

**1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

VOLUME: II B & III

**TECHNICAL SPECIFICATIONS
FOR
CW TREATMENT PLANT**

SPECIFICATION NO.: PE-TS-415-156-A001



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA**



TITLE:	SPEC NO: PE-TS-415-156-A001	
	VOLUME: II-B	
	SECTION: A	
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TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
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SECTION – A SCOPE OF ENQUIRY



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1. SCOPE OF INQUIRY/ INTENT OF SPECIFICATION

- 1.1 The specification is intended to cover design, engineering, manufacture, fabrication, assembly, inspection and testing at vendor's & sub-vendor's works, painting, mandatory spares along with spares for erection and commissioning, startup and commissioning as required, O&M for six months, forwarding, proper packing, shipment and delivery at site, unloading, handling & transportation at site, Erection & Commissioning, trial run, on FOR site basis, preparation & submission of "As Built" drawings, PG test at site and handing over of **CW Treatment Plant** as per the details in different sections / volumes of this specification for **1X660 MW BHUSAWAL TPS-UNIT:6, MAHARASHTRA, INDIA.**
- 1.2 Complete Supply and dosing of following chemicals (this is minimum requirement, however, any additional chemical as required along with the dosing arrangement as applicable to meet the guaranteed parameters shall be in the scope of bidder) for a period of 6 months (this 6 months period includes one initial startup, commissioning and PG test also).
- Corrosion Inhibitor
 - Scale Inhibitor
 - Biocide
- 1.3 Deputation of his experts (as required by employer) for continuously operation, maintenance of the CW programme for 6 months.
- 1.4 The contractor shall be responsible for providing all material, equipment & services, which are required to fulfil the intent of ensuring operability, maintainability, reliability and complete safety of the complete work covered under this specification, irrespective of whether it has been specifically listed herein or not. Omission of specific reference to any component / accessory necessary for proper performance of the equipment shall not relieve them of the responsibility of providing such facilities to complete the supply, erection and commissioning of **CW Treatment Plant** and external regeneration system.
- 1.5 It is not the intent to specify herein all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgment is not in full accordance herewith.
- 1.6 The extent of supply under the contract includes all items shown in the drawings, notwithstanding the fact that such items may have been omitted from the specification or schedules. Similarly, the extent of supply also includes all items mentioned in the specification and /or schedules, notwithstanding the fact that such items may have been omitted in the drawing.
- 1.7 The general terms and conditions, instructions to tenderer and other attachment referred to elsewhere are made part of the tender specification. The equipment materials and works covered by this specification are subject to compliance to all attachments referred to in the specification. The bidder shall be responsible for and governed by all requirements stipulated herein.
- 1.8 While all efforts have been made to make the specification requirement complete & unambiguous, it shall be bidders' responsibility to ask for missing information, ensure completeness of specification, to bring out any contradictory / conflicting requirement in different sections of the specification and within a section itself to the notice of BHEL and to seek any clarification on specification requirement in the format enclosed under Vol-III of the specification. In absence of any such clarifications, in case of any contradictory requirement, the more stringent requirement as per interpretation of BHEL/Customer shall prevail and shall be complied by the bidder without any commercial implication on account of the same. Further in case of any missing information in the specification not brought out by the prospective bidders as part of pre-bid clarification, the same shall be furnished by BHEL/ Customer as and when brought to their notice either by the bidder or by BHEL/ customer themselves. However, such requirements shall be binding on the successful bidder without any commercial & delivery implication.
- 1.9 Deviations, if any, should be very clearly brought out clause by clause in the enclosed schedule; otherwise, it will be presumed that the vendor's offer is strictly in line with NIT specification.



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- 1.10** In case all above requirements are not complied with, the offer may be considered as incomplete and would become liable for rejection.
- 1.11** Unless specified otherwise, all through the specification, the word contractor shall have same meaning as successful bidder/vendor and Customer/Purchaser/Employer will mean BHEL and/or Customer including their consultant as interpreted by BHEL in the relevant context. Bidder to refer GCC/SCC for more clarity.
- 1.12** The equipment covered under this specification shall not be dispatched unless the same have been finally inspected, accepted and dispatch release issued by BHEL/Customer.
- 1.13** BHEL's/Customer's representative shall be given full access to the shop in which the equipments are being manufactured or tested and all test records shall be made available to him.
- 1.14** Pre-bid meeting shall be held before bid submission. Bidder to ask all their queries in pre-bid meeting.



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SECTION – B PROJECT INFORMATION

TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.

1.0 INTRODUCTION

The proposed 1x 660 MW Bhusawal Thermal Power Project will be set up by Maharashtra State Power Generation Co. Ltd. (MAHAGENCO) in Dipnagar near Bhusawal, Maharashtra, India.

The Bidder shall acquaint himself by a visit to the site, if felt necessary, with the conditions prevailing at site before submission of the bid. The information given herein under is for general guidance and shall not be contractually binding on the Owner. All relevant site data/information as may be necessary shall have to be obtained /collected by the Bidder.

2.0 APPROACH TO SITE

Deepnagar is well connected by rail and road. By road, it is about 8 Km from Bhusawal city. Nearest railway station is at Bhusawal. The nearest Airport is at Aurangabad. The nearest sea port is at Mumbai. The site is located on the Mumbai-Nagpur Highway.

3.0 LAND

Bhusawal Thermal Power Plant is already having 1x62.5 MW + 2x210 MW Units and Two (2) Units of 500 MW each are under execution stage. About 108.94 Hectares of land is acquired by MAHAGENCO near existing TPS. It is proposed to install 1x 660 MW unit on this land.

4.0 SOURCE OF COAL

Indian coal would be sourced from Machaakata coal blocks in Orissa state. The Coal will be received at Plant site directly by rail. The coal from the railway wagons would be unloaded by means of wagon tipplers and will be either bunkered or stacked in the stock pile at site.

5.0 SOURCE OF WATER

The main source of water is considered Ozerkheda Reservoir which is located at around 18 km from plant site.

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6.0 ASH DISPOSAL AREA

The ash generated from 1 x 660 MW unit shall be disposed off in slurry form to the existing Ash Pond located at Velhala, approx. 12 Km from the site.

7.0 PROJECT INFORMATION

- | | | | |
|------|-------------------------|---|---|
| 7.1 | Client / Owner | : | Maharashtra State Power Generation Co. Ltd. |
| 7.2 | Consultant | : | Procon Engineers, Navi Mumbai
(Division of Nimoto Consulting Engineers Pvt. Ltd.) |
| 7.3 | Project Title | : | BHUSAWAL T.P.S. UNIT – 6 : 1X660 MW |
| 7.4 | Location | : | Dipnagar, Near Bhusawal, Maharashtra, India |
| 7.5 | Nearest railway station | : | Bhusawal |
| 7.6 | Nearest Airport | : | Aurangabad |
| 7.7 | Nearest Harbour | : | Mumbai |
| 7.8 | Access Roads | : | NH 6 (Mumbai-Nagpur Highway) |
| 7.9 | Elevation above MSL | : | 210 M |
| 7.10 | Longitude/latitude | : | 75°51'10" East /21° 02' 30" North |
| 7.11 | Seismic Zone | : | Zone III as per IS:1893 |

7.12 AMBIENT TEMPERATURE

- | | | | |
|--------|-----------------------------------|---|------------------------|
| 7.12.1 | Mean of daily maximum temperature | : | 48.25 °C (during May) |
| 7.12.2 | Mean of daily minimum temperature | : | 18 °C (during January) |
| 7.12.3 | Highest temperature recorded | : | 48.7°C |

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- 7.12.4 Lowest temperature : 13°C
recorded
- 7.13 Wet bulb temperature : 27°C (Maximum)
- 7.14 Rainfall : 112 mm average annually
- 7.15 Wind Speed : 0 to 39 Km/hr
- 7.16 Wind direction : East North East to West South West

ELECTRICAL

7.17 **MAIN POWER SOURCE FROM GRID**

- 7.17.1 Rated Voltage : 400kV
- 7.17.2 Voltage variation : $\pm 10\%$
- 7.17.3 Frequency Variation : $\pm 5\%$
- 7.17.4 Rated Short Circuit : 50 kA, Three Phase Symmetrical
Level

7.18 **AUXILIARY POWER SUPPLY**

Auxiliary electrical equipment shall be suitable for operation on the following supply system:

- 7.18.1 Motors above 1000 kW : 11kV, 3Ph, 3wire, 50Hz system
& other Power devices
- 7.18.2 Motors below 1000 kW : 3.3kV, 3 ph, 3 wire 50 Hz, Non Effectively
& above 160kW earthed
& other power devices
- 7.18.3 Motors upto 160 kW & : 415V, 3 ph, 4 wire 50 Hz
other power devices
- 7.18.4 Motor Starting Methods : Direct on Line
- 7.18.5 (a) Lighting fixtures : 240V, 1 phase, 50 Hz
Space heaters, and Supply through suitably rated transformers
single Phase to limit the short circuit level to 9kA – 1 sec.
motors

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(b) Control & : 240V, 1 Phase, 50 Hz from UPS
Instrumentation

7.18.6 Short circuit levels of 11kV, 3.3 kV and 415V system equipments

The equipment shall be suitable for the following short circuit levels

(a) 11kV Switchgears : 44 kA/3 sec

(b) 3.3kV Switchgears : 40 kA/3sec

(c) 415V PCC/ : 50 kA/1sec
PMCC/ MCC

(d) Lighting : 9 kA/1sec
Distribution
Boards & 240V
A.C. supply

7.18.7 Auxiliary DC supply

The auxiliary DC supply will be used for control, indication & protection, Turbine lube oil system, AVR, Emergency DC lighting of power plant and Control & Instrumentation etc.

(a) Voltage : (i) 220V DC for utility purpose
(ii) 24V DC for Control and
Instrumentation

(b) Voltage variation : + 10 %, - 15 %

7.18.8 Emergency power
supply

(a) Purpose : (i) Standby power to normal incomer of
emergency MCC
(ii) Alternate power source to Fire water
Pumps

(b) Rated voltage and : 415 V, 3 phase, 3 wire, 50 Hz.
frequency

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7.18.9 UPS power supply

- (a) Purpose : (i) Vital process loads
(ii) Critical lighting
(iii) Control and Instrumentation
(iv) Office for LAN power supply/Server etc.

(b) Rated Voltage : 415V, 3 ph, neutral/240V single phase, 50Hz

7.19 The variation in voltage and frequency may be $\pm 10\%$ and $\pm 5\%$ respectively. The combined voltage and frequency variation may be $\pm 10\%$. All devices shall be suitable for continuous operation over the entire range of voltage variation without any change in their performance

7.20 Power socket shall be 415V AC, 50 Hz, 4 pin 32/63 Amps. Power socket outlets for portable tools, hand lamps etc shall be 240 volts, single phase, 3 pin, metal clad industrial type

7.21 All electrical equipment shall be designed for the following ambient conditions

(a) Maximum ambient temperature : 50°C

(b) Minimum Ambient temperature : 13°C

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SECTION – C
(SPECIFIC TECHNICAL REQUIREMENTS)

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SECTION – C1

(SPECIFIC TECHNICAL REQUIREMENTS FOR MECHANICAL)

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1.0 GENERAL

The CW Chemical Treatment Plant and associated accessories shall conform to the technical specification.

2.0 SCOPE OF SUPPLY

Broad scope of work of this package includes all equipment and accessories. Please also refer Electrical and C&I sections for respective scopes.

a) The CW Chemical Treatment Plant, as specified in Technical data sheets, and shall consist of the followings:

- Entire CW Chemical Treatment Plant as per P&ID (PE-DG-415-156-A001) and Data Sheet-A.
- Complete Supply and dosing of following chemicals (this is minimum requirement, however, any additional chemical as required along with the dosing arrangement as applicable to meet the guaranteed parameters shall be in the scope of bidder) for a period of 6 months (this 6 months period includes one initial startup, commissioning and PG test also).
 - Corrosion Inhibitor
 - Scale Inhibitor
 - Biocide
- All tanks complete with inlet and outlet connections, all fittings and appurtenances etc. as specified and as required.
- All necessary valves and fittings.
- All necessary pumps, motors, actuators, etc as required and as indicated in P&ID and Data sheet.
- Electrical scope shall be as per "Electrical scope between BHEL and Vendor".
- All necessary drains, vents, and sampling points, with valves, as specified and as required.
- Hangers and supports as per the requirement.
- Relay based local control panel.
- Instrumentation (minimum) as per the enclosed P&ID (PE-DG-415-156-A001).
- Safety requirement as per Data Sheet-A.
- Start-up and commissioning spares as required.
- Mandatory spares.
- Operation and maintenance spares as required.
- All special tools necessary for proper maintenance or adjustment of the equipment packed in permanent box.
- Finish paints for touch up painting of equipments after erection at site in sealed container.
- Initial charge of all lubricants and grease.
- Monitoring gadgets, instruments, and equipments required for maintenance (till PG test and plant handover).
- Monitoring gadgets, instruments and equipment required to show demonstration parameters.
- Test racks (corrosion, scaling/deposit and bio-fouling) with coupons/test kits with mounting accessories.
- All flanges/counter flanges to interconnect the pipes.
- Pipe supporting material.

Note: Bidder shall study the scheme; water analysis etc contained in the specification and offer/supply the most suitable chemical(s). The chemicals proposed shall be non-toxic type. Heavy metal based chemicals such as chromate, zinc etc are not applicable. Further the chemicals shall not have any deleterious affect on any component of the CW System. Organic polymer / organic phosphorous / organic phosphates based chemicals shall be used. Required documentation in support of the above shall be made available to customer if required. The chemical must comply the applicable statutory requirements.

3.0 SCOPE OF SERVICE

The bidder's scope also includes following services for scope under this specification:

- 1) Erection and Commissioning.
- 2) Operation, maintenance, dosing of H₂SO₄ dosing with other chemicals of the treatment program for a period of 6 months at site.
- 3) Arrangement of all instruments and lab facilities to carry out trial run/commissioning and PG test.
- 4) Complete grouting for equipment, fixing and any concreting inside the vessels and lining.

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- 5) All personnel required during commissioning and PG Test.
- 6) Performance testing.
- 7) Determination and control of corrosion rates, microbiological fouling and scale deposition, etc as per guaranteed condition at regular intervals and review on regular basis and submit fortnightly reports to the BHEL/Customer.
- 8) Painting as per enclosed painting schedule. However, any variation in the painting schedule as finally approved by customer shall be taken care by the bidder without any commercial and delivery implication. Color-coding scheme shall be intimated to vendor during detailed engineering.

4.0 CIVIL SCOPE

Nil (including acid alkali resistant lining).

5.0 GUARANTEE:

- i) Corrosion rate:
 - On MS < 3.0 mpy
 - On Cu < 0.5 mpy
 - On SS (304) < 0.5 mpy
- ii) Scaling < 15mg/dm²/day
- iii) Ni-Cr mesh should be clean when visually inspected
- iv) Pitting corrosion rate on MS/Brass < 20 mpy.
- v) Micro/Bio fouling conditions
 - Total Viable Count (TVC) < 1x10⁵ Counts/ml
 - Sulfate reducing bacteria (SRB) < 1x10⁵ Counts/ 100ml

6.0 TERMINAL POINT

- a. Inlet water line (service water/potable water/Sample water from CW Pump): At 10 meters from CW Chemical Treatment Plant area.
- b. Outlet chemical line from CW Chemical Treatment Plant: upto the dosing point at CW Forebay (consider 100 meter piping distance).
- c. All drains: Common drain shall be connected to a lime pit.
- d. Acid unloading: Necessary manifold including the flexible unloading hose pipe (20 meter).
- e. Lime pit neutralized effluent from N-Pit Dewatering pump to CW Forebay (consider 100 meter piping distance).

7.0 EXCLUSIONS

- a) Service air, Instrument air, upto the terminal point.
- b) Air-conditioning, ventilation and fire fighting facilities, Drinking water and service water.
- c) All Civil works at site. However, fixing of equipment, grouting shall be done by bidder.
- d) M.C.C. / Switch fuse feeder panels for the power plant and control cabling up to & beyond the battery limit (Refer electrical section for scope).
- e) 98% Sulfuric Acid.

8.0 QP AND SUBVENDOR APPROVAL

- a) QP requirements part of section-C shall be as per the enclosed QP subject to BHEL/Customer approval. However, any additional comments as given by BHEL/Customer shall be adhered by the bidder without any implication to BHEL.
- b) Approved subvendor list is enclosed elsewhere of this specification. However, any additional sub-vendor shall be subject to BHEL and customer approval.

9.0 DESIGN/CONSTRUCTION

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In addition to the requirements of Section-C & D the following shall also be complied under scope of this specification:

The P&ID is enclosed herein in this section for bidders compliance.

The material of construction specified in Data Sheet-A are minimum requirements and material of construction for other components not specified shall be similarly selected by the bidder for intended duty which shall be subjects to customer approval during detailed engineering.

10.0 DRAWING/DOCUEMNTS REQUIREMENT (FOR MECHANICAL/ELECTRICAL/C&I/CIVIL/ETC)

After award of LOI, following drawing/documents shall be submitted by the bidder for BHEL/Customer approval. However, any additional drawing/document if found necessary for completion of the engineering, the same shall be submitted by bidder without any commercial implication.

- Detailed piping and instrument or engineering flow diagram for process and utility, showing all equipments, machinery, piping and instruments. All pipes should be indicated with diameter, pipe class, pipe number, fluid flowing through it as per the Employer's legend to be furnished later.
- Detailed configuration drawings, BOMs, Data Sheets, General arrangements and cross-sectional/assembly drags, along with the manufacturer's catalogue for all the items/equipment including control & instrumentation supplied by the bidder.
- Detailed installation drawings for all instruments and instrumentation schedule.
- Preparation and finalization of functional write-up and detailed logic diagram, for all control system, electrical wiring and schematic drgs for the development of logic diagrams, GA and layout drgs of control panels, junction boxes, bill of material for panel drgs and terminal, chart for all the panel drgs, inter connection diagram for cabling, cable schedule.
- Design calculation of process and mechanical design, equipments and systems. The bidder shall show, explain and prove the validity of the basis/procedures and methods used in these calculations.
- Details civil scope drawing for all civil works.
- Detailed piping layout drawings, pipe support drawings, complete bill of materials of the piping, valve schedule etc.
- Submission of detailed procedure for various performance tests and getting the Employer's approval for the same.
- Conducting PG test.
- Submission of O&M manual.
- Spec. for acid/alkali resistant lining and areas requiring such lining.

10.0 DRAWING/DOCUEMNTS REQUIRED ALONG WITH THE BID (Please refer Electrical and C&I portion also).

- Deviation schedule duly fill for deviation, if any. **
- Price Schedule duly filled.
- List of Spares (Commissioning and Recommended spares).

11.00 Reference Documents

- Clarified Water Analysis [TABLE-1].
- Data sheet- A.
- P&ID for CW Treatment Plant.
- Key plan for CW Treatment Plant.

NOTE-1: - Any item/work either supply of equipment or erection material or chemical which have not been specifically mentioned in but are necessary to complete the woks for trouble free and efficient operation of the plant shall be deemed to be included within the scope of this specification. The bidder without any extra charge shall provide the same.

Note-2: All major drawings/documents shall be approved by BHEL/Customer during detailed engineering. Stage. Successful vendor shall comply with the comment of the customer/BHEL without price & delivery implication.

Note-3: The above Note-1 & 2 shall be applicable for Electrical, C&I and Civil also.

Note-4: Ozone is being dosed @ 0.2 ppm continuous dosing in CW Forebay by BHEL (Ozonisation Plant supplier).

DESIGN CLARIFIED WATER ANALYSIS (MAKE UP WATER) [TABLE-1]

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SR. NO.	PARAMETERS	UNITS	VALUES
1.0	pH		8.0 – 8.5
2.0	Temperature	°C	22 - 30
3.0	Conductivity	µS/cm	1300
4.0	Colour	Hazen Units	Not Available
5.0	Odour		Not Available
6.0	Taste		Not Available
7.0	TDS	ppm	870
8.0	P-Alkalinity as CaCO ₃	ppm	Nil
9.0	M-Alkalinity as CaCO ₃	ppm	400
10.0	T – Alkalinity as CaCO ₃	ppm	400
11.0	Organic Matter as KMnO ₄	ppm	50
12.0	Iron (as Fe)	ppm	1
13.0	Turbidity (NTU)	ppm	2 ppm
14.0	CATIONS		
	(a) Ca as CaCO ₃	ppm	295
	(b) Mg as CaCO ₃	ppm	77
	(c) Na as CaCO ₃	ppm	203

	(d) K as CaCO ₃	ppm	10
	Total Cation	ppm	585
15.0	ANIONS		
	(a) HCO ₃ as CaCO ₃	ppm	400
	(b) Chlorides	ppm	149
	(c) SO ₄ as CaCO ₃	ppm	33
	(d) Fluoride as CaCO ₃	ppm	1
	(e) Nitrate as NO ₃	ppm	2
	Total Anion	ppm	585
16.0	Ammonia	ppm	Absent - Traces
17.0	Silica Colloidal (as SiO ₂)	ppm	< 1 (can be present in summer)
18.0	Silica Non - Colloidal (as SiO ₂)	ppm	36
19.0	Free Chlorine	ppm	Nil
20.0	Total Suspended Solids	ppm	Not Available
21.0	Carbonates as CaCO ₃	ppm	Not Available
22.0	Boron	ppm	<1 ppm
23.0	Oil & Grease	ppm	Not Available

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NOTE:

- A. CIRCULATING WATER ANALYSIS SHALL BE DERIVED CONSISTING CYCLE OF CONCENTRATION (COC) OF 5 FOR THE ABOVE MENTIONED MAKE UP WATER ANALYSIS.**
- B. DATA FOR COOLING TOWER:**
- Recirculation Volume of Cooling Tower is 72324 Cum/hr (approx.).
 - Storage/Holdup volume of cooling tower basin=25000 CuM.
 - Temperature difference across cooling tower is 10.0 Deg C.
 - MOC of Condenser tube is Welded SS as per ASTM-A-249-TP316.
 - Blow down=300 CuM/Hr.
 - Make up water=1537 CuM/Hr.
 - Cooling Water System metallurgy shall be as per P&ID CW/ACW System (enclosed in Technical Specification).

	TITLE: TECHNICAL SPECIFICATION FOR CW TREATMENT PLANT 1X660MW BHUSAWAL TPS-UNIT:6 MAHARASHTRA, INDIA.	SPEC NO: PE-TS-415-156-A001	
		VOLUME: II-B	
		SECTION: C	
		REV NO: 00	DATE:

LIST OF SUB VENDORS (TABLE-2)

TABLE-3

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

2.0 LIST OF APPROVED VENDORS – MECHANICAL

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
1.0	<u>BOILER, TURBINE, GENERATOR (BTG)</u>		
1.1	CONDENSOR ON LINE TUBE CLEANING SYSTEM	(a)	GEA-BGR
		(b)	TAPROGGE GMBH
1.2	CARBON STEEL PIPE FITTING	(a)	ALLIED INTERNATIONAL S.P.A. ITALY
1.3	PAINTINGS	(a)	ASIAN PAINTS
		(b)	BURGER PAINTS
		(c)	SHALIMAR PAINTS
		(d)	NEROLAC PAINTS
		(e)	JOHNSON & NICHOLSON
1.4	SPRING SUPPORT AND SPRING HANGERS	(a)	SARATHI
1.5	BOILER FEED PUMP	(a)	WEIR PUMPS
		(b)	KSB AKTIENGESELLSCHAFT
		(c)	SULZER PUMPS
		(d)	TORISHIMA PUMPS
1.6	CONCRETE VOLUTE PUMPS	(a)	KBL
		(b)	FLOWERVE INDIA CONTROL PVT LTD, INDIA
1.7	STEAM TRAPS	(a)	SPIRAX MARSHALL PVT LTD
		(b)	GREAVES LTD
		(c)	PENNANT ENGINEERING PVT LTD
		(d)	LEADER VALVES LTD
		(e)	CRESCENT VALVES MFG CO PVT LTD
1.8	VACCUM PUMPS	(a)	SIEMENS

**TECHNICAL SPECIFICATION FOR
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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(b)	UNIQUE SYSTEM, NEW JERSY, USA
1.9	RAPH	(a)	L & T HOWDEN PVT LTD
1.10	ID/FD/PA FANS	(a)	L & T HOWDEN PVT LTD
1.11	SEAL AIR FANS	(a)	TLT ENGINEERING INDIA PVT LTD, GUJARAT
1.12	SCANNER COOLING AIR FAN	(a)	C. DOCTOR
1.13	MILLS	(a)	L & T-MHI
		(b)	BHEL
1.14	GEAR BOX (COAL MILL)	(a)	FLENDER
1.15	SOOT BLOWERS	(a)	CLYDE BERGEMANN INDIA, NOIDA
1.16	BOILER CIRCULATION PUMP	(a)	M/S HAYWARD TYLER LIMITED, UK
1.17	METALLIC EXPANSION JOINTS	(a)	MILLAR FITTINGS, UK
1.18	NON-METALLIC EXPANSION JOINTS	(a)	KE – BURGMANN FLEXIBLE INDIA PVT. LTD.
1.19	SCREW PUMPS	(a)	TUSHACO PUMPS PVT. LTD.
1.20	INSULATION	(a)	LLYODS INSULATION (INDIA) LTD.
		(b)	ROCKWOOL INDIA LTD.
		(c)	HYDERABAD INDUSTRIES LTD.
		(d)	MINWOOL ROCK FABRICS LTD.
1.21	PLATES (BOILER)	(a)	SAIL
		(b)	TATA STEEL
		(c)	JINDAL STEEL
1.22	SECONDARY STRUCTURE & BUCKSTAY FOR BOILER	(a)	METALFAB HIGHTECH PVT. LTD., NAGPUR

**TECHNICAL SPECIFICATION FOR
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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
1.23	BOILER DUCTS & SECONDARY STRUCTURE	(a)	SEAM INDUSTRIES NAGPUR
		(b)	ENESTEE ENGINEERING LTD, NAGPUR
1.24	HANDRAILS & GRATING	(a)	INDIANA GRATING PVT. LTD., MUMBAI
1.25	COAL MILL COMPONENT	(a)	M/S AIA ENGINEERING LTD., AHMEDABAD
1.26	COAL PIPES	(a)	M/S PRATIBHA INDUSTRIES LTD., MUMBAI
1.27	MISC. TANK FABRICATION	(a)	SEAM INDUSTRIES NAGPUR
		(b)	ENESTEE ENGINEERING LTD, NAGPUR
		(c)	ERA BUILDING SYSTEM
		(d)	RATNAMANI TUBES & METAL
1.28	GASKETS (METALLIC & RUBBER)	(a)	IGP (MADRAS)
1.29	BOLTS & NUTS (FASTENERS)	(a)	DEEPAK FASTENERS LTD. LUDHIYANA
		(b)	POINEER NUT & BOLTS PVT. LTD. LUDHIYANA
1.30	SAFETY VALVE	(a)	DRESSER
		(b)	FISCHER CONTROLS
1.31	SAFETY RELIEF VALVE	(a)	SPIRAX MARSHALL
		(b)	LEADER VALVES
1.32	CERAMIC LINED BENDS	(a)	CARBORUNDUM UNIVERSAL LTD. TAMILNADU
1.33	FAB/CAST/FORGED STRAINERS/ Y TYPE STRAINERS	(a)	SPIRAX MARSHALL
		(b)	GUJARAT OTOFILT
		(c)	MULTITEX FILTRATION
		(d)	GRAND PRIX FAB
		(e)	MICON VALVES (I) PVT. LTD

**TECHNICAL SPECIFICATION FOR
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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(f)	FLOWTECH ENGINEERS
1.34	STEEL CASTINGS FOR COAL MILL	(a)	SYNERGY STEELS LTD, NEW DELHI
		(b)	SRINATHJI ISPAT LTD., GAZIABAD
		(c)	G.S. ALLOY CASTINGS LTD., ANDHRA PRADESH
		(d)	N.S. ENGINEERING COMPANY PVT. LTD., YDERABAD
1.35	FUEL OIL HEATING & PRESSURISING SYSTEM	(a)	TECHNOFAB ENGINEERING LTD., NEW DELHI
		(b)	THERMOSYSTEM PVT. LTD., HYDERABAD
1.36	BFP DRIVE TURBINE	(a)	HTC, CHINA
1.37	FORGED STEEL VALVE (UP TO 50 NB SIZE)	(a)	FOURESS LIMITED
		(b)	KSB LIMITED
		(c)	L & T
		(d)	BANKIM
		(e)	BDK VALVES
		(f)	LEADER
1.38	FORGED CARBON STEEL VALVE	(a)	FOURESS LIMITED
		(b)	CRESCENT
		(c)	TECHNO VALVES
		(d)	R & D MULTIPLES
		(e)	BHEL
		(f)	LEADER
		(g)	A.V. ENGG.
1.39	RUBBER EXPANSION JOINT	(a)	D'WAREN & CO.
		(b)	S.L. MANEKLAL

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	CORI ENGG. PVT. LTD
1.40	CONDENSATE EXTRACTION PUMPS	(a)	WEIR PUMPS
		(b)	KIRLOSKAR BROS. LTD., PUNE
1.41	GEAR BOX FOR BFP	(a)	TRIVENI ENGG. & IND. PVT. LTD., MYSORE
1.42	CONDENSER TUBES	(a)	PLYMOUTH, USA
		(b)	SHIN HAN METAL CO. LTD., KOREA
		(c)	REMI EDELSTAL TUBULARS LTD.
1.43	FABRICATION & SUPPLY OF STEEL STRUCTURE	(a)	DIAMOND ENGG. , TAMILNADU
		(b)	VASAN INDUSTRIES,, TAMILNADU
		(c)	ERA BUILDING SYSTEM LTD., RUDRAPUR
1.44	WINDBOX	(a)	GK SONS ENGG. ENTERPRISES PVT. LTD., TRICHY
1.45	STRUCTURAL STEEL FABRICATED COMPONENTS FOR ESP	(a)	VRINDA ENGG. PVT. LTD., KOLKATA
		(b)	S.S. FABRICATORS & MANUFACTURERS, NAGPUR
		(c)	DYNAMECH DESIGNER COMPANY , JABALPUR
		(d)	JAS EQUIPMENT & ENGINEERS PVT. LTD., DURGAPUR
		(e)	THE UNITED ENGINEERS, KOLKATA
		(f)	UNI PROFILES PVT. LTD., ORISSA
		(g)	FRIENDS ENGG. CORPORATION. BHILAI
		(h)	ENCORE PROJECTS PVT. LTD., BHILAI
		(i)	QUALITY ENGG. WORKS, KOLKATA
		(j)	EASTERN ENGINEER & ASSOCIATES, KOLKATA

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CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(k)	DEHU ENGINEERS (I) PVT. LTD., PUNE
		(l)	NAAISON ENGINEERS PVT. LTD., HYDERABAD
		(m)	SRINIVASA ENGINEERS PVT. LTD, HYDERABAD
1.46	ALUMINUM SHEET	(a)	BHARAT ALUMINUM CO. LTD.
		(b)	HINDALCO INDUSTRIES LTD.
		(c)	NATIONAL ALUMINUM COMPANY LTD.
1.47	C.S. PIPING & ALLOY STEEL PIPING	(a)	VALCOVNY TRUB CHIUMUTOV
		(b)	ARCELOR MITTAL TUBULAR ROMAN S.A., ROMANIA
1.48	SLIDING BEARING FOR ESP	(a)	METAL ENGG. & TREATMENT CO. PVT.LTD., KOLKATA
		(b)	ROLLON BEARING PVT. LTD., BANGALORE
1.49	PLATE TYPE HEAT EXCHANGER	(a)	GEA ECOFLEX INDIA, NAVI MUMBAI
		(b)	FUNKE WARMETAUSCHER, Gmbh GERMANY
		(c)	TRANter INDIA PVT. PUNE
1.50	HYDRAULIC UNIT FOR LOADING DEVICE & ROLLER TILTING	(a)	HYDAC (INDIA) PVT. LTD., MUMBAI
1.51	DUCTING SUPPORT & HANGER	(a)	PIPE HANGER & SUPPORT VT. LTD., CHENNAI
1.52	ESP FOUNDATION BOLTS	(a)	VRINDA ENGINEERING PVT. LTD., KOLKATA
		(b)	COMMERCIAL ENGINEERING BODY BUILDERS CO. PVT. LTD, JABALPU

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
2.0	<u>WATER TREATMENT PLANT</u>		
		(a)	DRIPLEX, NEW DELHI
		(b)	ION EXCHANGE , MUMBAI
		(c)	THERMAX, PUNE
		(d)	VA-TECH WABAG, CHENNAI
		(e)	DOSHION
3.0	<u>WATER TREATMENT PLANT EQUIPMENT</u>		
3.1	CHEMICAL DOSING SYSTEM (FOR STORAGE TANKS – HOT WATER, ACID & ALKALI)	(a)	ATS. CHEM. EQUIPMENTS PVT. LTD. HOSUR , TAMILNADU
3.2	CHEMICAL DOSING SYSTEM	(a)	S.J. INDUSTRIES, CHENNAI
		(b)	PSI ENGINEERING, CHENNAI
		(c)	XL FLOW SYSTEM, CHENNAI
		(d)	POSITIVE METERING SYSTEM, NASIK
3.3	CONDENSATE POLISHING UNIT	(a)	DRIPLEX,NEW DELHI
		(b)	ION EXCHANGE, MUMBAI
		(c)	BGR ENERGY SYSTEMS LTD., CHENNAI
3.4	RESIN	(a)	DOW
		(b)	LANXESS
3.5	CONDENSER ON-LINE TUBE CLEANING SYSTEM	(a)	M/S. TECHNOS, FRANCE
		(b)	M/S. EIMCO WATER TECHNOLOGIES, USA
		(c)	M/S. CLUMPS & KOLLER, GERMANY
		(d)	M/S. BGR ENERGY LTD., CHENNAI
3.6	OZONISATION SYSTEM	(a)	OZONE RESEARCH & APPLICATION (I) PVT LTD. NAGPUR

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(b)	FLUID TECHNOLOGIES, NAGPUR
3.7	DEBRIS FILTER	(a)	M/S. TAPROGGE, GERMANY
		(b)	M/S. EIMCO WATER TECHNOLOGIES, USA
		(c)	M/S. CLUMPS & KOLLER, GERMANY
		(d)	M/S. BGR ENERGY LTD., CHENNAI
4.0	ETP ITEMS, a. TPI & API Separators, b. Filter Press	(a)	K-PACK SYSTEMS
		(b)	ISHA ENGINEERS & CO.
5.0	OIL HANDLING PLANT	(a)	RAUNAK INTERNATIONAL
		(b)	TECHNO ELECTRIC
		(c)	UNITECH MACHINES
		(d)	BRIDGE & ROOF
6.0	VERTICAL TURBINE PUMPS	(a)	KIRLOSKAR BROTHERS LTD. (KBL)
		(b)	MATHER & PLATT
		(c)	WPIL
		(d)	JYOTI PUMPS
		(e)	FLOWMORE
		(f)	SAM
7.0	HORIZONTAL CENTRIFUGAL PUMPS	(a)	KBL
		(b)	KSB PUMPS
		(c)	MATHER & PLATT
		(d)	SAM TURBO
		(e)	WPIL
		(f)	JYOTI PUMPS
		(g)	FLOWMORE

**TECHNICAL SPECIFICATION FOR
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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(h)	SULZER
		(i)	KISHOR PUMPS
8.0	METERING /DOSING PUMPS	(a)	MILTON ROY INDIA (P) LTD.
		(b)	V.K. PUMPS
		(c)	SHAPO TOOLS
9.0	SUMP PUMP	(a)	KIRLOSKAR BROTHERS LTD. (KBL)
		(b)	SAM
		(c)	KISHOR PUMPS
		(d)	FLOW MORE
		(e)	KSB
		(f)	VARTAK PUMPS
		(g)	MAXFLOW
10.0	FUEL OIL PUMPS	(a)	TUSHACO
		(b)	ALKETON, MADRAS
		(c)	PSI ENGINEERING
		(d)	ROTO PUMPS
		(e)	BOURNMEN, GERMANY
		(f)	DELTA CORPORATION
		(g)	ALL WEILER, GERMANY
		(h)	TMO, SWEDEN
11.0	AIR BLOWER (LOBE TYPE)	(a)	EVEREST TRANSMISSION
		(b)	KAY ENGG. WORKS
		(c)	SWAM PNEUMATICS
		(d)	ROOTS
12.0	BUTTERFLY VALVES	(a)	KIRLOSKAR BROTHERS LTD.

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
	(MANUAL/PNEUMATIC)	(b)	FOURESS
		(c)	L & T
		(d)	INTERVALVE (INDIA) LTD
		(e)	R&D MULTIPLES
		(f)	AUDCO
		(g)	INSTRUMENTATION LTD
		(h)	HAWA VALVES
		(i)	VENUS PUMPS & ENGINEERING WORKS
		(j)	BHEL
		(k)	FLOW VEL
		(l)	LEADER VALVES
13.0	RUBBER EXPANSION JOINT	(a)	D'WAREN & CO
		(b)	S.L. MANEKLAL
		(c)	SRM EXOFLEX PVT LTD
		(d)	CORI ENGINEERS
14.0	STRAINERS	(a)	SPIRAX MARSHALL
		(b)	MICON VALVES (I) PVT. LTD.
		(c)	FLOWTECH ENGINEERS
		(d)	FOURESS LTD.
		(e)	KSB LTD.
		(f)	L & T
		(g)	LEADER
		(h)	PROCEDYNE ENGINEERS
15.0	CAST IRON VALVE (GATE /GLOBE/CHECK/AIR RELEASE VALVE)	(a)	LEADER VALVE
		(b)	VENUS PUMP

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	FOURESS
		(d)	LEVCON
		(e)	DURGA ENGG CO.
		(f)	L & T
		(g)	R & D MULTIPLES
		(h)	FLUIDLINE VALVES CO PVT LTD
		(i)	INTER VALVE (INDIA) LTD
		(j)	NSSL LIMITED
16.0	CAST STEEL VALVES (GATE/GLOBE/CHECK/ BALL VALVE)	(a)	L & T
		(b)	KIRLOSKAR BROS. LTD
		(c)	CRESENT VALVES
		(d)	AUDCO
		(e)	KSB
		(f)	LEVCON
		(g)	FOURESS
		(h)	R & D MULTIPLES
		(i)	FLUIDLINE VALVES
		(j)	NSSL LIMITED
		(k)	VENUS PUMP
		(l)	DURGA ENGG CO.
		(m)	HAWA VALVES
		(n)	A.V.VALVES
17.0	STAINLESS STEEL (GATE/GLOBE/CHECK VALVE)	(a)	CRESCENT
		(b)	FOURESS
		(c)	R & D MULTIPLES

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
18.0	GUN METAL/BRASS/ BRONZE VALVES	(a)	LEADER VALVES
		(b)	SARKAR
		(c)	LEVCON
		(d)	BOMBAY METAL & ALLOYS
		(e)	SANT ENGG
		(f)	BANKIM & COMP.
		(g)	BDK
19.0	FORGED STEEL VALVE	(a)	FOURESS LIMITED
		(b)	KSB LIMITED
		(c)	L & T
		(d)	BANKIM
		(e)	BDK VALVES
		(f)	LEADER
		(g)	A.V.ENGG
		(h)	CRESCENT
		(i)	BHEL
20.0	L.D. PIPING	(a)	SETH & SURA ENGG. CO. LTD.
		(b)	IVCRL
		(c)	RAUNAQ
		(d)	ZUBERI
		(e)	INDIAN HUME PIPES LTD
		(f)	DYNAMIC SS ENGG PVT LTD
21.0	L.P.PIPING	(a)	UNITECH MACHINES, NEW DELHI
		(b)	AARTI INFRASTRUCTURE, NAGPUR
		(c)	ZUBERI, JAIPUR

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(d)	SETH & SURA ENGG CO. LTD
22.0	DIESEL ENGINES	(a)	KIRLOSKAR CUMMINS
		(b)	GREAVES COTTON
		(c)	ASHOK LEYLAND
23.0	FLANGES & FITTINGS	(a)	ALLIANCE
		(b)	JYOTI
		(c)	EBY
24.0	AIR DRYING UNIT (Refrigerant Type)	(a)	DONALDSON
		(b)	SABRO
25.0	<u>EOT CRANE</u>		
25.1	EOT CRANE (More than 100 Ton)	(a)	UNIQUE IND. HANDLERS
		(b)	ANUPAM INDUSTRIES
		(c)	MUKAND
		(d)	WMI
		(e)	FAFECO
		(f)	CENTURY CRANE ENGINEERS (P) LTD.
25.2	EOT CRANE (Less than 100 T)	(a)	UNIQUE INDUSTRIAL HANDLERS
		(b)	ANUPAM INDUSTRIES
		(c)	MUKAND
		(d)	FAFECO
		(e)	TURBO FUEGUSON
		(f)	WMI
		(g)	CONSOLIDATED HOIST
		(h)	HERCULES
		(i)	ELECON

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(j)	HASK ENGINEERS
		(k)	BRADY & MORRIS ENGG. CO. LTD.
		(l)	McNALLY BHARAT KOLKATA
		(m)	SHREE ENGINEERS
		(n)	CENTURY CRANE ENGINEERS (P) LTD.
26.0	MANUAL HOIST & CHAIN PULLEY BLOCK	(a)	TRACTEL TRIFOR INDIA (P) LTD.
		(b)	LIFTING EQUIPMENT & ACCESSORIES
		(c)	INDEF (HERCULES)
		(d)	BATLIBOI
		(e)	UNIVERSAL
		(f)	ABHAY INDUSTRIES
27.0	ELECTRICAL HOIST	(a)	BATLIBOI
		(b)	PBL
		(c)	GREAVES
		(d)	HOISTOMECH
		(e)	SHREE ENGINEERS
		(f)	ABHAY INDUSTRIES
		(g)	INDEF
		(h)	UNIVERSAL
		(i)	SWIFT
		(j)	TRACTEL TRIFOR INDIA (P) LTD.
		(k)	CENTURY CRANE ENGINEERS (P) LTD.
		(l)	HERCULES HOISTS LIMITED
28.0	PAINTINGS	(a)	ASIAN PAINTS (I) LTD.
		(b)	BERGER PAINTS INDIA LTD.

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	SHALIMAR PAINTS LTD.
		(d)	NEROLAC
		(e)	JHONSON & NICHOLSON
29.0	ANTI COROSSIVE COAL TAR COATING	(a)	IWL LTD
		(b)	A.R.LAMINATORS
30.0	FABRICATED MS STEEL TANK	(a)	SEAM INDUSTRIES
		(b)	ENESTEE ENGG LTD
		(c)	ERA BUILDING SYSTEM
		(d)	DIAMOND FABRICATORS (I) PVT LTD
		(e)	THERMO SYSTEMS PVT LTD
		(f)	TECHNOFAB ENGG LTD
		(g)	RATANMANI TUBES AND METALS
31.0	WELDING FLUX & FILLER WIRE	(a)	PRECISION WELD ARC LTD
		(b)	S. CHEM & ALLIED PRODUCTS PVT LTD.
32.0	<u>FIRE DETECTION & PROTECTION SYSTEM</u>		
		(a)	TYCO
		(b)	HITECH ENGINEERING SERVICES
33.0	<u>FIRE DETECTION & PROTECTION SYSTEM EQUIPMENTS</u>		
33.1	PUMPS	(a)	KBL
		(b)	MATHER & PLATT
		(c)	FLOW MORE
33.2	HIGH VELOCITY NOZZLES	(a)	PREUSSAGE (WEST JRMANY)
		(b)	H D FIRE
33.3	MEDIUM VELOCITY NOZZLES	(a)	PREUSSAGE (WEST JRMANY)
		(b)	GEM, USA

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	RELIABLE
		(d)	FIRE TECH
		(e)	H D FIRE
33.4	DELUGE VALVE	(a)	VIJAY
		(b)	PREUSSAGE (WEST JRMANY)
		(c)	H. D. FIRE
		(d)	GEM, USA
33.5	FIRE HOSE	(a)	JAYSHREE
		(b)	NEWAGE
		(c)	TIGER
		(d)	EQPTS HOSES
		(e)	COMOS
		(f)	SBJ, AHMEDABAD
33.6	DETECTORS (IONISATION)	(a)	FENWAL
		(b)	AUTRONICA
		(c)	BRK
		(d)	CERBERUS
		(e)	APPOLO
33.7	DETECTOR PHOTO ELECTRIC	(a)	FENWAL
		(b)	AUTRONOICA
		(c)	BRK
		(d)	CERBERUS
33.8	HEAT DETECTOR	(a)	FENWAL
		(b)	AUTRONICA
		(c)	APPOLO

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(d)	B ARK
		(e)	CERBERUS
		(f)	NITTAN HOCHIKI
33.9	INFRARED DETECTOR	(a)	TQ
		(b)	CROWCON
		(c)	TRITECH
		(d)	DETRONICS
		(e)	TECHICAL TRADELINK
		(f)	PATOL
		(g)	ODTI
33.10	FRANJIBLE BULB DETECTORS	(a)	ANGUS
		(b)	SPRAY SAFE
		(c)	PRESSAGE
		(d)	GRINNEL
33.11	WATER MONITORS	(a)	AVON
		(b)	RELIABLE
		(c)	VIJAY
		(d)	H. D. FIRE
33.12	BRANCH PIPES & NOZZLES	(a)	NEWAGE
		(b)	VIJAY
		(c)	KOOVERJI
		(d)	H. D. FIRE
		(e)	SBJ, AHMEDABAD
33.13	CAST STEEL NON RETURN VALVE	(a)	R & D MULTIPLE
		(b)	UPADHYA

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	SHIVDURGA
		(d)	FOURESS
		(e)	DEWRANCE
		(f)	MECHANELL AKSON MECH INDIA
		(g)	CRESENT TUBE
		(h)	PRODUCTS INDIA
		(i)	BUMKIN
		(j)	IVC
		(k)	DURGA ENGINEERING CORPORATION , THANE
33.14	CAST IRON SLUICE VALVE	(a)	KIRLOSKAR
		(b)	LEADER
		(c)	H. SARKER & CO.
		(d)	VENUS ABC CALCUTTA
		(e)	SHIVDURGA
		(f)	FOURESS
		(g)	R & D
		(h)	MULTIPLES
		(i)	CRESENT
		(j)	TUBE PRODUCTS INDIA UPADHYA
		(k)	UPADHYA
		(l)	KALPANA
		(m)	IVC
		(n)	BANKIM
		(o)	ELOMATIC

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MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(p)	DURGA ENGINEERING CORPORATION , THANE
33.15	BUTTERFLY VALVE / PLUG VALVE	(a)	FOURESS
		(b)	CRESENT
		(c)	L&T
		(d)	GEETA IRON & BRASS
		(e)	R & D MULTIPLES
		(f)	INDIAN VALVE CO.
		(g)	DEWRANCE AMCNEILL
		(h)	ELOMATIC
		(i)	CRAWLEY & RAY
		(j)	KALPANA
		(k)	DURGA ENGINEERING CORPORATION , THANE
		(l)	HAWA ENGINEERS LTD.
33.16	GM BRASS BRONZE VALVE	(a)	BOMBAY METAL & ALLOY
		(b)	LEADER ENGG.
		(c)	SANT ENGG.
33.17	PIPELINE STRAINERS	(a)	GRADPRIX
		(b)	CHEMPHARM
		(c)	GUJARAT OTOFILT
		(d)	MULTIPLEX ENGRS.
		(e)	SUPERFLOW
		(f)	GUJARAT OTOFILT (Y & BASKET)
33.18	SEAMLESS CARBON STEEL PIPES	(a)	RITC
		(b)	BHEL

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	MSL
33.19	CS- ERW PIPE	(a)	SAIL
		(b)	AJANTA STEEL
		(c)	JINDAL PIPES
		(d)	ZENITH STEELS
33.20	FLANGES & FITTINGS	(a)	ALLIANCE
		(b)	JYOTI
		(c)	EBY
33.21	AIR COMPRESSORS	(a)	INGERSOLL RAND (I) LTD.
		(b)	KIRLOSKAR PNEUMATICS
		(c)	ATLAS COPCO
33.22	LANDING VALVES (HYDRANT VALVES)	(a)	NEWAGE
		(b)	KOOVERJI
		(c)	HD FIRE
		(d)	WINCO VALVES PVT. LTD.
33.23	QD DETECTORS	(a)	NEW AGE INDUSTRIES, MUMBAI
		(b)	HD FIRE PROTECT PVT. LTD., THANE
33.24	HYDRANT VALVES	(a)	WINCO VALVES PVT. LTD., AHMEDABAD
33.25	PIPE STRAINERS	(a)	GRAD PRIX
		(b)	CHEMPHRAM
		(c)	GUJARAT AUTO FILT
		(d)	MULTIPLEX ENGINEERS
		(e)	SUPER FLOW
34.0	<u>COAL HANDLING PLANT</u>		
		(a)	ELECON

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(b)	LARSEN & TOUBRO
		(c)	TRF
		(d)	THYSSEN KRUPP
		(e)	McNALLY BHARAT
		(f)	TECHPRO
35.0	<u>COAL HANDLING EQUIPMENT</u>		
35.1	STACKER RECLAIMER	(a)	ELECON
		(b)	L&T
		(c)	STRANCHAN & HENSHAW
		(d)	KRUPP
		(e)	TRF
35.2	SIDE ARM CHARGER	(a)	ELECON
		(b)	L&T
		(c)	STRANCHAN & HENSHAW
		(d)	KRUPP
		(e)	TRF
35.3	WAGON TIPLER	(a)	ELECON
		(b)	L&T
		(c)	STRANCHAN & HENSHAW
		(d)	KRUPP
		(e)	TRF
35.4	INTEGRAL WEIGH BRIDGE	(a)	PRAYAS ENGINEERING LTD.
		(b)	L&T
		(c)	AUTOMEASURMATIC

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(d)	KRUPP
35.5	APRON FEEDER	(a)	ELECON
		(b)	L&T
		(c)	STRANCHAN & HENSHAW
		(d)	KRUPP
		(e)	TRF
35.6	IMPACTOR / CRUSHER	(a)	L&T
		(b)	ELECON
		(c)	KRUPP
		(d)	UNIVERSAL ENGG. CORPN.
		(e)	PENNSYLVANIA CRUSHER CORPN.
35.7	MAGNETIC SEPARATOR	(a)	ELECTROMAG
		(b)	PRAYAS ENGINEERING LTD.
		(c)	ERICSON
35.8	ELECTRONIC BELT WEIGHER	(a)	MERRICK
		(b)	IPA
		(c)	PRAYAS ENGINEERING LTD.
		(d)	RAMSAY
		(e)	ASEA
35.9	CONVEYOR BELT	(a)	NIRLON
		(b)	HILTON
		(c)	HINDUSTAN RUBBER
		(d)	PHOENIX YULE LTD.
		(e)	NRC
		(f)	ANIL RUBBER

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(g)	NEELKANTH RUBBER MILLS
		(h)	PENTAGON RUBBER PVT. LTD.
		(i)	FORECH
35.10	IDLERS	(a)	I.G.P.
		(b)	KALI
		(c)	ELECON
		(d)	L&T
		(e)	SYSTEM
		(f)	TRF
		(g)	KRUPP
		(h)	VVN MFG.
		(i)	INVESTA LTD.
		(j)	PRAYAS ENGINEERING LTD.
		(k)	MINISTAR ENGINEERING CORPORATION, PONDICHERY
		(l)	MINISTAR ENGINEERING CORPORATION, CHENNAI.
35.11	PULLEYS	(a)	I.G.P.
		(b)	KALI
		(c)	ELECON
		(d)	L&T
		(e)	KRUPP
		(f)	TRF
		(g)	VVN MFG.
		(h)	INVESTA LTD.
		(i)	MINISTAR ENGINEERING

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
			CORPORATION, PONDICHERY
		(j)	MINISTAR ENGINEERING CORPORATION, CHENNAI
35.12	WOBLER FEEDER	(a)	L&T
		(b)	ELECON
		(c)	KRUPP
		(d)	UNIVERSAL ENG.
		(e)	TRF
35.13	PADDLE FEEDER	(a)	ELECON
		(b)	L&T
		(c)	KRUPP
		(d)	TRF
35.14	FLAP GATE	(a)	HEIN-LEHMAN
		(b)	ELECON
		(c)	KRUPP
		(d)	L&T
		(e)	ACTUATOR INDIA
		(f)	TECHNOMECH
35.15	DUST EXTRACTION & SUPPRESSION SYSTEM	(a)	GEC
		(b)	DUVENT
		(c)	AEIROVENT
		(d)	FLAKT-INDIA
		(e)	ELECON
		(f)	ANDREW YULE
		(g)	F-HARLEY

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(h)	THERMAX
		(i)	HYDERABAD POLLUTION CONTROL
		(j)	PREMIER
		(k)	IRRIGATION
		(l)	WRC
		(m)	TPS
		(n)	CHEMTROLS SAMIL (INDIA) PVT. LTD.
		(o)	RIECO INDUSTRIES LTD, PUNE
35.16	DRY FOG DS SYSTEM	(a)	TPS
		(b)	CHEMTROLS SAMIL (INDIA) PVT. LTD.
		(c)	SPRAYING SYSTEM (I) PVT. LTD.
35.17	WATER MONITORS	(a)	AVON
		(b)	RELIABLE
		(c)	VIJAY
		(d)	H D FIRE
35.18	ULTRASONIC BUNKER LEVEL INDICATOR	(a)	BIN MASTER
		(b)	KAB INSTRUMENT
		(c)	THERMO RAMSEY
35.19	METAL DETECTOR	(a)	ELECTROMAG
		(b)	PRAYAS ENGINEERING LTD.
		(c)	STERLING
		(d)	THERMO RAMSEY
35.20	BELT CLEANER	(a)	TEGA
		(b)	PRAYAS ENGINEERING LTD.
		(c)	HOSCH EQUIPMENT (I) LTD.

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(d)	ELECON ENGINEERING CO. LTD (Internal)
		(e)	BMH CONCARE TECHNOLOGY INC. (External)
35.21	HOLD BACK	(a)	ELECON
		(b)	DAVID BROWN
		(c)	FMG
		(d)	ALLENBURY
35.22	BEARINGS	(a)	SKF
		(b)	NBC
		(c)	NORMA
		(d)	FAG
		(e)	KOYO
		(f)	NTN
		(g)	COOPER (SPLIT CASE BEARINGS)
		(h)	HKT (SPLIT CASE BEARINGS)
35.23	IMPACT PADS	(a)	TEGA
		(b)	KAVERI
35.24	HYDRAULIC MOTORS, POWER PACK & CYLINDER	(a)	HAGGLUNDS
		(b)	REXROTH
		(c)	L&T
		(d)	MAHA HYDRAULIC
		(e)	MAC TAGGART SCOTT
35.25	FLUID COUPLING (TRACTION TYPE)	(a)	ELECON ENGINEERING CO. LTD
		(b)	GREAVES (PEMBRIL)
		(c)	FLUIDOMAT

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(d)	VOITH (I)
		(e)	ELECON
35.26	FLUID COUPLING (SCOOP TYPE)	(a)	ELECON ENGINEERING CO. LTD
		(b)	GREAVES (PEMBRIL)
		(c)	FLUIDOMAT
		(d)	VOITH (I)
35.27	FLEXIBLE COUPLING	(a)	ELECON ENGINEERING CO. LTD
		(b)	CONCARD
		(c)	HI-CLIFF
		(d)	FENNER
		(e)	DAVID BROWN
35.28	TRAVELLING TRIPPER	(a)	ELECON ENGINEERING CO. LTD
35.29	SKIRT BOARD SEALING	(a)	THEJO
		(b)	KAVERI
		(c)	TEGA
		(d)	SPILLBAN
35.30	PLUMMER BLOCK (BEARING HOUSING)	(a)	MASTA MACHINERY STORES PVT. LTD.
35.31	COAL SAMPLING SYSTEM	(a)	EASTMAN CRUSHERS CO. PVT. LTD.
		(b)	RAMSAY
		(c)	ADVANCE SYSTEM
35.32	THRUSTER BRAKE	(d)	ELECON ENGINEERING CO. LTD
		(e)	STROM KRAFT
		(f)	ELECTROMAGNETIC INDUSTRIES
35.33	BELT VULCANIZING MACHINE	(a)	THEJO ENGINEERING LTD.

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
35.34	CABLE REELING DRUM	(a)	ELECON ENGINEERING CO. LTD
35.35	SYSTEM INTEGRATOR FOR HYDRAULIC SYSTEM	(a)	MAHA HYDRAULIC
36.0	<u>MILL REJECT HANDLING SYSTEM</u>		
		(a)	MACAWBER BEEKAY
		(b)	UNITED CONVEYOR CORP (UCCL)
		(c)	DCIPS
		(d)	HV EQUIPMENTS PVT. LTD.
37.0	<u>MILL REJECT HANDLING EQUIPMENTS</u>		
37.1	KNIFE GATE VALVES (HOPPER ISOLATION)	(a)	VAAS INDUSTRIES (I) PVT. LTD.,
		(b)	FOURESS (I) LTD
37.2	BAG FILTERS/VENT FILTER	(a)	THERMAX
		(b)	ACCO/ORIENT FAN
		(c)	DC INDUSTRIAL PLANT SERVICES (P) LTD.
		(d)	ABB
		(e)	BATLIBOI
		(f)	SHAVO NORGREN
		(g)	WALKER
		(h)	ULTRAFILTER
38.0	<u>ASH HANDLING PLANT</u>		
		(a)	TECHPRO ASHTECH
		(b)	DEMECH
		(c)	McNALLY BHARAT
		(d)	INDURE

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		(e)	MACAWBER BEEKAY
		(f)	ENERGO ENGG. PROJECT LTD.
39.0	<u>ASH HANDLING PLANT EQUIPMENT</u>		
39.1	CASTABLE REFRACTORY	(a)	ASSOCIATED CEMENT COMPANY LIMITED
		(b)	BHASKAR REFRACTORY
		(c)	TATA REFRACTORIES
39.2	POROUS TILES	(a)	CARBORANDUM
		(b)	GRINDWELL NORTON
		(c)	KULKARNI METALURGICAL
39.3	KNIFE GATE VALVES (HOPPER ISOLATION)	(a)	VAAS INDUSTRIES (I) PVT. LTD.
		(b)	FOURESS (I) LTD
39.4	KNIFE GATE VALVES (SLURRY DUTY)	(a)	VAAS INDUSTRIES (I) PVT. LTD. Upto 10 Bar
		(b)	FOURESS
		(c)	SISTAG
39.5	PLUG VALVE (SLURRY DUTY) (FULL BORE, REGULAR PATTERN)	(a)	L & T
		(b)	SISTAG
		(c)	BDK
		(d)	FOURESS
39.6	CONVEYING AND INSTRUMENT AIR COMPRESSOR (OIL FREE, NON LUBRICATED)	(a)	ATLAS COPCO
		(b)	DENVER GARDNER ARZENER
		(c)	INGERSOL RAND
		(d)	KIRLOSKAR PNEUMATIC
39.7	FLUIDISING BLOWER	(a)	KAY INTERNATIONAL

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(b)	SWAM PNEUMATIC
		(c)	EVEREST
		(d)	KULKARNI POWER TOOLS
		(e)	INDCOM
		(f)	SWAM
39.8	TUBE SETTLER		MM AQUA
	PLATE SETTLER		ION EXCHANGE
39.9	BASALT LINED FITTING AND PIPING.	(a)	DEMECH
		(b)	KELENBORNE/DCIPS
		(c)	ACC
	DRC LINING	(d)	DENSEN TECHNOLOGIES
39.10	METALLIC EXPANSION BELLOWS	(a)	METALLIC BELLOWS (I) PVT. LTD.
		(b)	SUR INDUSTRIES
		(c)	MBE
		(d)	M B EXPANSION
39.11	ASH SLURRY PUMPS	(a)	SAM INDUSTRIAL PUMPS PVT. LTD.
		(b)	WEIR MINERALS (I) PVT. LTD.
39.12	HIGH CONC. SLURRY DISPOSAL PUMPS (PISTON DIAPHRAGM PUMPS)	(a)	GEHO, NETHERLAND / OR PROVEN MAKE SUBJECT TO APPROVAL OF MSPGCL
39.13	ACI FITTINGS/CASINGS/LINERS	(a)	MENON METALLIKS
		(b)	CRAWLEY & RAY
		(c)	INDURE
39.14	BAG FILTERS/VENT FILTER	(a)	THERMAX
		(b)	ACCO / ORIENT FAN

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(c)	DC INDUSTRIAL PLANT SERVICES (P) LTD.
		(d)	ABB
		(e)	BATLIBOI
		(f)	SHAVO NORGREN
		(g)	WALKER
		(h)	ULTRA FILTER
39.15	VACUUM PUMP	(a)	VACUUM AIR
		(b)	PPI
		(c)	GARUDA
		(d)	NASH
		(e)	SIEMENS
		(f)	INDIAN MAKE
		(g)	KAKATI
39.16	AIR HEATER	(a)	ESCORT
		(b)	RAYCOLT
		(c)	SPHERE HOT
		(d)	HEATCO
		(e)	LAMDA INDUSTRIES
		(f)	INELLCON
39.17	CONVENTIONAL TYPE CLARIFIER	(a)	DRIPLEX
		(b)	ION EXCHANGE
		(c)	HIND DORR
		(d)	OLIVA
		(e)	THERMAX

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
39.18	MS ERW PIPE (BLACK & GALVANISED)	(a)	JINDAL
		(b)	TISCO
		(c)	SURYA ROSHINI /
		(d)	INDUS TUBES LTD
		(e)	RATNAMANI METALS & TUBES
		(f)	GOOLUCK STEEL TUBES LTD.
		(g)	PSL HOLDING
		(h)	SAW PIPES LTD.
		(i)	DADU PIPES PVT. LTD.
		(j)	ASIAN MILLS PVT. LTD.
		(k)	MAHARASHTRA SEAMLESS PIPE
39.19	MS PIPE SEAMLESS	(a)	MAHARASHTRA SEAMLESS PIPE
		(b)	BHEL
		(c)	INDIA SEAMLESS
		(d)	TISCO
39.20	CAST IRON PIPES	(a)	ELECTRO STEEL CASTINGS
		(b)	SAIL
		(c)	KUSHLAVA
39.21	G.I PIPES & FITTINGS	(a)	PRAKASH TUBES
		(b)	NAV KAR FITTINGS & FORGING PVT. LTD
		(c)	GOOD LUCK STEEL TUBES LTD.
		(d)	INDUS TUBES LTD.
39.22	SS TUBES & PIPES	(a)	APEX TUBES PVT.LTD
		(b)	REMI EDELSTAHL TUBULARS PVT.LTD
		(c)	PRAKASH STEELAGE PVT. LTD

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<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
39.23	FLUID COUPLING	(a)	PEMBRIL
		(b)	VOITH
		(c)	FLUIDOMAT
		(d)	GREAVES LTD.
		(e)	HYDRO DYNAMIC
		(f)	FLANDER MACNEILL GEARS LTD.
		(g)	DAVID BROWN
39.24	GEAR BOX	(a)	ELECON
		(b)	SHANTHI
		(c)	RADICON
		(d)	NEW ALLENBURY WORKS
39.25	DOUBLE DISK SWING VALVE	(a)	EVERLASTING
39.26	BUTTERFLY VALVE	(a)	AUDCO
		(b)	FOURESS
		(c)	BDK
		(d)	ELOMATIC
		(e)	KEY STONE
39.27	VERTICAL DRAIN PUMP	(a)	SAM
		(b)	MBIL
		(c)	WEIR MINERAL (I) PVT. LTD.
39.28	AIR DRYING PLANT (REFRIGERANT TYPE)	(a)	DONALDSON
39.29	BALL VALVE	(a)	SHANCO
		(b)	BDK
		(c)	OSCAR

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(d)	LEGRIS
		(e)	R B (ITALIAN)
		(f)	FLOWCON
39.30	ASH WATER PUMPS	(a)	KIRLOSKAR
		(b)	KSB
		(c)	BEACON WEIR
		(d)	MATHER & PLATT
		(e)	SAM
39.31	FLUSHING PUMP	(a)	UT PUMPS & SYSTEMS LTD.
39.32	VENTILATION FAN	(a)	FLAKT
		(b)	C.B. DOCTOR
		(c)	GEC
		(d)	ALSTOM
		(e)	CG
		(f)	BATLIBOI
		(g)	BAJAJ
		(h)	USHA
39.33	AGITATOR WITH GEAR BOX / ACCESSORIES	(a)	RATHI VESSELS & SYSTEMS PVT.LTD.
40.0	<u>VENTILATION EQUIPMENT</u>		
40.1	VENTILATION SYSTEM	(a)	BLUE STAR Ltd.
		(b)	Hyderabad Pollution Controls Ltd.
		(c)	VOLTAS LIMITED
		(d)	AEROVENT PROJECTS LIMITED
		(e)	WRC ENGINEERING COMPANY PVT LIMITED

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
40.2	AIR FILTER	(a)	PUROLATOR
		(b)	TENACITY
		(c)	UCCO
		(d)	JOHN FLOWER
		(e)	AIR TECH
		(f)	DYNAFILTERS
40.3	FRESH AIR FANS	(a)	GEC
		(b)	KAITAN
		(c)	FLAKT
40.4	V.BELTS & PULLEY	(a)	DUNLOP
		(b)	FENNER
40.5	FIRE DAMPAR	(a)	TSC
		(b)	AIR TECH
		(c)	GEORGE RAO
		(d)	RAVISTAR INDIA PVT LIMITED.
40.6	BEARINGS	(a)	SKF
		(b)	NORMAN
		(c)	NBC
		(d)	FAG
41.0	<u>AIR CONDITIONING</u>		
41.1	REFRIGERATION RECIPROCATING COMPRESSOR	(a)	ACCL,KOLKATA
		(b)	KIRLOSKAR,PUNE
		(c)	VOLTAS,MUMBAI
		(d)	CARRIER,MUMBAI
		(e)	TRANE (INDIA) PVT.LTD.,MUMBAI

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
41.2	CONDENSER & CHILLER	(a)	NMW (I) PVT. LTD., HOWRAH (W.B)
		(b)	PATEL AIR TEMP, AHMEDABAD
		(c)	JAYPEE ENGG. WORKS,KOLKATA
		(d)	BLUE STAR,MUMBAI
		(e)	CARRIER,MUMBAI
		(f)	VOLTAS,MUMBAI
41.3	COOLING COILS	(a)	JAYPEE , AHMEDABAD
		(b)	BLUE STAR , MUMBAI
		(c)	CARRIER,MUMBAI
		(d)	COOL TECH,MUMBAI
		(e)	V.M. ENGG., PUNE
41.4	AIR HANDLING UNITS	(a)	FLAKT (ABB)
		(b)	BLUE STAR,MUMBAI
		(c)	CARRIER, MUMBAI
		(d)	COOL TECH, MUMBAI
		(e)	V.M. ENGG.,PUNE
		(f)	HYDERABAD POLLUTION CONTROLS PVT. LTD
41.5	CONDENSER CHILLED WATER PUMPS	(a)	KIRLOSKAR
		(b)	BEACONWEIR
		(c)	GREAVES LTD.
		(d)	JYOTI
		(e)	KSB
		(f)	CROMPTON GREAVES
41.6	FRESH AIR FANS	(a)	GEC

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(b)	KHAITAN
		(c)	FLAKT(ABB)
41.7	AIR FILTER	(a)	PUROLATOR
		(b)	TENACITY
		(c)	UCCO
		(d)	JOHN FLOWER
		(e)	AIR TECH
		(f)	DYNA FILTERS
41.8	COLD INSULATION MATERIAL	(a)	BEORDESEL
		(b)	FGP
		(c)	LLOYD
		(d)	UP TWIGA
		(e)	BASF
41.9	FAN COIL UNITS	(a)	BLUE STAR
		(b)	FLAKT
		(c)	ACCO
		(d)	TEXCHEM
41.10	BEARINGS	(a)	SKF
		(b)	NORMAN
		(c)	FAG
		(d)	NBC
41.11	V BELTS & PULLEY	(a)	DUNLOP
		(b)	FENNER
41.12	FALSE CEILING MATERIAL	(a)	LUXALON 84 C & BIGGER WIDTH 124 C
41.13	MOTORISED DAMPERS	(a)	HIN

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
		(b)	LEHMAN
		(c)	TECHNOMECH
		(d)	BACHMANN
		(e)	TEE INSTRUMENT
41.14	COOLING TOWERS	(a)	PAHARPUR
		(b)	HIMGIRI
41.15	FIRE DAMPER	(a)	TSC
		(b)	AIR TECH
		(c)	GEORGE RAO
41.16	MIXING VALVES	(a)	HONEYWELL
		(b)	TSC
		(c)	AVCON
41.17	MODULATING MOTORS	(a)	HONEYWELL
		(b)	TSC
		(c)	AVCON
41.18	MODULATING THERMOSTAT	(a)	PROTO-TECH
42.0	<u>ELEVATOR</u>		
		(a)	OTIS ELEVATORS
		(b)	KONE ELEVATORS INDIA PVT. LTD.
		(c)	CITY LIFTS
		(d)	MEKASTER ENGG. LTD., HALOL(GUJARAT)
		(e)	ECE INDUSTRIES LTD.,KOLKATA
42.1	CONTROLLER, COP, LOP, CABLES ETC.	(a)	SAMIL ELTEC CO. LTD., KOREA

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEM</u>		<u>VENDORS</u>
42.2	TRACTION MACHINE ASSEMBLY	(a)	HAISUNG, KOREA
42.3	ROPE	(a)	KISWIRE, KOREA
43.0	<u>AIR COMPRESSOR</u>		
		(a)	KIRLOSKAR PNEUMATICS
		(b)	ATLAS COPCO
		(c)	INGERSOL-RAND

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

3.0 LIST OF APPROVED VENDORS-ELECTRICAL

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
1.0	MOTOR ACTUATORS	(a)	ROTORK
		(b)	AUMA
		(c)	LIMITORQUE
		(d)	ANTIREB
2.0	DRY TYPE TRANSFORMERS	(a)	KIRLOSKAR
		(b)	VOLTAMP
		(c)	CROMPTON
		(d)	VIJAY ELECTRICALS, HYD.
		(e)	BHEL
		(f)	MEGAWIN SWITCHGEAR
3.0	(A) GENERATOR TRANSFORMER	(a)	TELK
		(b)	BHEL
		(c)	ABB
		(d)	AREVA
		(e)	CGL
		(f)	SIEMENS
	(B) UNIT & STATION TRANSFORMER	(a)	TELK
		(b)	BHEL
		(c)	ABB
		(d)	AREVA
		(e)	CGL
		(f)	SIEMENS
		(g)	VOLTAMP
	(C) AUXILIARY	(a)	AREVA

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
	TRANSFORMER (Oil Filled)	(b)	ABB
		(c)	CROMPTON GREAVES LTD.
		(d)	VOLTAMP TRANSFORMERS (P) LTD.
		(e)	VIJAY ELECTRICALS
		(f)	KIRLOSKAR
		(g)	BBL
		(h)	MEGAWIN
		(i)	BHEL
		(j)	STAR DELTA,BHOPAL
		(k)	EMCO
4.0	LT POWER AND CONTROL CABLES	(a)	UCL
		(b)	CCI
		(c)	KEI INDUSTRIES LTD.
		(d)	FINOLEX
		(e)	FORT GLOSTER
		(f)	POLYCAB WIRES PVT LTD.
		(g)	DELTON
		(h)	RALLISON ELECT
		(i)	NICCO
		(j)	PARAMOUNT CABLE CORPN
		(k)	PARAGON CABLE
		(l)	KRISHNA ELECT.INDUSTRIES
		(m)	DASHMESH CABLES
		(n)	INCOM WIRES & CABLES LTD
		(o)	TERACOM LTD

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
	CONTROL CABLES ONLY	(a)	CORDS
		(b)	THERMO CABLES LTD, HYDERABAD
5.0	HT POWER CABLE (HT cable manufacturers having Triple extrusion Dry cure (ccv) process using Nitrogen only are to be selected.)	(a)	UCL
		(b)	CCI
		(c)	FORT GLOSTER
		(d)	CRYSTEL CABLE INDUSTRIES
		(e)	POLYCAB WIRES PVT LTD.
		(f)	NICCO
		(g)	HINDUSTAN VIDYUT PRODUCTS
		(h)	KEI INDUSTRIES
		(i)	M/s RPG Cable Ltd
6.0	GEARED MOTORS	(a)	POWER BUILD
		(b)	CROMPTON
		(c)	KIRLOSKAR
		(d)	LAXMI HYDRAULICS PVT LTD FOR 415V
7.0	CABLE TRAYS	(a)	VENUS STEEL
		(b)	INDIANA
		(c)	BHARTI EXPORT
		(d)	VATCO
		(e)	RATAN PROJECT & ENGG. LTD, KOLKATA
		(f)	KANADE ANAND UDYOG MUMBAI
		(g)	M/S PATNY SYSTEM (P) LTD, HYD.
		(h)	DOLPHIN

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(i)	M/S INAR PROILES PVT.LTD.,ANKAPALLE
		(j)	INDUSTRIAL PERFORATION (I) PVT. LTD.KOLKATA
		(k)	M/S PREMIER POWER PRODUCTS (CAL) PVT.LTD.,KOLKATA
		(l)	M/S RABI ENGINEERING WORKS PVT.LTD, KOLKATA.
		(m)	M/S UNITECH FABRICATORS AND ENGINEERS PVT. LTD.,KOLKATA
		(n)	M/S ASSOCIATED POWER STRUCTURES PVT. LTD.,GUJRAT
		(o)	M/S JAMNA METAL COMPANY PVT. LTD., DELHI
		(p)	M/S RUKMANI ELECTRICALS & COMPONENTS PVT. LTD., KOLKATA
		(q)	M/S RATAN ENGINEERING CO., KOLKATA
8.0	PROXIMITY SWITCH	(a)	AW
		(b)	JAYASHREE
9.0	VFD (LT MOTORS)	(a)	ABB
		(b)	SIEMENS
		(c)	L & T
		(d)	ALLEN BRADLEY
		(e)	GE FANUC
10.0	SAFETY SWITCHES	(a)	AG
		(b)	JAYASHREE

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
11.0	ANNUNCIATOR	(a)	PROCON
		(b)	I/C
12.0	HOOTER	(a)	KHERAJ
		(b)	TULLU
		(c)	VAISHNO
13.0	CONTROL PANELS/(Relay Based) LIGHTING PANELS/JBS	(a)	POSITRONICS.
		(b)	CONTROL & SCHEMATIC
		(c)	VIMAC ELECTRIC
		(d)	PRITHVI TECHNOLOGY
		(e)	POWEROL PANEL & CONTROL
		(f)	L & T
		(g)	SIEMENS
		(h)	SCHNEIDER
14.0	LT BUS DUCT	(a)	STAR DRIVE
		(b)	ELEC MECH
		(c)	CONTROL SCHEMATIC
		(d)	REEP
		(e)	JASPER ENGINEERS
		(f)	C & S ELECTRIC LTD.
15.0	BATTERY	(a)	EXIDE
		(b)	AMARA RAJA
		(c)	HBL
		(d)	AMCO
16.0	BATTERY CHARGER	(a)	CHHABI
		(b)	AMARA RAJA

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(c)	HBL
		(d)	MASS- TECH.
		(e)	AMCO
17.0	CIRCUIT BREAKER (LT)	(a)	L & T
		(b)	SIEMENS
		(c)	ABB
		(d)	SCHNEIDER
18.0	POWER CONTACTOR/ AUXILIARY CONTACTOR	(a)	SIEMENS
		(b)	L & T
		(c)	ABB
		(d)	SCHNEIDER/ GE
19.0	NUMERICAL PROTECTION RELAYS FOR LT SWITCHGEAR	(a)	ABB
		(b)	ALSTHOM
		(c)	SCHNEIDER
		(d)	L&T
		(e)	SIEMENS
20.0	AUXILIARY RELAY	(a)	GE
		(b)	SIEMENS
		(c)	L&T
		(d)	ABB
		(e)	SCHNEIDER
21.0	THERMAL O/L RELAYS	(a)	L & T
		(b)	SIEMENS
		(c)	ABB
		(d)	SCHNEIDER

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
22.0	PUSH BUTTONS/ INDICATING LAMP	(a)	SIEMENS
		(b)	L & T
		(c)	CANDS
		(d)	TEKNIC
		(e)	SCHNEIDER
23.0	ELECTRICAL PANEL METER/ INDICATING INSTRUMENTS (AMMETER/VOLTMETER)	(a)	AE
		(b)	IMP
		(c)	MECO
		(d)	RISHABH
24.0	CT(LT)	(a)	KAPPA
		(b)	SILCON
		(c)	PRAYOG
		(d)	PRAGATI
		(e)	CANDS
		(f)	PRECISE
25.0	PT(LT)	(a)	KAPPA
		(b)	SILCON
		(c)	PRAYOG
		(d)	PRAGATI
		(e)	CANDS
		(f)	PRECISE
26.0	CONTROL TRANSFORMERS	(a)	KAPPA
		(b)	SILCON
		(c)	POWER PACK
		(d)	PRAGATI

**TECHNICAL SPECIFICATION FOR
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1X660MW BHUSAWAL TPS-UNIT:6
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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(e)	CANDS
		(f)	PRECISE
27.0	POWER SWITCH	(a)	SIEMENS
		(b)	L & T
		(c)	GE
		(d)	ABB
		(e)	SCHNEIDER
28.0	SELECTOR SWITCHES AND CONTROL SWITCHES	(a)	KAYCEE
		(b)	SIEMENS
		(c)	L & T
		(d)	RECON
		(e)	SWITRON
29.0	TIMERS	(a)	GE
		(b)	ABB
		(c)	SCHNEIDER
		(d)	L & T
		(e)	EAPL
30.0	FUSES FOR LT	(a)	GEC
		(b)	SIEMENS
		(c)	L & T
		(d)	STANDARD
		(e)	BUSSMANN
31.0	MCCB	(a)	L & T
		(b)	SIEMENS
		(c)	AEG

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAVAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(d)	SCHNEIDER
32.0	MCB	(a)	MDS
		(b)	SIEMENS
		(c)	SCHNEIDER
33.0	TERMINAL BLOCK & ACCESSORIES SIDE CLAMP	(a)	ELMEX
		(b)	CONNECT WELL IND
		(c)	WAGO AND CONTROLS
34.0	DOUBLE COMPRESSION CABLE GLAND	(a)	COMET
		(b)	ELECTRO MAG
		(c)	COSMOS
		(d)	POWER ENGG
35.0	CRIMPING LUGS	(a)	DOWELL
36.0	NUMERIC RELAY FOR HT SWITCHGEAR (3.3kV/11kV)	(a)	ABB
		(b)	AREVA
		(c)	SIEMENS
37.0	NUMERIC RELAY FOR GENERATOR, GT, ST AND UT PROTECTIONS	(a)	ABB
		(b)	AREVA
		(c)	SIEMENS
38.0	LIGHTING FIXTURES	(a)	PHILIPS
		(b)	CGL
		(c)	BAJAJ
		(d)	GE
39.0	CONDUIT	(a)	SENCO
		(b)	M. CHANDRA
		(c)	NAGARJUNA

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(d)	K.K. Industries Kolkata
40.0	CABLE LUGS	(a)	DOWEL
		(b)	CROWN
		(c)	NIKO
		(d)	FORWARD ENGG.
41.0	DIESEL GENERATOR	(a)	POWERICA
		(b)	JACKSON
		(c)	KIRLOSKAR
		(d)	AVK SECC
		(e)	LERUY SOMER
		(f)	GD ANKLESARIA & CO.
42.0	LT MCC	(a)	L & T
		(b)	CONTROL SCHEMATIC
		(c)	SIEMENS
		(d)	ABB
		(e)	GE
		(f)	ALSTOM
		(g)	SCHNEIDER
		(h)	CROMPTON
43.0	H.DG.C.I. Pipe Electrode	(a)	HITESH
		(b)	DHATU UDYOG NGP
44.0	HT HEAT SHRINKABLE END TERMINATION & JOINTING KITS	(a)	RAYCHEM, RPG

**TECHNICAL SPECIFICATION FOR
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1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
45.0	FIRE STOP MORTAR SEAL&FIRE RETARDANT CABLE COATING SYSTEM	(a)	M/S SIGNAM FIRE PROTECTION (I) PVT. LTD.
		(b)	M/S VIJAY SYSTEMS ENGINEERING PVT. LTD. MUMBAI
46.0	Above Ground Earthing Materials	(a)	M/S INAR PROILES PVT.LTD.,ANKAPALLE
		(b)	INDUSTRIAL PERFORATION (I) PVT. LTD.KOLKATA
		(c)	M/S PREMIER POWER PRODUCTS (CAL) PVT.LTD.,KOLKATA
		(d)	M/S RABI ENGINEERING WORKS PVT.LTD, KOLKATA.
		(e)	M/S UNITECH FABRICATORS AND ENGINEERS PVT. LTD.,KOLKATA
		(f)	M/S ASSOCIATED POWER STRUCTURES PVT. LTD.,GUJRAT
		(g)	M/S RUKMANI ELECTRICALS & COMPONENTS PVT. LTD., KOLKATA
		(h)	M/S RATAN ENGINEERING CO., KOLKATA
		(i)	M/S JAMNA METAL CO. PVT LTD. DELHI
		(j)	M/S PATNY SYSTEMS HYD.
		(k)	RATAN PROJECTS & ENGG. CO. P. LTD.,KOLKATA
		(l)	KANADE ANAND UDYOG, MUMBAI
47.0	SEAL OF BUSHING	(a)	TEXPLAS INDIA PVT. LTD.

**TECHNICAL SPECIFICATION FOR
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1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
48.0	PRESSURE RELIEF VALVES	(a)	ATVUS, KOLKATA
		(b)	SUKRUT UDYOG,PUNE
49.0	HT SWITCHGEAR	(a)	SIEMENS *
		(b)	L&T *
		(c)	ALSTOM*
		(d)	ABB*
		(e)	CROMPTON GREAVES LTD*
		(f)	BHEL
		(g)	AREVA (* Subject to availability of type test certificates and performance certificates for 3 (Three) years along with bid document. HT Switchgear should have been type tested within last 3 years.)
50.0	MLDB	(a)	L&T
		(b)	POSITRONICS
		(c)	CONTROL & SCHEMATICS, HYDERABAD
		(d)	VIMAC
		(e)	PRITHVI TECHNOLOGY
51.0	BUS TRANSFER SCHEME (NUMERICAL)	(a)	AARTECH SOLENIC
52.0	HT MOTORS (3.3 kV/6.6 kV /11 kV)	(a)	ALSTOM
		(b)	BHEL
		(c)	CROMPTON GREAVES LTD
		(d)	KIRLOSKAR ELECTRIC CO. LTD.

**TECHNICAL SPECIFICATION FOR
CW TREATMENT PLANT
1X660MW BHUSAWAL TPS-UNIT:6
MAHARASHTRA, INDIA.**

<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(e)	SIEMENS
		(f)	MARATHON ELECTRIC
		(g)	ABB
		(h)	HHI
53.0	LT MOTORS(415V)	(a)	ALSTOM
		(b)	BHEL
		(c)	CROMPTON GREAVES LTD
		(d)	KIRLOSKAR ELECTRIC CO. LTD
		(e)	SIEMENS
		(f)	MARATHON ELECTRIC
		(g)	ABB
		(h)	BHARAT BIJLEE
		(i)	LAXMI HYDRAULIC LTD
54.0	DC MOTORS	(a)	ALSTOM
		(b)	BHEL
		(c)	CROMPTON GREAVES LTD.
		(d)	KIRLOSKAR ELECTRIC CO. LTD.
		(e)	SIEMENS
55.0	MV BUSDUCT	(a)	BHEL
		(b)	REEP
		(c)	POWER GEAR
		(d)	C & S ELECTRIC LTD.
56.0	RELAY CONTROL PANEL (PCR)	(a)	ABB
		(b)	AREVA
		(c)	BHEL

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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(d)	SIEMENS
57.0	ENERGY METER MEAA METERS AS PER CEA NORMS	(a)	L&T
		(b)	ABB
		(c)	CONZERV
		(d)	SECURE
			(Subject to availability of type test TC)
58.0	RELAY TEST KIT	(a)	MEGGER (JOSTS ENGG CO LTD, PUNE) DOBLE
		(b)	OMICRON ELECTRONICS ASIA LTD, HONGKONG
		(c)	SCOPE PUNE
		(d)	MEGGER(AVO PULSAR)
		(e)	PROGRAMMA ELECTRONIKA, SWEDEN
59.0	AUXILIARY/TRIPPING RELAYS	(a)	ABB
		(b)	AREVA LTD.
		(c)	SIEMENS
60.0	RECORDER	(a)	YOKAGOWA
		(b)	CHINO LAXSONS, EUROTHERM DEL
61.0	TRANSDUCERS	(a)	AUTOMATIC ELECTRIC LTD
		(b)	SOUTHERN TRANSDUCERS, CHENNAI
		(c)	RISHABH,NASIK
		(d)	ABB
		(e)	SITU
		(f)	SECURE

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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
62.0	HRC FUSES/ SEMICONDUCTOR FUSE/ LINK/FUSE FITTINGS (HT)	(a)	SIEMENS
		(b)	KAYCEE
		(c)	L&T
		(d)	INDO ASIAN FUSE GEAR
		(e)	COPPER BUSSMAN
63.0	TEST LINK BLOCK	(a)	IMP POWERS
		(b)	ENKAY
64.0	CONTROL PANEL /DESK (PCR)	(a)	BHEL BHOPAL
		(b)	PYROTECH CONTROL
		(c)	RITTAL INDIA
65.0	PLUG IN RELAY	(a)	OEN
		(b)	JYOTI RE 300 (WITH DIODE)
		(c)	AREVA
		(d)	ABB
66.0	SOLID STATE METERS/ TRIVECTOR METERS	(a)	ENERCON
		(b)	L&T
		(c)	ABB
		(d)	BHEL
67.0	VACCUM INTERRUPTERS (HT SWGR)	(a)	BEL
		(b)	CGL * Subject to availability of type test certificate along with bid document for HT SWGR type tested within last 3 years
68.0	INSTRUMENT	(a)	SILKAANS

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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
	TRANSFORMERS (HT SWGR) (CT/PT)	(b)	PRAGATI
		(c)	PRAYOG
		(d)	LAXMI ENGINEERING, BHOPAL
69.0	LIMIT SWITCHES/ AUXILIARY SWITCHES	(a)	KAYCEE
		(b)	SIEMENS
70.0	BREAKER CONTROL SWITCHES	(a)	SALZER
		(b)	SETON
		(c)	AREVA
		(d)	KAYCEE
		(e)	RECOM
71.0	DISCREPANCY CONTROL SWITCHES	(a)	ABB
		(b)	CONTROL DYNAMICS
72.0	SWITCH FUSE UNIT (LT)	(a)	SIEMENS
		(b)	L & T
		(c)	ABB
		(d)	ALSTOM
		(e)	GE
73.0	MOTOR (SRING CHARGING)	(a)	RALLIWOLF
		(b)	KULKARNI POWER TOOLS
		(c)	FAL INDUSTRIES
74.0	Zn O SURGE ARRESTOR	(a)	RAYCHEM (GEC)
		(b)	OBLUM
75.0	TR SETS AND PANELS, RAPPER PANELS ETC.	(a)	ADOR POWERTRON, PUNE
		(b)	HIND RECTIFIERS, MUMBAI
76.0	HOPPER HEATERS	(a)	THERMION HEAT TRACERS PVT. LTD., MUMBAI

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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(b)	HTD HEAT TRACE, HYDRABAD/USA
77.0	INSULATION HEATERS	(a)	ESCORT, FARIDABAD.
		(b)	SANDVIK ASIA LTD., HOSUR
78.0	DISCHARGE/ EMITTING ELECTRODE	(a)	AIR SYSTEM LIMITED, CHENNAI
		(b)	THE UNITED ENGINEERS, KOLKATA
79.0	STREET LIGHT POLES	(a)	BAJAJ
		(b)	K.L. IND.
		(c)	BOMBAY TUBE POLES
		(d)	RIDDHI POLES
80.0	ENERGY SAVING PANEL	(a)	PRITHVI TECHNOLOGY
		(b)	INSTRUMENT UNIVERSAL
81.0	SWITCHES FOR LIGHTING	(a)	ANCHOR/ELORA
82.0	SWITCHES FOR DECORATIVE NON INDUSTRIAL TYPE 5/15 AMPS 240V RECEPTACLES	(a)	ANCHOR/ELORA
83.0	INDUSTRIAL TYPE 15 AMPS & 63 AMPS (WELDING) RECEPTACLES	(a)	BCH
		(b)	BEST & CROMPTON
		(c)	AJMER
		(d)	HANSU
84.0	HIGH MAST	(a)	BAJAJ
85.0	LIGHTING TRANSFORMER	(a)	POWER PACK
		(b)	PRECISE

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<u>SR. NO.</u>	<u>ITEMS</u>		<u>VENDORS</u>
		(c)	PRITHVI TECHNOLOGY
		(d)	VOLTAMP
86.0	ELECTRICAL HEAT TRACING SYSTEM (FOR FUEL OIL SYSTEM)	(a)	THERMON HEAT TRACERS PVT. LTD
		(b)	XICON INTERNATIONAL LTD.

NOTE:

For new vendors, bidder shall submit the credentials of such vendors to owner for approval of vendor.

**TECHNICAL SPECIFICATION FOR
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4.0 LIST OF APPROVED VENDORS – CONTROL & INSTRUMENTATION

<u>SR. NO.</u>	<u>NAME OF EQUIPMENT / ITEM</u>		<u>APPROVED VENDORS</u>
1.0	<u>FIELD / PRIMARY INSTRUMENTS:</u>		
1.1	RTD & THERMOCOUPLES	(a)	PYRO ELECTRIC INSTRUMENTS GOA PVT. LTD.
		(b)	GENERAL INSTRUMENTS CONSORTIUM, MUMBAI
		(c)	DETRIVE, MUMBAI
		(d)	TEMSSENS INSTRUMENTS(I) PVT. LTD, UDAIPUR
1.2	SMART ELECTRONIC TRANSMITTERS (PRESSURE, DIFF. PRESSURE)	(a)	EMERSON PROCESS MANAGEMENT (I) LTD
		(b)	FUJI, JAPAN
		(c)	YOKOGAWA, JAPAN/ YOKOGAWA INDIA
		(d)	ABB, GERMANY / FARIDABAD
		(e)	HONEYWELL, USA / PUNE
1.3	DISPLACER TYPE LEVEL TRANSMITTER	(a)	CHEMTROL MIL
		(b)	DRESSER, COIMBATORE
		(c)	V-AUTOMAT, DELHI
		(d)	ECKARDT, GERMANY
1.4	LEVEL TRANSMITTERS (DISPLACEMENT TYPE)	(a)	DRESSER MASONIELAN, FRANCE (DRESSER VALVES INDIA LTD. COIMBATORE)
		(b)	CHEMTROLS, MUMBAI (ECKARDT, GERMANY)
		(c)	ECKARDT, GERMANY

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<u>SR. NO.</u>	<u>NAME OF EQUIPMENT / ITEM</u>		<u>APPROVED VENDORS</u>
1.5	LEVEL TRANSMITTERS (ULTRASONIC TYPE)	(d)	ENDRESS+HAUSER, GERMANY/INDIA
		(e)	KROHNE, FRANCE
		(f)	PEPPERL+FUCHS, GERMANY/INDIA
		(g)	VEGA, GERMANY
		(h)	KAB INSTRUMENTS LTD.
1.6	RADAR TYPE LEVEL TRANSMITTERS	(a)	SIEMENS MILLTRONICS
		(b)	ENDRESS & HAUSER
		(c)	SBEM
		(d)	EMERSON
		(e)	AMETEKEDREXELBRROK (CHEMTROLS)
1.7	TEMPERATURE TRANSMITTERS	(a)	EMERSON PROCESS (FORMERLY FISHER ROSEMOUNT), USA/DAMAN
		(b)	ABB, GERMANY / FARIDABAD
		(c)	FUJI, JAPAN
		(d)	HONEYWELL, USA / PUNE
		(e)	YOKOGAWA, JAPAN/ YOKOGAWA INDIA
		(f)	MOORE, USA
1.8	MAGNETIC LEVEL SWITCHES	(a)	LEVCON INSTRUMENTS PVT. LTD., KOLKATA
		(b)	V.AUTOMAT, NEW DELHI
		(c)	ASIAN INDUSTRIAL VALVES, CHENNAI
1.9	LEVEL SWITCHES CONDUCTIVITY TYPE	(a)	BHARAT HEAVY ELECTRICALS LTD.
		(b)	YARWAY, USA

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<u>SR. NO.</u>	<u>NAME OF EQUIPMENT / ITEM</u>		<u>APPROVED VENDORS</u>
		(c)	LEVELSTATE, UK
		(d)	SOLARTON, UK (PRESENTLY CALLED AS MOBREY)
		(e)	CHEMTROL
		(f)	LEVEL STATE (HITECH SYSTEMS)
		(g)	MOBREY
1.10	FLOW SWITCHES	(a)	SWITZER, CHENNAI
		(b)	KRONHE MARSHALL
		(c)	GENERAL INSTRUMENTS MUMBAI
		(d)	CHEMTROL
1.11	BYPASS ROTAMETER	(a)	IEPL, HYDERABAD
		(b)	PLACKA INSTRUMENTS INDIA PVT. LTD., CHENNAI
		(c)	TRAC, HYDERABAD
		(d)	EUREKA, PUNE
1.12	ROTAMETER	(a)	INSTRUMENTATION ENGINEERS PVT. LTD.
		(b)	SIGMA INSTRUMENTS CO.
		(c)	EUREKA INDUSTRIAL EQPT. PVT. LTD.
		(d)	TELACE EQUIPMENT PVT. LTD.
1.13	FLOW INTEGRATOR (ELECTRONIC TYPE)	(a)	ABB, GERMANY / FARIDABAD
		(b)	MASIBUS, GANDHINAGAR
		(c)	YOKOGAWA, JAPAN/ YOKOGAWA INDIA
		(d)	LEKKTROTEK, PUNE
		(e)	EMERSON

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<u>SR. NO.</u>	<u>NAME OF EQUIPMENT / ITEM</u>		<u>APPROVED VENDORS</u>
		(f)	ENDRESS & HAUSER
		(g)	FORBES MARSHALL
1.14	GAUGES (PRESSURE, DIFF. PRESSURE)	(a)	A N INSTRUMENTS PVT. LTD., KOLKATA
		(b)	GENERAL INSTRUMENTS CONSORTIUM, GOA/ MUMBAI
		(c)	GOA THERMOSTATIC INSTRUMENTS, GOA
		(d)	FORBES MARSHALL LTD., HYDERABAD
		(e)	WAAREE INDUSTRIES, MUMBAI
		(f)	H.GURU INSTRUMENTS (SOUTH INDIA), BANGALORE
		(g)	WIKA INSTRUMENTS INDIA PVT. LTD., PUNE
		(h)	GOA INSTRUMENTS PVT. LTD.,
		(i)	MONOMETER, MUMBAI
		(j)	BELLS CONTROLS LTD., KOLKATA
		(k)	SWITZER INSTRUMENTS LTD., CHENNAI
		(l)	WIKA ALEXANDER WIEGAND GMBH&CO., GERMANY
		(m)	BUDENBURG GUAGE CO. LTD
		(n)	INSTRUMENTATION PVT. LTD., BANGALORE
		(o)	INDOSONIC INSTRUMENT, MUMBAI
		(p)	PRECISION
		(q)	ASHCROFT