7220 Pincode : 700074 Email : parthabosebpi@gmail.com; bosepanda@vsnl.net	Trial to Hold as per SEARP amd- 3,w.e.f. 15-09- 12 , Supplier registered in trial category on 30.10.2010 and was thereafter put in susp-hold category as per SEARP Amd-03 on 15.09.2012. Further, on evaluation put in permanent category on 20.08.2014; ,
103	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	A126	PRECISION MASS PRODUCTS PVT. LTD.	REGULAR	NA	Mr. Nishit Patel/Mr. Anuj Verma Plot No.2306, Phase II, GIDC Chhatral Kalol- Gujarat,-INDIA Phone- 9999464663 Pincode : 382729 Email : sales@precisionmass.com	Registration of "M/s Ashcroft India Pvt. Ltd." substituted to "M/s Precision Mass Products Pvt. Ltd." as per MISCC dt. 15.02.2016 based on "Termination and business transfer agreement" submitted by
104	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	A010	A.N. INSTRUMENTS PVT. LTD.	REGULAR	C	MARKETING DIVISION, 5th FLOOR, 59-B, CHOWRINGHEE ROAD, KOLKATA-WEST BENGAL- INDIA Phone- 24757784,22472509 Pincode : 700020 Email : anidol@aninst.in	, ,
105	145-08000-A	PRESSURE GAUGE/ DIFF.PRESSURE GAUGE	W017	Baumer Technologies India Pvt. Ltd.	REGULAR	NA	Mr. Shyam Warilani/Mr. V Suresh Babu 36, DAMJI SHAMJI INDUSTRIAL COMPLEX, OFF.-MAHAKALI CAVES ROAD, ANDHERI(E) MUMBAI-Maharashtra-INDIA Phone- +91 99589 25151 Pincode : 400093 Email : sales.in@baumer.com	, NAME HAS BEEN CHANGED FROM M/S WAAREE INSTRUMENTS LTD. TO M/S BAUMER TECHNOLOGIES INDIA PVT. LTD. W.E.F. 15.06.2013.
106	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	A126	PRECISION MASS PRODUCTS PVT. LTD.	REGULAR	NA	Mr. Nishit Patel/Mr. Anuj Verma Plot No.2306, Phase II, GIDC Chhatral Kalol- Gujarat,-INDIA Phone- 9999464663 Pincode : 382729 Email : sales@precisionmass.com	Registration of "M/s Ashcroft India Pvt. Ltd." substituted to "M/s Precision Mass Products Pvt. Ltd." as per MISCC dt. 15.02.2016 based on "Termination and business transfer agreement" submitted by
107	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	B085	Barksdale GmbH, Germany	REGULAR	NA	Michael Weileder Dorn Assenheimer, Strasse 27 Reichelsheim--Germany Phone- +91-9999107840 Pincode : D-61203 Email : msingh@barksdale.de	, ,

108	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	D021	DRESSER INDUSTRIES INC.	REGULAR	NA	Mr. Nishit Patel/Mr. Anuj Verma Plot No.2306, Phase II, GIDC Chhatral Kalol-Gujarat-India Phone- 02764-233682 Pincode : 382729 Email : Nishit.patel@ashcroftindia.com	, ,
109	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	D003	INDFOS (INDIA) LIMITED	REGULAR	NA	MR.L.C.VENKATRANGAN/MR. B.KANNAN New No.17, II Floor, Adwave Towers, Dr.Sevalia Shivaji Salai, T.Nagar Chennai-TamilNadu- INDIA Phone- +91 44 24353407 Pincode : 600017 Email : delhi@indfos.com	, ,
110	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	G060	GENERAL INSTRUMENTS CONSORTIUM	REGULAR	C	Mr. Amarendra Kulkarni 194/195, Gopi Tank Road, Off. Pandurang Naik Marg, Mahim Mumbai-Maharashtra India Phone- 9323195251 Pincode : 400016 Email : amarendra@general-gauges.com	Workas at- GAUGES BOURDON INDIA PVT. LTD. (A MFG. UNIT OF GENERAL INSTRUMENTS CONSORTIUM , PLOT NO-4, 5 & 6, JAWAHAR Co-op. INDUSTRIAL ESTATE, KAMOTHE, PANVEL- 410 209 , ,
111	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	K054	Kaustubha Udyog,	REGULAR	NA	S.No. 36/1/1, Sinhgad Road, Vadgaon Khurd, Near Lokmat Press, Pune,- Maharashtra,-India, Phone- 020-24393577, Pincode : Email : pressure@vsnl.com,	, ,
112	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	I041	INDFOS INDUSTRIES LIMITED	REGULAR	C	B-20-21, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD-UP-INDIA Phone- 0120-2712016 Pincode : Email : mktn@indfos.com	, ,
113	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	S010	SOR INC.	REGULAR	NA	LARRY DEGARMO/Avdhesh Chandra, 14685 W. 105TH STREET LENEXA-KANSAS- USA Phone- 09810905139, Pincode : 66215 Email : Ldegarmo@sorinc.com, avdhesh@sherman-india.com	, ,
114	145-06000-A	PRESSURE SWITCH/DIFF. PRESSURE SWITCH	S009	SWITZER PROCESS INSTRUMENTS PVT. LTD.	REGULAR	C	B Kannan/V S Jayaprakash 9, SOUTH BOAG ROAD, II FLOOR, PB NO-1423, T.NAGAR, CHENNAI-TAMIL NADU-INDIA Phone- 044-24340999 / 24344 Pincode : 600017 Email : marketing@switzerinstrument.com	Name changed from "M/s Switzer Instrument Ltd." to "M/s Switzer Process Instruments Pvt. Ltd." w.e.f. 27.07.2016; , ,
115	145-03000-A	PROGRAMMABLE LOGIC CONTROLLER	R021	ROCKWELL AUTOMATION INDIA LTD	REGULAR	NA	(ALLENBRADLEY),C-11, SITE-4, INDUSTRIAL AREA SHHIBABAD, GHAZIABAD-UP-INDIA Phone- 2895247-52 Pincode : 201010 Email : pmehrotra@rockwell.com	, ,
116	145-03000-A	PROGRAMMABLE LOGIC CONTROLLER	S001	SIEMENS LIMITED	REGULAR	NA	Dr. Armin Bruck/Sandeep Mathur 130, Pandurang Budhkar Marg Worli Mumbai-Maharashtra-INDIA Phone- 0124 383 7377 Pincode : 400018 Email : ankit.varshney@siemens.com	, ,
117	145-03000-A	PROGRAMMABLE LOGIC CONTROLLER	S083	SCHNEIDER ELECTRIC INDIA PVT.LTD.	REGULAR	NA	A-4 , MOHAN CO-OP INDL AREA MATHURA ROAD NEW DELHI-DELHI-INDIA Phone- Pincode : 110044 Email : aditya.bawa@schneider-electric.com	, ,

118	145-03000-A	PROGRAMMABLE LOGIC CONTROLLER	M205	mitsubishi electric india pvt. ltd.	REGULAR	NA	Mr. Mehul Dholakia Emerald House, EL-3, J Block, M.I.D.C., Bhosari, Pune- Maharashtra-India Phone- 020-27102000 Pincode : 411026 Email : mehul.dholakia@asia.meap.com	, ,
119	145-03000-A	PROGRAMMABLE LOGIC CONTROLLER	H063	Honeywell Automation India Limited ,	REGULAR	NA	56 & 57, Hadapsar Industrial Estate, Pune,- Maharashtra,-India, Phone- 9689940949, Pincode : Email : amit.aglave@honeywell.com,	, ,
120	145-03000-A	PROGRAMMABLE LOGIC CONTROLLER	G035	GE Intelligent Platforms Private Limited	REGULAR	B	90/B, ELECTRONICS CITY, HOSUR ROAD, BANGLORE- KARNATAKA-INDIA Phone- 28528328 Pincode : 561229 Email : shivesh.k.iba@ge.com	, ,
121	145-34000-A	ROTAMETER	F033	Flow Star Engineering Pvt. Ltd.,	REGULAR	B	MR. KHALID AKHTAR/MR. TAPAN KUMAR JANA Plot No- 7 F/2, Northern India Industrial 20/3, Mathura Road FARIDABAD-HARYANA- INDIA Phone- 9818176380 Pincode : 121005 Email : khalid@flowstar.co.in	VENDOR IS REGISTERED IN MS&D (MICRO) W.E.F.30.11.2011 FOR FY 2011-12 , ,
122	145-34000-A	ROTAMETER	E047	EUREKA INDUSTRIAL EQUIPMENTS PVT.LTD.	REGULAR	NA	Mr V. K. Pandit/Mr Ashish Shaha 17-20, Royal chambers, Paud Road Pune-Maharashtra-India Phone- 9370469466 Pincode : 411038 Email : caloc@eurekaflow.com	, ,
123	145-34000-A	ROTAMETER	I030	INSTRUMENTATION ENGINEERS PVT LTD	REGULAR	A	SH.N.V.RAM GOPAL/MS. N.NIHARIKA PLOTS 1,2,3, PHASE-III, IDA, JEEDIMETLA HYDERABAD- TELANGANA-INDIA Phone- 9848407365 Pincode : 500055 Email : jodolbi@ieflowmotors.com	, ,
124	145-34000-A	ROTAMETER	S158	SCIENTIFIC DEVICES (BOMBAY) PVT LTD,	REGULAR	NA	Office no. 53, Shree Manoshi Complex, Plot No. 5 & 6, Sec-3, Ghansoli (East), Navi Mumbai,-Maharashtra,- INDIA Phone- 9892230623, Pincode : 400 701, Email : sdbpl@vsnl.com	, ,
125	145-16000-A	SIGHT FLOW INDICATORS	S158	SCIENTIFIC DEVICES (BOMBAY) PVT LTD,	REGULAR	NA	Office no. 53, Shree Manoshi Complex, Plot No. 5 & 6, Sec-3, Ghansoli (East), Navi Mumbai,-Maharashtra,- INDIA Phone- 9892230623, Pincode : 400 701, Email : sdbpl@vsnl.com	, ,
126	145-16000-A	SIGHT FLOW INDICATORS	I030	INSTRUMENTATION ENGINEERS PVT LTD	REGULAR	A	SH.N.V.RAM GOPAL/MS. N.NIHARIKA PLOTS 1,2,3, PHASE-III, IDA, JEEDIMETLA HYDERABAD- TELANGANA-INDIA Phone- 9848407365 Pincode : 500055 Email : jodolbi@ieflowmotors.com	, ,
127	145-16000-A	SIGHT FLOW INDICATORS	S008	SIGMA INSTRUMENTS CO.	REGULAR	NA	Gopal Kannan/R Gopinath 201, ANANDRAJ INDUSTRIAL ESTATE, OFF.LBS MARG, SONAPUR LANE, BHANDUP (W) MUMBAI-MAHARASHTRA- INDIA Phone- +919821038162 Pincode : 400078 Email : sales@sigmainstruments.co.i	Reassessed on 27.04.2016; , ,
128	145-16000-A	SIGHT FLOW INDICATORS	B077	BLISS ANAND PVT. LTD.	REGULAR	NA	Mr. Vikas Anand/ Mr.RGRajan 92B & 93 B , IMT MANESAR Gurgaon- Haryana-India Phone- 0124- 4366000 TO 9 Pincode : 122001 Email : caloc@blissanand.com	Reassessed on 31.03.2016; , ,

129	145-16000-A	SIGHT FLOW INDICATORS	B068	B.K.EQUIPMENTS PVT.LTD.	REGULAR	A1	T. BALAKRISHNAN/S.VENKATES H 217 , ARCOT ROAD PORUR , CHENNAI-TAMIL NADU-INDIA Phone- 9444057761 Pincode : 600116 Email : bkrain@email.com	, ,
130	145-13000-A	TEMP. ELEMENT	G032	GOA INSTRUMENTS INDUSTRIES PVT.LTD.,	REGULAR	NA	D2/5, Mapusa Industrial Estate, Mapusa, Goa,- MAHARASHTRA-INDIA Phone- 09326054551, Pincode : 403507, Email : sumukh@goainstruments.com,	GCC Rev.5 has been accepted in toto. , ,
131	145-13000-A	TEMP. ELEMENT	G071	GAUGE BOURDON INDIA PVT. LTD.	REGULAR	NA	194/195, Gopi Tank Road, Off Pandurang Naik Marg, Mahim Mumbai,- Maharashtra,-India, Phone- 011-41607463, Pincode : 400016, Email : gicdelhi@general-avulac.com	, ,
132	145-13000-A	TEMP. ELEMENT	I022	DETRIVE INSTRUMENTATION & ELECTRONICS LTD.	REGULAR	B	320, TV INDUSTRIAL ESTATE, OFF.DR.A.BESANT ROAD, BEHIND GLAXO, WORLI, MUMBAI-MAHARASHTRA-INDIA Phone- 24934125,24938403 Pincode : 400025 Email : trivtech@vsnl.com	, ,
133	145-13000-A	TEMP. ELEMENT	P061	PYRO ELECTRIC INSTRUMENTS GOA PVT.LTD.	REGULAR	B	M. D. BICHU/R. M. BICHU G.B. HILL CROWN APARTMENTS, COLLEGE ROAD, MAPUSA-GOA-INDIA Phone- 9326114601 Pincode : 403507 Email : priyanka.marketing@pyro-electric.in	, ,
134	145-13000-A	TEMP. ELEMENT	T106	TECHNO INSTRUMENTS	REGULAR	NA	Abhijit Gohel/Mr. Amit Pandya Plot No. 1145/1, Uma Conventor Lane, Santej,Ta. Kalol, Gandhinagar-Gujarat-India Phone- 9909925223 Pincode : 382721 Email : amit@techno-instruments.com	, ,
135	145-13000-A	TEMP. ELEMENT	T107	Tempsens Instrument (I) Pvt Ltd	REGULAR	NA	MR. V.P.RATHI/MR. HEMANT RATHI B-188A ROAD NO.5 , M.I.A UDAIPUR-RAJASTHAN-INDIA Phone- 09352420069 Pincode : 313003 Email : info@homcon.com	, ,
136	145-13000-A	TEMP. ELEMENT	T108	TM TECNOMATIC SPA	REGULAR	NA	MR. ANTONIO NOVIELLO/Mrs. Enrica Bazzoc VIA DELLE INDUSTRIE, 36 CREMONA-ITALY Phone- 39037221574 Pincode : 26100 Email : info@tmttecnomatic.com	, ,
137	145-13000-A	TEMP. ELEMENT	T115	Thermal Instrument India Pvt. Ltd.	REGULAR	NA	Mr. Raghavendra M. Kulkarni 194/195, Gopi Tank Road Behind Citylight Cinema,Mahim Mumbai-Maharashtra-India Phone- 09322664709 Pincode : 400016 Email : ramk@aicoindia.com	Registered as per 11th MISCC-Electrical and C&I (FY 2014-15) dt. 20.09.2014. , ,
138	145-13000-A	TEMP. ELEMENT	T111	TOSHNIWAL INDUSTRIES PVT. LTD.,	REGULAR	NA	Industrial Estate, Makhupura, Ajmer,- Rajasthan,-India, Phone- 9352009000, Pincode : 305002, Email : info@tiwl.com	GCC Rev.5 has been accepted in toto. , ,
139	145-13000-A	TEMP. ELEMENT	W017	Baumer Technologies India Pvt. Ltd.	REGULAR	NA	Mr. Shyam Warilani/Mr. V Suresh Babu 36, DAMJI SHAMJI INDUSTRIAL COMPLEX, OFF.-MAHAKALI CAVES ROAD, ANDHERI(E) MUMBAI-Maharashtra-INDIA Phone- +91 99589 25151 Pincode : 400093 Email : sales.in@baumer.com	, NAME HAS BEEN CHANGED FROM M/S WAAREE INSTRUMENTS LTD. TO M/S BAUMER TECHNOLOGIES INDIA PVT. LTD. W.E.F. 12.06.2012

140	145-10000-A	TEMPERATURE GAUGE	W017	Baumer Technologies India Pvt. Ltd.	REGULAR	C	Mr. Shyam Warilani/Mr. V Suresh Babu 36, DAMJI SHAMJI INDUSTRIAL COMPLEX, OFF.-MAHAKALI CAVES ROAD, ANDHERI(E) MUMBAI-Maharashtra-INDIA Phone- +91 99589 25151 Pincode : 400093 Email : sales.in@baumer.com	, NAME HAS BEEN CHANGED FROM M/S WAAREE INSTRUMENTS LTD. TO M/S BAUMER TECHNOLOGIES INDIA PVT. LTD. W.E.F. 12.06.2013
141	145-10000-A	TEMPERATURE GAUGE	G071	GAUGE BOURDON INDIA PVT. LTD.	REGULAR	NA	194/195, Gopi Tank Road, Off Pandurang Naik Marg, Mahim Mumbai,- Maharashtra,-India, Phone- 011-41607463, Pincode : 400016, Email : gicdelhi@general-gauges.com	, ,
142	145-10000-A	TEMPERATURE GAUGE	H023	H.GURU INDUSTRIES	REGULAR	NA	Mr. G. D. Hazra/Mr. P. K. Mitra 10 B, HO-CHI-MINH SARANI, KOLKATA-WEST BENGAL-INDIA Phone- 033 2282 2463 / 1637 Pincode : 700071 Email : ghg@hgurugroup.net	, Financial limit reviewed on 05.06.2014; ,
143	145-10000-A	TEMPERATURE GAUGE	H040	H.GURU INSTRUMENTS (SOUTH INDIA) P. LTD	REGULAR	B	32,INDUSTRIAL SUBURB YESWANTHAPUR BANGALORE-KARNATAKA-www.hgurusouth.com Phone- 080-23370300, Pincode : 560022 Email : info@hgurusouth.com	, ,
144	145-10000-A	TEMPERATURE GAUGE	G032	GOA INSTRUMENTS INDUSTRIES PVT.LTD.,	REGULAR	D	D2/5, Mapusa Industrial Estate, Mapusa, Goa,- MAHARASHTRA-INDIA Phone- 09326054551, Pincode : 403507, Email : sumukh@goainstruments.com,	GCC Rev.5 has been accepted in toto. , ,
145	145-10000-A	TEMPERATURE GAUGE	G047	GOA THERMOSTATIC INSTRUMENTS PVT.LTD.	REGULAR	B	FLAT -B , GF, HILL CROWN APTS., COLLEGE ROAD, MAPUSA-GOA-INDIA Phone- Pincode : 403525 Email : ghilworks@mvn-electric.in	, ,
146	145-10000-A	TEMPERATURE GAUGE	F016	FORBES MARSHALL (HYD) LTD.	REGULAR	NA	MR SAILESH PATALAY/MR. M K SRINIVASAN PLOT NO.A-19/2, & T-4/2, IDA, NACHARAM, HYDERABAD-TELANGANA-INDIA Phone- 9849913704 Pincode : 500 076 Email : mksrinivasan@forbesmarshall.com	, ,
147	145-10000-A	TEMPERATURE GAUGE	A126	PRECISION MASS PRODUCTS PVT. LTD.	REGULAR	NA	Mr. Nishit Patel/Mr. Anuj Verma Plot No.2306, Phase II, GIDC Chhatral Kalol-Gujarat,-INDIA Phone- 9999464663 Pincode : 382729 Email : sales@precisionmass.com	Registration of "M/s Ashcroft India Pvt. Ltd." substituted to "M/s Precision Mass Products Pvt. Ltd." as per MISCC dt. 15.02.2016 based on "Termination and business transfer agreement" submitted by
148	145-10000-A	TEMPERATURE GAUGE	B014	BUDENBERG GUAGE CO.LTD.	REGULAR	NA	PO BOX-5, ALTRINCHAM CHESHIRE-UK-UK Phone- 0161-9285441 Pincode : WA14 4ER Email : dhhdelhi@vusol.net	, ,
149	145-10000-A	TEMPERATURE GAUGE	A010	A.N. INSTRUMENTS PVT. LTD.	REGULAR	C	MARKETING DIVISION, 5th FLOOR, 59-B, CHOWRINGHEE ROAD, KOLKATA-WEST BENGAL-INDIA Phone- 24757784,22472509 Pincode : 700020 Email : asidol@bol.net.in	, ,

150	145-15000-A	TEMPERATURE SWITCH	D003	INDFOS (INDIA) LIMITED	REGULAR	NA	MR.L.C.VENKATRANGAN/MR. B.KANNAN New No.17, II Floor, Adwave Towers, Dr.Sevalia Shivaji Salai, T.Nagar Chennai-TamilNadu-INDIA Phone- +91 44 24353407 Pincode : 600017 Email : delhi@indfos.com	, ,
151	145-15000-A	TEMPERATURE SWITCH	D021	DRESSER INDUSTRIES INC.	REGULAR	NA	Mr. Nishit Patel/Mr. Anuj Verma Plot No.2306, Phase II, GIDC Chhatral Kalol-Gujarat-India Phone- 02764-233682 Pincode : 382729 Email : Nishit.patel@ashcroftindia.com	, ,
152	145-15000-A	TEMPERATURE SWITCH	S009	SWITZER PROCESS INSTRUMENTS PVT. LTD.	REGULAR	NA	B Kannan/V S Jayaprakash 9, SOUTH BOAG ROAD, II FLOOR, PB NO-1423, T.NAGAR, CHENNAI-TAMIL NADU-INDIA Phone- 044-24340999 / 24344 Pincode : 600017 Email : marketing@switzerinstrument.com	Name changed from "M/s Switzer Instrument Ltd." to "M/s Switzer Process Instruments Pvt. Ltd." w.e.f. 27.07.2016; , ,
153	145-15000-A	TEMPERATURE SWITCH	S010	SOR INC.	REGULAR	NA	LARRY DEGARMO/Avdesh Chandra, 14685 W. 105TH STREET LENEXA-KANSAS-USA Phone- 09810905139, Pincode : 66215 Email : Ldegarmo@sorinc.com, avdesh@sherman-india.com	, ,
154	145-15000-A	TEMPERATURE SWITCH	T001	TOSHNIWAL BROTHERS PVT.LTD.	REGULAR	NA	WORKS:TOSHNIWAL IND.PVT.LTD, INDUSTRIAL ESTATE MAKHUPURA, AJMER-RAJASTHAN-INDIA Phone- 441171 Pincode : 305002 Email : toshniwalprocess@gmail.com	, ,
155	145-14000-A	TRANSMITTERS	T031	Honeywell Automation India Limited	REGULAR	NA	Mr. Ritwij Kulkarni 917, INTERNATIONAL TRADE TOWER, NEHRU PLACE, NEW DELHI-DELHI-INDIA Phone- 9890200584 Pincode : 110019 Email : rajesh.chaudhary@honeywell.com	, ,
156	145-14000-A	TRANSMITTERS	Y10	YOKOGAWA INDIA LIMITED,	REGULAR	NA	PLOT NO.96, ELECTRONICS CITY COMPLEX, HOSUR ROAD, BANGALORE,- KARNATAKA,-INDIA, Phone- 080-41586000, Pincode : Email : uday.shankar@in.yokogawa.com,	Subject to submission of renewed ISO certificate & compliance to GCC; Relevant documents (ISO 9001:2008 and GCC Rev-05) furnished on 18.06.2013. , ,
157	145-14000-A	TRANSMITTERS	T111	TOSHNIWAL INDUSTRIES PVT. LTD.,	REGULAR	NA	Industrial Estate, Makhupura, Ajmer,- Rajasthan,-India, Phone- 9352009000, Pincode : 305002, Email : info@tipl.com	GCC Rev.5 has been accepted in toto. , ,
158	145-14000-A	TRANSMITTERS	V040	V. AUTOMAT & INSTRUMENTS (P) LTD.	REGULAR	NA	Mr. R. K. BASSI/Mr. PRAVEEN KUMAR F-61, OKHLA INDL.AREA, PH-1 NEW DELHI-DELHI-INDIA Phone- 9810005826 Pincode : 110 020 Email : caloc@vautomat.com	Technical limit reviewed on 12.10.2015; , Technical limit reviewed on 30.04.2014 ,
159	145-14000-A	TRANSMITTERS	S039	SMART INSTRUMENTS LTD, BRAZIL	REGULAR	NA	Agents: Digital Electronic Ltd. 74/11 'C' Cross Road MIDC Andheri (East) MUMBAI-MAHARASHTRA-INDIA Phone- 28208477 Pincode : 400093 Email : corp@delby.rpgms.ems.vsnl.net.in	Technical limit reviewed on 12.10.2015; , Technical limit reviewed on 30.04.2014 ,

160	145-14000-A	TRANSMITTERS	S106	SBEM PVT. LTD.	REGULAR	NA	MR.N.K. BEDARKAR/MR. VISHWANATH KARANDIK 39, ELECTRONIC CO.OP. ESTATE, PUNE SATARA ROAD PUNE,- MAHARASHTRA-INDIA Phone- 912041030100 Pincode : 411009 Email : newdelhi@sbem.co.in	Reviewed in MISCC dt. 21.07.2015 for non-response in 4 consecutive tender enquiry; , Technical limit reviewed on 30.04.2014 & 12.10.2015; ,
161	145-14000-A	TRANSMITTERS	S001	SIEMENS LIMITED	REGULAR	NA	Dr. Armin Bruck/Sandeep Mathur 130, Pandurang Budhkar Marg Worli Mumbai-Maharashtra-INDIA Phone- 0124 383 7377 Pincode : 400018 Email : ankit.varshney@siemens.com	Comm Add: Attn Mr K.K.Bedi/ Mr Sanjay Satpute, Siemens Ltd. EFIE, Plot no 6A, Sec-18, Maruti Industrial Area, Gurgaon - 122015, Ph 0124-3836250 , ,
162	145-14000-A	TRANSMITTERS	R002	EMERSON PROCESS MANAGEMENT (INDIA) PVT.LTD.	REGULAR	C	Mr. Amit Paithankar/Vikram Raj Singh 206- 210,BALARAMA BUILDING 2ND FLR. BANDRA EAST MUMBAI-MAHARASHTRA-INDIA Phone- 9619121500 Pincode : 400051 Email : vikramraj.singh@emerson.co	, ,
163	145-14000-A	TRANSMITTERS	P068	Pune Techtrol Pvt. Ltd.	REGULAR	C	N.P.Khatan/Sudhakar Badiger S-18, MIDC Bhosari, Pune-Maharashtra-INDIA Phone- 9850560042 Pincode : 411 026 Email : ho@punetechtrol.com	Technical limit reviewed on 12.10.2015; , Manufacturing works: J-52/7, MIDC, Bhosari, Pune.
164	145-14000-A	TRANSMITTERS	P082	PANAM ENGINEERS	REGULAR	NA	Mr. Santosh Shukla 203, Jaisingh Business,Parsiwada, Sahar road,Andheri(East), Mumbai,-Maharashtra,-India, Phone- 9892179529, Pincode : 400099, Email : santosh@panamengineers.com,	, ,
165	145-14000-A	TRANSMITTERS	N040	NIVO CONTROLS PVT. LTD.	REGULAR	C	Mr. Praveen Toshniwal 104-115, Electronic Complex, Indore-M.P.-India Phone- 0731-4081305 Pincode : 452010 Email : sales@nivocontrols.com	Registered in permanent category as per 11th MISCC-Electrical and C&I (FY 2014-15) dt. 20.09.2014. , Technical limit reviewed on 12.10.2015; ,
166	145-14000-A	TRANSMITTERS	M091	Moore Industries International Inc.	REGULAR	NA	Leonard.W. Moore/ Matt Moren 16650 Schoenborn St. North Hills-CALIFORNIA-USA Phone- +1 818 830 5548 Pincode : 91343 Email : mmoren@miinet.com	INDIAN REPRESENTATIVE: CHEMTROL INDUSTRIES LTD. , ,
167	145-14000-A	TRANSMITTERS	E057	Endress + Hauser (India) Pvt. Ltd.,	REGULAR	NA	Mr. Prakash Vaghela 215-216, DLF Tower 'A', Jasola District Centre, New Delhi,- New Delhi,-India, Phone- 9717593001, Pincode : 110025, Email : prakash.vaghela@in.endress.com	For temperature transmitter only. , ,

168	145-14000-A	TRANSMITTERS	B049	ABB LIMITED	REGULAR	A1	MR. RAJIV GOVIL 14, MATHURA ROAD, FARIDABAD-HARYANA-INDIA Phone- 09971085678 Pincode : 121003 Email : vipin.swami@in.abb.com	(1) A GROUP COMPANY OF ABB, NOW. (2) NAME OF VENDOR CHANGED FROM BIRLA-KENT TAYLOR LIMITED TO ABB LIMITED W.E.F. 27.06.2011 , Technical limit reviewed and changed on 05.06.2014; Technical limit further reviewed on
169	145-42000-A	ULTRASONIC FLOW METERS	N209	NIVUS GMBH	REGULAR	NA	Mr. Marcus Fischer Im Taele 2, D - 75031 Eppingen -- Germany Phone- 00491712233770 Pincode : Email : carolin.schuster@nivus.com	, ,
170	145-33000-A	VENTURI METER	M009	MICRO PRECISION PRODUCTS PVT. LTD.	REGULAR	NA	K.P. CHANDHOK/ATUL CHANDHOK 4, LINK ROAD, FARIDABAD-HARYANA-INDIA Phone- 9810265688 Pincode : 121002 Email : nal@micro1.com	, ,
171	145-33000-A	VENTURI METER	S044	STAR-MECH CONTROLS (I) PVT.LTD.	REGULAR	C	SUSHILLOTAM, SUSHILLOTAM, 29/3A/3, SASANE NAGAR, HADAPSAR, PUNE- MAHARASHTRA-INDIA Phone- 02026970450 Pincode : 411028 Email : sushil@star-mech.net	, ,
172	145-33000-A	VENTURI METER	T108	TM TECNOMATIC SPA	REGULAR	NA	MR. ANTONIO NOVIELLO/Mrs. Enrica Bazzoc VIA DELLE INDUSTRIE, 36 CREMONA- ITALY Phone- 39037221574 Pincode : 26100 Email : info@tmttecnomatic.com	AS PER DECISION OF MISCC-ELECT AND C&I HELD ON 19.10.2012 , ,
173	145-40000-A	VIBRATION MONITORING SYSTEM	S156	SKF INDIA LIMITED	REGULAR	NA	Mr. Shishir Joshipura SERVICE BUSINESS UNIT, CHINCHWAD, PUNE- MAHARASHTRA-INDIA Phone- +91 982 3161755 Pincode : 411033 Email : sandeep.gadre@skf.com	PARENT COMPANY: SKF CONDITION MONITORING INC, USA. ENTIRE RESPONSIBILITY OF ALL CONTRACTUAL OBLIGATIONS SHALL BE OF INDIAN VENDOR AS DECIDED BY 4TH MISCC (ELECT AND C&I) HELD ON
174	145-40000-A	VIBRATION MONITORING SYSTEM	R056	ROCKWELL AUTOMATION INDIA PVT LTD	REGULAR	NA	A-66, SEC- 64, NOIDA,- UP-India Phone- 0120-4671236 Pincode : 201301 Email : ra.india@ra.rockwell.com; asharma@ra.rockwell.com	PARENT COMPANY: ROCKWELL AUTOMATION INC, USA. ENTIRE RESPONSIBILITY OF ALL CONTRACTUAL OBLIGATIONS SHALL BE OF INDIAN VENDOR AS DECIDED BY 4TH MISCC (ELECT AND C&I) HELD ON

175	145-40000-A	VIBRATION MONITORING SYSTEM	M097	MEGGITT INDIA PVT. LTD.	REGULAR	NA	LJ Swaminathan/Gaurav Anand Unit-04A, Level-02, Bagmane Laurel Bagmane Tech Park, CV Raman Nagar Bangalore-Karnataka-India Phone- +91-9731577119 Pincode : 560093 Email : gaurav.anand@meggitt.com	PARENT COMPANY: MEGGITT SA, SWITZERLAND. ENTIRE RESPONSIBILITY OF ALL CONTRACTUAL OBLIGATIONS SHALL BE OF INDIAN VENDOR AS DECIDED BY 4TH MISCC (ELECT AND C&I) HELD ON
176	145-40000-A	VIBRATION MONITORING SYSTEM	F034	FORBES MARSHALL PVT. LTD.	REGULAR	NA	A - 34/35, MIDC ESTATE, H-BLOCK, PIMPRI, PUNE- MAHARASHTRA-INDIA Phone- 020-27442020, Pincode : 411 018 Email : mvyas@forbesmarshall.com	IN ASSOCIATION WITH SHINKAWA ELECTRIC CO. LTD., JAPAN (V.CODE S155) AS PER AGREED SCOPE MATRIX. ENTIRE RESPONSIBILITY OF ALL CONTRACTUAL OBLIGATIONS SHALL BE OF INDIAN VENDOR , ,
177	145-40000-A	VIBRATION MONITORING SYSTEM	G068	GE INDIA INDUSTRIAL PVT. LTD.	REGULAR	NA	Mr. Pramod Kaushik/Vijay Pal BUILDING NO-7A, 4TH FLOOR GURGAON- HARYANA-INDIA Phone- 0124-4808515 Pincode : 122002 Email : vijay.pal@ge.com	PARENT COMPANY: BENTLY NEVADA INC, USA. ENTIRE RESPONSIBILITY OF ALL CONTRACTUAL OBLIGATIONS SHALL BE OF INDIAN VENDOR AS DECIDED BY 4TH MISCC (ELECT AND C&I) HELD ON

Notes:- 1) The above sub-vendor list is tentative & reference only. However sub-vendor list is subject to BHEL/end user approval without any commercial/delivery implication. 2) New subvendor if proposed by vendor during contract stage shall be subject to BHEL/end user approval without any commercial implication.

2X660 MW ENNORE SEZ SUPERCRITICAL TPS

APPROVED VENDOR LIST [SUMMARIZED] DATED 15-DEC-2016

Sl. No.	Package Name	Vendor Name	Approval Status for Ennore Project	Approval Letter No. for Ennore Project	Page No.	Remarks [Ennore]	Approval Status for North Chennai Project	Approval Letter No. for North Chennai Project	Page No.	Remarks [North Chennai]
CONTROL AND INSTRUMENTATION (C&I) PACKAGES										
1	ANUBAR (DELTA TUBE)	STAR-MECH CONTROLS (I) PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	8					
		TM TECNOMATIC SPA	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		SWITZER INSTRUMENT LTD.	Approved	D.115/14 Dtd. 19.12.2014	8					
2	CONTROL VALVE	RINGO VALVULAS S.L.	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		Severn Glocon India Pvt. Ltd.	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		CONTROL COMPONENT INC.	Approved	D.115/14 Dtd. 19.12.2014	8		Approved	D.221/08 Dtd. 06.06.2008	134	
		DRESSER VALVE INDIA PVT. LTD	Credentials Required	D.115/14 Dtd. 19.12.2014	8		Approved	D.221/08 Dtd. 06.06.2008	134	
		LESLIE CONTROLS, INC	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		SPX Corporation, USA	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		Daume Regelarmaturen GmbH,	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		INSTRUMENTATION LTD.	Approved	D.115/14 Dtd. 19.12.2014	8		Approved	D.221/08 Dtd. 06.06.2008	134	
		Valvitalia S.P.A. ,	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		WEIR VALVES & CONTROLS UK LTD.	Approved	D.115/14 Dtd. 19.12.2014	8					
		Koso India Private Limited,	Credentials Required	D.115/14 Dtd. 19.12.2014	8					
		FORBES MARSHALL ARCA PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	8		Approved	D.221/08 Dtd. 06.06.2008	134	
		R.K.CONTROL INSTRUMENTS PVT. LTD.	Approved	D.115/14 Dtd. 19.12.2014	8					
		EMERSON PROCESS MANAGEMENT CHENNAI LIMITED	Approved	D.115/14 Dtd. 19.12.2014	7					
		HOLTER REGELARMATUREN GmbH & Co.KG	Credentials Required	D.115/14 Dtd. 19.12.2014	7					
		MIL CONTROLS LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.144/08 Dtd. 17/03/2009	90	
		SHENJIANG VALVE CO. LTD.	Credentials Required	D.115/14 Dtd. 19.12.2014	7					
		Metso Singapore PTE. LTD.,	Approved	D.115/14 Dtd. 19.12.2014	7					
		DeZURIK - COPES VULCAN LTD., U.K.					Approved	D.221/08 Dtd. 06.06.2008	134	
		FISHER SANMAR LIMITED					Approved	D.221/08 Dtd. 06.06.2008	134	
		INTROL-ABB					Approved	D.302/08 Dtd. 02/01/2009	98	
		CONTINENTAL VALVES LTD					Not Approved	D.144/08 Dtd. 17/03/2009	89	
		FOURESS ENGG. INDIA LTD.					Credentials Required	D.221/08 Dtd. 06.06.2008	124	

2X660 MW ENNORE SEZ SUPERCRITICAL TPS

APPROVED VENDOR LIST [SUMMARIZED] DATED 15-DEC-2016

Sl. No.	Package Name	Vendor Name	Approval Status for Ennore Project	Approval Letter No. for Ennore Project	Page No.	Remarks [Ennore]	Approval Status for North Chennai Project	Approval Letter No. for North Chennai Project	Page No.	Remarks [North Chennai]
3	FLOW ELEMENT - NOZZLE	HYDROPNEUMATICS PVT. LTD.	Approved	D.115/14 Dtd. 19.12.2014	7					
		INSTRUMENTATION LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.221/08 Dtd. 06.06.2008	134	
		MICRO PRECISION PRODUCTS PVT. LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.221/08 Dtd. 06.06.2008	134	
		STAR-MECH CONTROLS (I) PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.221/08 Dtd. 06.06.2008	134	
		SEIKO FLOW CONTROL GMBH	Approved	D.115/14 Dtd. 19.12.2014	7					Approved in the name of Flow Elements
		BRISTOL BABCOCK LTD. UK					Approved	D.221/08 Dtd. 06.06.2008	134	
		BALIGA LIGHTING EQUIPMENTS PRIVATE LIMITED, CHENNAI					Approved	D.221/08 Dtd. 06.06.2008	134	
		ENGINEERING SPECIALITIES PRIVATE LTD					Approved	D.221/08 Dtd. 06.06.2008	134	
4	FLOW ELEMENT - ORIFICE	MICRO PRECISION PRODUCTS PVT. LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.221/08 Dtd. 06.06.2008	134	Approved in the name of Flow Elements
		INSTRUMENTATION LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.221/08 Dtd. 06.06.2008	134	
		HYDROPNEUMATICS PVT. LTD.	Approved	D.115/14 Dtd. 19.12.2014	7					
		Flow Star Engineering Pvt. Ltd.,	Approved	D.115/14 Dtd. 19.12.2014	7					
		STAR-MECH CONTROLS (I) PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	7		Approved	D.221/08 Dtd. 06.06.2008	134	
		MINCO (INDIA) PRIVATE LIMITED	Approved	D.115/14 Dtd. 19.12.2014	7					
		INSTRUMENTATION ENGINEERS PVT LTD	Approved	D.115/14 Dtd. 19.12.2014	7					
		BRISTOL BABCOCK LTD. UK					Approved	D.221/08 Dtd. 06.06.2008	134	
		BALIGA LIGHTING EQUIPMENTS PRIVATE LIMITED, CHENNAI					Approved	D.221/08 Dtd. 06.06.2008	134	
		ENGINEERING SPECIALITIES PRIVATE LTD					Approved	D.221/08 Dtd. 06.06.2008	134	
5	PROGRAMMABLE LOGIC CONTROLLER	GE Intelligent Platforms Private Limited	Approved	D.115/14 Dtd. 19.12.2014	6					
		SIEMENS LIMITED	Approved	D.115/14 Dtd. 19.12.2014	6					
		ROCKWELL AUTOMATION INDIA LTD	Approved	D.115/14 Dtd. 19.12.2014	6					
		SCHNEIDER ELECTRIC INDIA PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	6					
		Honeywell Automation India Limited	Approved	D.115/14 Dtd. 19.12.2014	6					
6	ROTAMETER	FLOWTECH INSTRUMENTS SERVICES	Approved	D.115/14 Dtd. 19.12.2014	6					
		Flow Star Engineering Pvt. Ltd.,	Approved	D.115/14 Dtd. 19.12.2014	6					
		EUREKA INDUSTRIAL EQUIPMENTS PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	6					
		SCIENTIFIC DEVICES (BOMBAY) PVT LTD,	Approved	D.115/14 Dtd. 19.12.2014	6					
		INSTRUMENTATION ENGINEERS PVT LTD	Approved	D.115/14 Dtd. 19.12.2014	6		Approved	D.144/08 Dtd. 17/03/2009	90	
		CHEMTROLS SAMIL (INDIA) PVT. LTD., MUMBAI					Approved	D.221/08 Dtd. 06.06.2008	132	

2X660 MW ENNORE SEZ SUPERCRITICAL TPS

APPROVED VENDOR LIST [SUMMARIZED] DATED 15-DEC-2016

Sl. No.	Package Name	Vendor Name	Approval Status for Ennore Project	Approval Letter No. for Ennore Project	Page No.	Remarks [Ennore]	Approval Status for North Chennai Project	Approval Letter No. for North Chennai Project	Page No.	Remarks [North Chennai]
7	ULTRASONIC FLOW TRANSMITTERS	New Package								
8	SIGHT FLOW INDICATORS	TELACE EQUIPMENT PVT.LTD.	Credentials Required	D.115/14 Dtd. 19.12.2014	6					
		BLISS ANAND PVT. LTD.	Approved	D.115/14 Dtd. 19.12.2014	6					
		B.K.EQUIPMENTS PVT.LTD.	Approved	D.115/14 Dtd. 19.12.2014	6					
		SIGMA INSTRUMENTS CO.	Approved	D.115/14 Dtd. 19.12.2014	6					
		FLOWTECH INSTRUMENTS SERVICES	Approved	D.115/14 Dtd. 19.12.2014	6					
		INSTRUMENTATION ENGINEERS PVT LTD	Approved	D.115/14 Dtd. 19.12.2014	6					
		SCIENTIFIC DEVICES (BOMBAY) PVT LTD,	Approved	D.115/14 Dtd. 19.12.2014	6					



**ENNORE SEZ COAL BASED STPP
(2 X 660 MW)**

FUEL OIL HANDLING SYSTEM

SPEC. No: PE-TS-412-166-A001

AMENDMENT NO. - 1

DATE 14.03.2017

Annexure- I

ADDITIONAL SUB VENDOR LIST

1.0	ITEM	SUB VENDOR	PLACE
2.0	FLOWMETER - MASS FLOW (CORIOLIS TYPE)	• EMERSON PROCESS MANAGEMENT • E&H • GE INDIA INDUSTRIAL PVT. LTD • YOKOGAWA INDIA LIMITED • ABB LIMITED	• CHENNAI • CHENNAI
3.0	ELECTRIC HEAT TRACER	• NELSON, • Thermopad, • RAYCHEM RPG LTD • Thermon	• HYDERABAD • Mumbai • Mumbai

ANNEXURE-II (REPLY OF PRE-BID CLARIFICATIONS)

		TECHNICAL SPECIFICATION FOR FUEL OIL HANDLING SYSTEM 2x660 MW ENNORE SEZ COAL BASED STPP AT ASH DYKE OF NCTPS, CHENNAI (PRE-BID CLARIFICATION SCHEDULE)	SPECIFICATION NO. PE-TS-412-166-A001	
			SECTION 'II'	
			REVISION 00	DATE: 16/02/2017
			PAGE 1 OF 1	
			PRE-BID CLARIFICATION SCHEDULE	
Sl.No	Section/Clause/Page No.	Statement of referred clause	Clarification required	
1	PE-TS-412-166-A001, Section-I, 2.1.6 & 2.1.12 Page 2 of 12	vertical centrifugal sump pump each of capacity 30 m ³ /hr located inside FO Unloading Pump House. Vertical centrifugal type pumps of cap. 30m ³ /hr for pumping separated water	Both statements are contradictory, Kindly confirm us whether we need to consider centrifugal pumps or screw pumps	Bidder to consider vertical Single screw pumps for sump pumps
	PE-DC-412-166-A001 Page 8 of 19	Vertical Single screw pumps for sump pumps		
2	PE-DC-412-166-A001 Page 17 of 19 Clause:4.1.19	Control valves for Fuel oil temperature control i.e. Aux steam for Floor coil heater (ON/Off type) control valve	Both statements are contradictory. Kindly confirm which one to be used	Bidder to consider control valves for Fuel oil temperature control i.e. Aux steam for Floor coil heater (ON/Off type) control valve, Aux steam for suction heater (Modulating) control valve and Aux steam temperature control valve for desuperheater.
	PE-DC-412-166-A001 Page 6 of 19 Clause:3.1.3	Through pneumatically operated modulating type control valve		
3	PE-DC-412-166-A001 Page 3 of 19	The road tankers shall have steam heating coil arrangement dully installed for heating HFO up to min. 500C.	Both statements are contradictory, Kindly confirm whether we need to consider steam for heating or electrical heating	Road tanker are steam heated .Please refer P&ID PE-DG-412-166-A103.
	Customer specification Chapter 15 clause15.2	Before unloading the heavy fuel oil, it shall be heated by electric heaters in the road tankers		
4	PE-DC-412-166-A001 Page 9 of 19	Strainer data sheet	Ratio of inlet area to free flow area not given. Kindly confirm	The open area ratio (i.e. straining area to the inlet area ratio) shall be at least 10:1. Please refer page No. Page 122 of 644
5	PE-DC-412-166-A001 Page 14 of 19	Velocity for HFO suction and discharge is given as 0.5m/s and 1m/s. For HSD it is 1m/s and 2m/s.	Both statements are contradictory, Kindly confirm which one needs to be considered	Bidder to follow velocity for HFO suction and discharge is given in page 32 & 33 of 644 .
	Customer specification clause33.2.1	Velocity for HFO/HSD is given as 2m/s		

ANNEXURE-II (REPLY OF PRE-BID CLARIFICATIONS)

6	Scope of C&I for FOUS Page 398 of 644 Clause No:5	For cable scope refer to electrical scope between BHEL and vendor defined in electrical specification	Instrumentation cable scope is not clear in scope of work. Kindly confirm instrumentation cables are in whose scope	Cable other than special type of cable like compensating, coaxial, prefab, micc, optical fibre etc. shall be in BHEL scope.
	Standard electric scope between BHEL and vendor page 364 of 644 SI.No:4	Junction box for control & instrumentation cable		
7	Scope of C&I for FOUS Page 398 of 644 Clause No:1	Fuel oil unloading system shall be operated from DCS(BHEL Scope)	We presume we need to terminate at JB and from there to DCS, BHEL will take care	Please refer electrical scope matrix for cable scope.
	Scope of C&I for FOUS Page 398 of 644 Clause No:5	All Instruments shall be terminated on JB/LCP		
8	PE-DC-412-166-A001 Page 7 of 19 Clause:3.1.4(7)	Heating medium for suction heater is steam'	Both statements are contradictory. Kindly confirm which one to be used	Heating medium for suction heater is steam.
	Customer specification Clause 15.4.4.1	Heating medium for suction heater is electric		
9	PE-TS-412-166-A001, Section-I, 4.0.0 Page 5 of 12	Effluent from oil water separators terminal point is at the guard point in ETP area	We could not locate ETP area in layout, hence kindly suggest ETP area is how far away from pump house	Please refer Amendment .
10	Customer specification chapter:6 Page 194 of 644 Clause 6.2 & 6.4	6.2 describes about standard coating system (External coatings) in which Zinc silicate is primer and 6.4 describes about painting of outdoor equipment including tanks (external surfaces) in which Zinc phosphate is primer	We presume we need to follow 6.4 for external surface of HSD tank. As HFO tank will be fully insulated for which we presume 6.5 C(ii) needs to be followed. Kindly confirm. There are no details for internal painting, kindly confirm which paint needs to be applied inside	Internal painting shall be as below Primer - N. A. Finish - 2 coats of double boiled linseed oil However, Painting shall be subject to customer approval. Bidder to provide the same during detail engineering without any cost implication to BHEL.
11	PE-DC-412-166-A001 Page 5 of 19 Clause:3.1.1(8)	Corrosion allowance given as 1.5mm for roof	As per IS 803 roof shall have 5mm thick. By adding corrosion allowance the same shall be 6.5mm, hence we need to select 8mm thk for roof. As per industry practice 6mm for roof is sufficient. Kindly suggest us whether we can consider 1mm corrosion allowance for roof	Bidder to consider the allowance as mentioned in specification. Bidder to provide 8mm thickness for roof.
12	PE-DG-412-166-A101, HFO P&ID	Steam in and out shown for sump in pump house and water collection pit with motorised valve inside	Please note as major is water content in sump and water collection pit, no steam is required. Further to operate MOV no temperature shown in sump and OWS pit. Kindly confirm	Bidder to follow specification .
13	PE-TS-412-166-A001, Section-I, 2.1.6 & 2.1.12 Page 5 of 12 Clause 4.0.0	Terminal point of Aux. steam	Terminal point of Instrumentation air is not given	Please refer Amendment .
14	PE-DG-412-166-A101, HFO P&ID	Isolation Valve shown for Temperature element, Temperature gauge & temperature switch	Kindly note isolation valve is not applicable for these items	Noted .
15	Layout, Page No:640	Flashtank, OWS area	Location could not found	Location shall be near the tank farm dyke area. same shall be decided during detail engineering.
16	Vendor list	Mass flow meter	Mass flow meter vendor not given in vendor list	Please refer Amendment .

ANNEXURE-II (REPLY OF PRE-BID CLARIFICATIONS)

PRE BID CLARIFICATION SCHEDULE					
Project:	2 x 660MW ENNORE SEZ COAL BASED STPP				
Package:	FUEL OIL UNLOADING AND STORAGE SYSTEM				
Sr.No.	Section/Clause/ Page No.	Statement of the referred clause	Clarification required	BHEL REPLY	
A. MECHANICAL					
1	TECH SPEC_Part1, Pg.No. 7 of 322, Cl.No. 2.1.2	Scope of Supply : Two (2) nos, (1W+1S), HSD twin screw unloading pump motor set each of capacity 50 m3/hr with twin simplex type strainers at their suction.	Referred clause calls for Twin Simplex strainer whereas in " Process & Instrumentation Diagram for HSD System" indicates one simplex strainer at each pump suction. Please clarify which one has to be considered.	Bidder to provide simplex type strainer as per P&ID.	
2	TECH SPEC_Part1, Pg.No. 10 of 322, Cl.No. 4.0.0	Terminal points	Terminal points for PRDS Spray water and Instrument air are not given in the referred clause. Please provide the same.	Please refer amendment .	
3	TECH SPEC_Part1, Pg.No. 10 of 322, Cl.No. 4.0.0	Terminal points : At the TP BHEL shall supply 4 MT/hr of steam. Bidder shall check the adequacy of the same. In case this is not adequate, bidder to inform the maximum aux. steam requirement at this TP along with manual calculation for the same.	Please provide the tanker initial temperature and heating time to be considered for checking the adequacy of supplied steam of 4 MT/hr.	Initial temperature shall be considered minimum ambient temperature and heating time to be consider 1.5 hrs (max.)	
4	TECH SPEC_Part1, Pg.No. 10 of 322, Cl.No. 2.3	Exclusions : (g) Exclusion as indicated in Electrical & C&I portion of technical specification	We have not found any exclusions relevant to electrical and C&I scope in respective specifications. Please provide.	Bidder to refer C&I and electrical specification for scope .	
5	TECH SPEC_Part1, Pg.No. 24 of 322, Cl.No. 3.1.3	FLOOR COIL HEATER OF HFO STORAGE TANKS Design capacity : To raise the temperature of full tank capacity of Heavy Fuel oil from minimum temp. to storage temperature of 60 deg C in 72hours.	Kindly provide minimum temperature to be considered for the floor coil heaters.	Bidder to consider minimum ambient temperature .Please refer project information page No.18 of 644.	
6	TECH SPEC_Part1, Pg.No. 31 of 322, Cl.No. d	BURIED PIPE, IF ANY / PIPE CARRYING BILGE WATER (WATER WITH TRACES OF OIL)	We understood this piping specification to be considered for sump pump and recovered water pumps discharge piping. Please confirm.	In case of any buried fuel oil pipe, same shall be considered along with their wrapping & coating	
7	TECH SPEC_Part1, Pg.No. 32 of 322, Cl.No. 3.2.13	VELOCITIES FOR SELECTING PIPING	Velocities for sump pump discharge piping, recovered water pump discharge piping, condensate piping and super heated steam(aux. steam) piping is not given. Please provide the same.	Bidder to follow page No. 32 & 208 of 644 for velocity	
8	TECH SPEC_Part1, Pg.No. 21 of 322, Cl.No. 2.1	The road tankers shall have steam heating coil arrangement dully installed for heating HFO up to min.50 degC. Steam supply to the road tankers from Aux steam header (laid by the side of Fuel Oil unloading header) shall be through metallic flexible hoses and the condensate shall be collected in a condensate header laid by the side of Fuel Oil unloading header.	Both referred clauses are contradicting each other regarding the type of heating of road tankers. However we are considering road tankers heating by steam. Please confirm.	Confirmed.	
	TECH SPEC_Part1, Pg.No. 115 of 322, Cl.No. 15.2	The fuel oil will be transported to the plant site by road tankers; and unloading pumps shall be used for unloading of oil and storing it in tanks. Before unloading the heavy fuel oil, it shall be heated by electric heaters in the road tankers as considered necessary to make it flowable. Fuel oil decanting pumphouse is also included in scope of bidder.			

ANNEXURE-II (REPLY OF PRE-BID CLARIFICAIONS)

9	TECH SPEC_Part1, Pg.No. 21 of 322, Cl.No. 2.1	Two (2) nos. HFO storage tanks, each of net capacity 3000 m are envisaged. The HFO tank shall be provided with steam floor coil heaters at the bottom of the tank to raise the temperature of oil to handling / tank maintenance temp. of 60 degC in 72 hrs. time and maintaining the temperature inside the tank at 60 degC. The floor coil heater for the Fuel oil storage tanks shall have adequate nos. of sections and shall be regulated through one pneumatically operated modulating type control valve on the steam supply line. This shall be actuated from tank temperature.	Both referred clauses are contradicting each other regarding type of heating of HFO storage tanks. However we are considering steam for heating HFO storage tanks. Please confirm.	Confirmed.
	TECH SPEC_Part1, Pg.No. 119 of 322, Cl.No. 15.4.3.1	Each heavy fuel oil tank shall be provided with floor coil heater in one or more tiers at the bottom of the heavy fuel oil storage tanks to maintain oil within the tank at specified temperature with electricity as the heating medium. The tubes shall be seamless steel to A106 Gr. B supporting the coil within the tank bottom.		
10	TECH SPEC_Part1, Pg.No. 21 of 322, Cl.No. 2.1	Two (2) nos. HFO storage tanks, each of net capacity 3000 m are envisaged. The HFO tank shall be provided with steam floor coil heaters at the bottom of the tank to raise the temperature of oil to handling / tank maintenance temp. of 60 degC in 72 hrs. time and maintaining the temperature inside the tank at 60 degC. The floor coil heater for the Fuel oil storage tanks shall have adequate nos. of sections and shall be regulated through one pneumatically operated modulating type control valve on the steam supply line. This shall be actuated from tank temperature.	Referred clauses are contradicting each other regarding the type of control valve. Kindly clarify which type to be considered.	Bidder to consider control valves for Fuel oil temperature control i.e. Aux steam for Floor coil heater (ON/Off type) control valve, Aux steam for suction heater (Modulating) control valve and Aux steam temperature control valve for desuperheater.
	TECH SPEC_Part1, Pg.No. 35 of 322, Cl.No. 4.1.19	Control valves for Fuel oil temperature control i.e. Aux steam for Floor coil heater (ON/Off type) control valve , Aux steam for suction heater (Modulating) control valve and Aux steam temperature control valve for desuperheater.		
11	TECH SPEC_Part1, Pg.No. 22 of 322, Cl.No. 2.1	Each HFO storage tank shall also be provided with a suction heater at tank outlet to heat the outgoing HFO by 10 degC over maintenance temp of 60 deg C inside the tanks. Steam shall be the heating medium for the HFO tank suction heaters.	Both referred clauses are contradicting each other regarding type of heating medium and temperature rise for suction heaters. However we are considering steam as a heating medium and 10 deg. C temperature rise. Please confirm.	Bidder to consider the temperature rise of 10 deg C . to raise the temperature from 60deg C to 70Deg C in suction heater .
	TECH SPEC_Part1, Pg.No. 119 of 322, Cl.No. 15.4.4.1	Fuel Oil Suction Heater : Heating media : Electric Initial temp of oil : 50°C Final temp of oil : 70°C Oil temperature rise : 20°C		
12	TECH SPEC_Part1, Pg.No. 31 of 322, Cl.No. 3.1.12	PIPES, FITTINGS & FLANGES	Minimum thickness/Sch to be considered for Fuel oil piping, steam and condensate piping, Inst. air piping, etc. is not given. Please provide.	For fuel oil pipe thickness shall be schedule "standard" as minimum to be maintained for instrument ,condensate pipe thickness Please refer page No.267 of 644.
13	TECH SPEC_Part1, Pg.No. 116 of 322, Cl.No. 15.2 (g)	One (1) – 150 NB (min.) heavy fuel oil unloading manifold complete with eight (8) stand pipes with flexible hoses of 8 M length [each provided with universal type couplings, isolation valves and matching pieces as required for connecting to road tankers isolation valves and caps as required for connecting to road tankers. Tapping points on the oil header shall be suitably located.	Both referred clauses are contradicting each other regarding unloading header size. By considering given velocity criteria unloading header size should be of 400NB. We are considering the same. Please confirm.	Please refer P&ID PE-DG-412-166-A101
	Drwaing no. : PE-DG-412-166-A101 REV 03, Process & Instrumentation Diagram of HFO System	HFO Unloading header - 400 NB		
14	TECH SPEC_Part1, Pg.No. 31 of 322, Cl.No. 3.1.12	Fuel Oil Unloading Pipes - IS 1239/IS1978/API 5L Gr. B(ERW) / IS 3589 Fabricated from IS 2062 Plates Fuel Oil Pump Discharge Piping/Other Fuel Oil / Piping - API 5L GR.B (ERW)	Both referred clauses are contradicting each other regarding MOC of fuel oil piping. However we are considering piping MOC as per TECH SPEC_Part1, Pg.No. 31 of 322, Cl.No. 3.1.12. Please confirm.	Bidder to follow customer specification (clause No.15.4.10 page No. 121 ,122 of 644)
	TECH SPEC_Part1, Pg.No. 119 of 322, Cl.No. 15.4.1	Construction materials: Pipes, Valves & Hoses : Pipes- 65 mm NB & larger - API-5L Gr.B or A106 Gr.B, BW ends ANSI B16.25 Pipes- 50 mm NB & below - A106 Gr.B Socket weld ends ANSI-B-16.11		
15	Drwaing no. : PE-DG-412-166-A101 REV 03, Process & Instrumentation Diagram of HFO System	HFO Intertank transfer line.	Please specify the number of working pumps to be considered for sizing inter tank transfer line in HFO system.	Bidder to consider 2No. of pump.

ANNEXURE-II (REPLY OF PRE-BID CLARIFICATIONS)

16	TECH SPEC_Part1, Pg.No. 8 of 322, Cl.No. 2.1.25	Spray water for fuel oil area desuperheater will be sourced from CEP discharge of both the U nits.	Spray water terminal point, pressure, temperature and properties of water are not provided for PRDS. Please provide the same.	Spray water terminal point shall be as mentioned in amendment .Technical parameter are as below: Pressure -35kg /cm2. Temperature -47 Deg C. DM water quality-Ph value 9-9.5
17	TECH SPEC_Part1, Pg.No. 89 of 322, Cl.No. 1.00.01.03	Temperature,Transmitters and Electronic Transmitters (For Pressure, DP, Temp, Flow, Level), Temperature, Pressure, Flow & Level Switch, safety switches, Gauges, meters, Transducer or any other instrument etc.	Referred clause calls for a flow meter as a spare. Being a huge item we are not considering flow meter as a spare. However we will consider flow transmitter as a spare. Please confirm.	Flow meter to be considered .
18	Drwaing no. : PE-DG-412-166-A101, A102 REV 03, Process & Instrumentation Diagram of HFO System, LDO system	Flow meter	Type of flow meter is not given in the referred drawings and in specificaiton. Hence we are considering Positive displacment type flow meter for both HFO and LDO system.	Bidder to considered clause No. 3.03.20 page 446 of 644.
B. Electrical, Control & Instrumentation				
1	TECH SPEC_Part1, Pg.No. 7 of 322, Cl.No. 2.1.14 TECH SPEC_Part1, Pg.No. 35 of 322, Cl.No. 4.1.17 TECH SPEC_Part2, Pg.No. 42 of 322	LT transformers and LT switch gears for FO Unloading system shall be as per contract specification, Vol-IV (Electrical Specificaitons) LT transformers and LT switch gears for FO Unloading system shall be as per contract specification, Vol-IV (Electrical specification). Standard Electrical Scope Between BHEL and Vendor (for EPC projects)	From the referred Clauses Scope of LT transformer and LT Switchgear is not provided in the Electrical scope between BHEL and Vendor. However we are considering Scope for electricals as per Scope matrix given. Please confirm.	Scope shall be as per Scope matrix, LT Transformers and LT SWGR (MCC) are in BHEL scope of supply.
2	TECH SPEC_Part1, Pg.No. 121 of 322, Cl.No: 15.4.9.1 TECH SPEC_Part2, Pg.No. 42 of 322	Electricals and Control Instrumentation: One (1) - Motor control centre/ switchgear; one lot of motor starters & push button stations for unloading pump sets with spare feeders including accessories for the heavy fuel oil pipework. Standard Electrical Scope Between BHEL and Vendor (for EPC projects)	From the referred Clauses Scope of MCC and LPBS are in BHEL Scope as per electrical scope matrix. Hence we are excluding from our scope. Please confirm.	Scope shall be as per Scope matrix, LT SWGR (MCC) and LBPs shall be in BHEL scope of supply. However bidder has to provide the load data in BHEL format. Please refer Electrical scope matrix provided.
3	TECH SPEC_Part1, Pg.No. 121 of 322, Cl.No: 15.4.9.3 TECH SPEC_Part2, Pg.No. 42 of 322	Lightning protection; earthing; cathodic protection (as required); illumination of oil unloading pump house oil forwarding pumphouse & oil tank farm area; cable trays, conduits etc for satisfactory installation of the electrical system for the offered plant. Standard Electrical Scope Between BHEL and Vendor (for EPC projects)	From the referred Clauses Scope of described is in BHEL Scope as per electrical scope matrix except Cable trays & conduits. Hence we are excluding from our scope. Please confirm.	Scope of supply of electricals shall be as per the scope matrix provided. Please refer Electrical scope matrix provided.
4	TECH SPEC_Part1, Pg.No. 89 of 322	C&I Mandatory spares	We understood that the yellow colour highlighted spares are to be considered as C&I spares as per system requirement. Whereas even in the highlighted also some of the items are stricked off. Please clarify, which items are to be considered.	Confirmed that the stricken-off items are not applicable for this package.

ANNEXURE-II (REPLY OF PRE-BID CLARIFICATIONS)

5	TECH SPEC_Part1, Pg.No. 35 of 322, Cl. No: 5.2	Remote I/Os cum redundant processor panels of DDCMIS shall be provided for Fuel oil unloading & handling system. Redundant DPU panel shall be located in the FOPH house.	From the referred Clauses, the requirement of C&I scope is not clear. Please provide clear scope matrix of C&I. Also please provide system architecture.	Remote I/O cum redundant processor shall be provided by BHEL. Write-Up/control philosophy for implementing the logic shall be provided by the bidder.
	TECH SPEC_Part1, Pg.No. 35 of 322, Cl. No: 5.3	One local control panel shall also be provided in line with Volume V, Annexure C.		
	TECH SPEC_Part1, Pg.No. 10 of 322, Cl. No: 2.3.0	Exclusions: d) Control/I/O panel for Fuel Oil pump houses		
	TECH SPEC_Part1, Pg.No. 38 & 39 of 322, Annexure-7	In DDCMIS, functional grouping of controller is already fixed. Bidder is adding this BOP package in DDCMIS. Since this activity shall not be in the FOPH and separate building arises for fuel decanting then Bidder have to provide additional hot redundant controller cum I/O panel, one no. OWS and one no. A4 sized B/W LJP in local control room. Also as per Specification complete backup panel is also required with PLC for Fuel oil handling & unloading system. Fuel Oil Handling and Unloading system has lesser no. of I/O's and intermittent operation. Hence separate controller is not envisaged. Control of Fuel oil handling & unloading system shall be envisaged in DDCMIS panel located in Fuel oil pump house.		The Fuel Oil Unloading and Handling System shall be controlled from the DDCMIS which is under BHEL's scope.
6	TECH SPEC_Part1, Pg.No. 35 of 322, Cl. No: 5.3	One local control panel shall also be provided in line with Volume V, Annexure C.	1. From the referred clauses the Volume V, Annexure-C is nothing but the description given under Cl. No 6.00.2 Local Control Panel. Please confirm. 2. Also in the Local Control Panel description it was indicated that "--- control switches, meters, indicators, status indication lamps etc. to achieve the control philosophy described above". No control Philosophy described above. Please provide.	The Local Control Panel is under bidder's scope of supply. The required details(extract from the Customer's specification) w.r.t the Local Control Panel are enclosed with amendment, which shall be read along with the specification sent earlier.
	TECH SPEC_Part2, Pg.No. 157 of 322, Cl. No: 6.00.2	LOCAL CONTROL PANEL: The local control panel for control and monitoring of the fuel Oil shall be located in the Fuel oil pressurizing pump area and shall house all necessary start/stop push buttons, auxiliary relays, control switches, meters, indicators, status indication lamps etc. to achieve the control philosophy described above . This panel shall also include all the annunciation described below.		
7	General		Please provide following specifications and data sheets: 1. Thermal Insulation and Aluminium cladding 2. Control & Instrumentation cables	1. Please refer page No .124 & 218 of 644 for insulation specification. 2. Purpose for requirement of specification for C&I cables is not clear. For dimensions of cables etc, the same shall be informed during the detailed engineering.
B. Additional Query for Electrical, Control & Instrumentation				
8	TECH SPEC_Part1, Pg.No. 7 of 322, Cl.No. 2.1.12	Two (2) nos.(1W+1S) Vertical centrifugal type pumps of cap. 30m ³ /hr for pumping separated water from oil water separator to guard pond in the ETP area.	From the referred clause it is clear that recovered water is terminated to guard pond in the ETP area. However location of guard pond in the ETP area is not shown in the given plot plan (tech spec_ part 2, pg no. 318 of 322). Please provide the complete plot plan with legend.	Please refer amendment and plot plan.

