



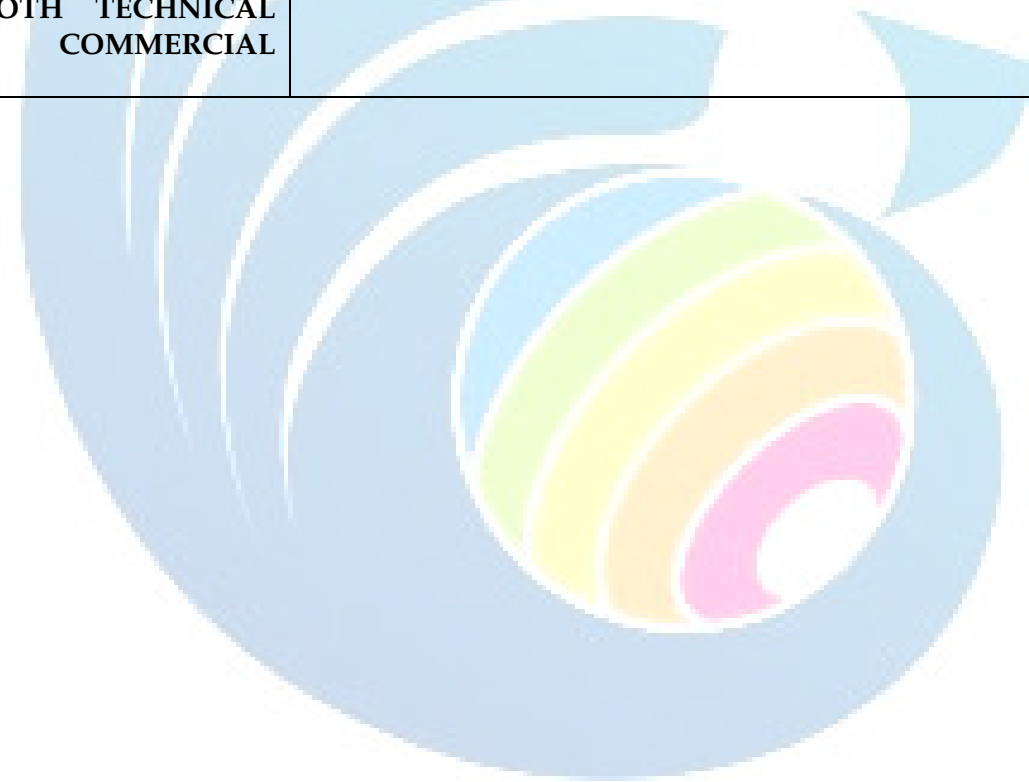
**INDIA EXPOSITION MART LIMITED**  
 PLOT NO.23,24, 25,27, 28 & 29, KNOWLEDGE PARK-II,  
 GREATER NOIDA - 201 306, DISTT. GAUTAM BUDH NAGAR (UP)

**EXPRESSION OF INTEREST (EOI)**

<b>NAME OF THE SERVICES</b>	<b>HVAC PLANT OPERATION &amp; MAINTENANCE SERVICES</b>
<b>KIND OF SERVICES</b>	<p>(A) OPERATION &amp; MAINTENANCE WITHOUT SPARE PARTS (NON-COMPREHENSIVE MAINTENANCE) .</p> <p>(B) OPERATION &amp; MAINTENANCE WITH SPARE PARTS (COMPREHENSIVE MAINTENANCE)</p> <p>BOTH PROPOSALS ARE TO BE SUBMITTED SEPARATELY.</p>
<b>DETAIL OF SERVICES</b>	<p>OPERATION AND MAINTENANCE OF 13 NOS. YORK MAKE – WATER COOLED CENTRIFUGAL CHILLERS (400T), MODEL YS WITH STARTER PANEL ALONG WITH THE FOLLOWING PUMPS AND OTHER ALLIED EQUIPMENTS OF HVAC PLANT.</p> <ul style="list-style-type: none"> <li>i) PRIMARY PUMP – 13 NOS.</li> <li>ii) SECONDARY PUMP WITH VFD- 16 NOS.</li> <li>iii) CONSENSER PUMP - 13 NOS.</li> <li>iv) COOLING TOWER - 13 NOS.</li> <li>v) FCU – 1904 NOS.</li> <li>vi) AHU - 240 NOS.</li> <li>vii) STARTER PANEL - 240 NOS.</li> <li>viii) MCC PANEL - 2 NOS.</li> <li>ix) SPLIT AC (2T) - 14 NOS.</li> <li>x) WALKING CHILLER (8T) - 8 NOS.</li> <li>xi) DEFREEZER (8T) - 3 NOS.</li> <li>xii) VENTILATION SYSTEMS       <ul style="list-style-type: none"> <li>a) AIR WASHER - 25 NOS.</li> <li>b) SCUBIER - 4 NOS.</li> <li>c) EXHAUST FAN - 44 NOS.</li> <li>d) FRESH AIR - 35 NOS.</li> <li>e) AXIAL FAN - 48 NOS.</li> </ul> </li> </ul>
<b>SCOPE OF WORKS</b>	(a) OPERATION AND MAINTENANCE OF 400T CHILLER PLANTS ALONG WITH ALL PUMPS AND OTHER

	<p>ALLIED EQUIPMENTS OF HVAC PLANTS.</p> <p>(b) PLANNED ROUTINE MAINTENANCE AS PER PROCEDURE MENTIONED AT ANNEXURE 'A'.</p> <p>(c) PREVENTIVE MAINTENANCE AS PER PROCEDURE MENTIONED AT ANNEXURE 'A'.</p> <p>(d) MAJOR MAINTENANCE AS PER PROCEDURE MENTIONED AT ANNEXURE 'A'.</p> <p>(e) BREAK-DOWN MAINTENANCE AS MENTIONED AT ANNEXURE 'A'.</p> <p>(f) AREA OF THE OPERATION AND MAINTENANCE INCLUDES THE WHOLE COMPLEX.</p> <p>(g) ALL TOOLS FOR REPAIR WILL BE PROVIDED BY SERVICE PROVIDER.</p> <p>(h) ALL AHU'S, FCU'S AND OTHER EQUIPMENTS AND PARTS OF THE HVAC AS MENTIONED IN DETAIL OF SERVICES WILL BE CHECKED AND SERVICED IN WHOLE IEML COMPLEX PERIODICALLY. NO EXTRA MANPOWER WILL BE PROVIDED.</p>
<p><b>LAST DATE FOR SUBMISSION OF TENDER FOR BOTH TECHNICAL AND COMMERCIAL PARTS</b></p>	<p>15<sup>TH</sup> MAY, 2010</p>

India Expo Mart



## HVAC PLANT OPERATION & MAINTENANCE SERVICES

### 1. PLANNED ROUTINE MAINTENANCE PROCEDURE FOR VARIOUS EQUIPMENTS.

#### I. CHILLERS

Daily

- Starting and stopping of chillers.
- Recording operation condition (on applicable log form)
- Check oil levels and oil heaters.

Weekly

- Check refrigerant levels.
- Check for any sign of refrigerant leakage

#### II. PUMPS

Daily

- Starting and stopping of pumps

Quarterly

- Inspect pumps seals and adjust if necessary.
- Check for any leaks
- If pressure gauges fitted, check operating pressures to ensure strainer clean and pump vented.
- Check pump coupling, vibration and footings.
- Check pumps- motor bearings.
- Clean pump strainers.

#### III. MOTORS

Quarterly

- Check starter operation.
- Check and record the motor running current on all three phases /single phase.
- Lightly lubricate motor bearings.
- Check all connections and associated wiring.

#### IV. COOLING TOWERS

Daily

- Starting and stopping of motor.

Quarterly

- Cleaning of sump.

### 2. SCOPE OF SERVICES FOR PREVENTIVE MAINTENANCE OF CHILLERS AND ANCILLIARIES

Service Provider will provide labour as detailed in this offer to carry out the following maintenance work.

#### A. MINOR MAINTENANCE

Service Provider will carry out preventive services quarterly for servicing of HV AC System.

## CHILLERS

The following inspection items will ensure that unit is operating reliably and efficiently through the cooling season.

- a) Inspecting the chillers and adjusting safety controls.
- b) Checking operation of control.
- c) Checking oil and refrigerant levels.
- d) Checking operation of lube system.
- e) Checking the oil return system.
- f) Checking operation of motor and starter.
- g) Recording operating conditions.
- h) Checking log and reviewing chiller and system operation.
- i) Logging and reporting repairs and parts that are required.
- j) Carry out leak test of system.
- k) Complete service inspection report forms
- l) Check oil heater operation.
- m) Check three phase voltage and current balance

## PUMPS

- a) Inspect pumps seals and adjust if necessary.
- b) Check for any leaks.
- c) If pressure gauges fitted, check operating pressures to ensure strainer clean and pump vented.
- d) Check pump coupling vibration and footing.
- e) Check pump motor bearings.
- f) Check starter operation.
- g) To check that vent passages are not blocked.

## MOTORS

- a) Check and record the motor running current on all three phases /single phase.
- b) Lightly lubricate motor bearings.
- c) Check all connections and associated wirings.
- d) To check the earthing conductor for continuity.
- e) To clean motor. To make motor free for oil, dust and moisture.
- f) To check insulation resistance between respective terminals and frame.

## COOLING TOWER

- a) Checking of spray nozzles and float valves for water level.
- b) Checking of fan assembly for oil level, cleanliness, vibration and noise.
- c) Checking splashing of water.
- d) Cleaning of sump
- e) Cleaning of nozzles.
- f) Checking water quality.
- g) pH should be between 6 & 8, NaCl – Below 750 ppm, SO<sub>4</sub>-Below 1200 ppm, NaHCO<sub>3</sub> – Below 200 ppm, Chlorine – Free residual not to exceed 1 ppm.
- h) To flush and clean cooling tower to minimize the growth of bacteria including legionella Pneumophila to avoid the risk of sickness or death.
- i) Cleaning of louvers, drift eliminators and easily accessible fill surfaces by moderate pressure water nozzles.
- j) To observe, touch and listen to the tower.
- k) To check gear reducer oil level. To add oil if required.
- l) Check operation of the float valve. Depress the operating level to make sure that the valve is operating freely.

- m) Check for any build up of silt on the floor of the cold water basin.
- n) To re-lubricate motor.
- o) To check to see that all bolts are tight in the fan and mechanical equipment region.
- p) To visually inspect the drift eliminator. To remove any accumulated debris or scale.

### AHU

- a) To check fan belt tension and adjust if necessary.
- b) To check the condition of drain for free flow.
- c) To check the condition of access door hinges and lubricate if necessary.
- d) To check the fan motor running current.
- e) To check function controls and their effect on Air Handling Unit component.
- f) To check fan and motor bearings.
- g) To add water and flush condensate drain pan, trap and drain line.
- h) To check the condition of chilled water.
- i) To check the condition of inlet strainer.

### 3. MAJOR MAINTENANCE:

Service Provider will carry out the one major service.

#### CHILLERS

Performing preventive maintenance tasks as indicated below:

Checking the Compressor Oil System for the following items:

- a) Changing the compressor oil, if required (Oil to be supplied by IEML)
- b) Changing oil filter and drier (Spares to be supplied by IEML)
- c) Checking oil heater.
- d) Checking all other oil systems components and strainer where applicable.

#### Checking motor starter and performing the following tasks:

- a) Running diagnostic check.
- b) Cleaning contacts or recommending replacement.
- c) Meggering the motor.
- d) Checking all terminals and tightening connections.
- e) Checking overloads.

#### Review the Control Panel for the following items:

- a) Running diagnostic check of motor control panel.
- b) Checking safety shutdowns operation.
- c) Checking all terminals and tightening connections.
- d) Checking display data accuracy and set points.

#### Checking Condenser for the following items:

- a) Checking the water pressure drop.
- b) Checking flow switch operation.
- c) Cleaning of Condenser tubes (Chemicals to be provided by IEML).

**Checking the cooler for the following items:**

- a) Checking the water pressure drop.
- b) Checking flow switch operation.
- c) Checking the refrigerant level.

**Checking the system for the following items:**

- a) Conducting a leak check and identifying leak sources (Consumables to be provided by IEML.)
- b) Recording the condition of sight glasses.
- c) Checking the refrigerant cycle to verify the proper operating balance.
- d) Checking condenser water and chilled water heat transfer.

**General items included:**

- a) Repairing insulation removed for inspection and maintenance procedures.
- b) Cleaning equipment and surrounding area upon completion of work.
- c) Consulting with operator.
- d) Reporting deficiencies and repairs required.
- e) Complete service inspection Report Form.
- f) Testing performance of chillers with respect to power consumption.

**PUMPS**

- a) Lubricate pump bearings per manufacturer's recommendation.
- b) Lubricate motor bearings per manufacturer's recommendation.
- c) Tighten all nuts and bolt. Check motor mounts and vibrations pads. Replace and adjust as required.
- d) Visually check pump alignment and coupling.
- e) Check motor operating conditions.
- f) Inspect electrical connections and contactors.
- g) To check terminal tightness.
- h) Check and clean strainers, then check hand valves.
- i) Inspect mechanical seals. Replace as required. Or inspect pump packing. Replace and adjust as required.
- j) Verify gauges for accuracy.
- k) Clean external surfaces as required.
- l) Check suction and discharge pressures.
- m) To compare current readings with those specified on nameplate of each motor.

**COOLING TOWERS.**

- a) Remove all debris from within and around unit then flush as required.
- b) Check and clean strainers, bleed, over flow and drain.
- c) Lubricate fan and motor bearings per manufacturers recommendation.
- d) Change oil in gear reducer assembly as per manufacturer's recommendation.
- e) Check belts, motor pulley and motor mounts. Replace and adjust as required.
- f) Inspect electrical connections, contactors, relays and operating/safety controls.
- g) Check motor operating conditions.
- h) Meggering of motor.
- i) Clean float valve assembly and check for proper operation.
- j) Check operating conditions. Adjust as required.

- k) Check drive shaft alignment, tightness of cal screws and set screws and condition of all components.
- l) Check fan assembly bolting and tighten as required.

#### AHU

- a) Check the operation of dampers.
- b) Check the filter frame for proper sealing.
- c) Replace synthetic media in panel filters ( To be provided by IEMML).
- d) Check the access door for easy operation and proper locking.
- e) Check the coils and fan condition. Washing with water spray if necessary.\
- f) Check the condition of all insulating regulating valves etc. in the system.
- g) Vent the water coils.
- h) Check motor and fan bearing lubrication.

#### 4. **BREAKDOWN CALLS**

Service Provider shall attend the break down calls as and when required. Response time: 4 hours.

- 5. The above scope of work, in case of non-comprehensive maintenance excludes supply of spares and parts, compressor oil, oil filter, filter drier, refrigerant, grease of compressor motor, air filter, circuit breaker, cables/wires, pipes, insulation, actuators, thermostat, motorized volume control damper, motorized fire damper etc. and any other item not mentioned in the list of equipment but it includes minor consumables like O-ring of FCU Valve, Old Dhoti, Grease and oil etc. and minor repairing. The minor repairing includes arresting of leakage of oil and water, rewinding of burnt motors and repair of pumps and any other minor items.

Indig

