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|-------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------|-------------------------------------------------|
| <br>PSSR<br>PROJECTS | <b>TECHNICAL SPECIFICATION</b> |                                                               | SPECIFICATION NO.<br>PROJ-ELEC/C&I-TS-SOFP-0009 |
|                                                                                                       |                                |                                                               | REV NO : 00                                     |
|                                                                                                       | <b>PRODUCT</b>                 | <b>SILICON OIL FILTRATION<br/>PLANT<br/>1000 LPH CAPACITY</b> | DATE : 20/12/2006                               |
|                                                                                                       |                                |                                                               | SHEET 1 of 4                                    |

### **SILICON OIL FILTRATION PLANT - 1000 LPH CAPACITY**

The Plant shall be suitable for treating **Silicon Oil** by first heating and then passing it through specially designed filter and then subjecting it to vacuum treatment which dehydrates and degassifies the oil to following specifications in **TWO-THREE PASSES** after completion of the process.

| <b>PARAMETERS</b>                         | <b>AFTER PROCESSING</b> |
|-------------------------------------------|-------------------------|
| Break Down Voltage<br>(Across 2.5 mm gap) | 60 KV                   |
| Moisture Contents                         | 10 PPM                  |
| Suspended Particles                       | less than 1 Micron      |
| Gas Content                               | 0.5% By Volume          |

The Plant shall generally conform to IS-6034-1989 and its latest revision.

The Oil Filtration Plant shall be designed for High Vacuum and Low Temperature of oil for achieving required results.

The Oil Filtration Plant shall be Mobile, mounted on an under carriage with Four Castor wheels / Pneumatic wheels with Screw Jacks for relieving pressure on wheels at stationary conditions, shall be provided. The Plant will be weather proofed & will be suitable for outdoor use. The casing shall be provided with doors of CRCA sheets, hinged on fabricated frame work of angles and channels to have access to the operational controls.

All components shall have adequate strength and rigidity to withstand normal conditions of handling transport and usage and will be free from edges or corners to avoid injury to operating personnel in normal conditions of use. The design of the Plant shall be such that if required the plat/s can easily be replaced. Proper guarding arrangement will be provided on all such parts which due to their position and nature of operation are liable to cause accidents.

The Plant shall mainly consist of the following:

- 01. INLET PUMP**
- 02. HEATERS**

|                                                                                                               |                                |                                                               |                                                             |
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|                                                                                                               |                                |                                                               | <b>SHEET 2 of 4</b>                                         |

### **03. IONIC REACTION COLUMN**

### **04. FILTRATION SYSTEM**

- **PRELIMINARY FILTER**
- **FILTER PRESS**
- **CARTRIDGE FILTER**

### **05. DEGASSING AND DEHYDRATION CHAMBER - TWO STAGE**

### **06. VACUUM PUMPING SYSTEM (FOR DEGASSING COLUMN)**

### **07. TRANSFORMER EVACUATION SYSTEM**

### **08. DISCHARGE PUMP**

### **09. SOLENOID VALVE AT INLET & OUTLET**

### **10. OIL SAMPLING VALVE**

### **11. AIRING VALVE**

### **12. GAUGES & INSTRUMENTS**

### **INDEPENDENT DRIVES**

Independent Drives for Oil Discharge Pump, Oil Inlet Pump & Vacuum Pumps shall be provided.

Motors shall conform generally to IS:325 (Testing) shall be of Class 'F' Insulation. Starters shall be of direct On-line type.

### **13. CONTROL PANEL**

All Electrical Control Gear, Mains Isolating Arrangement, Starters, Contactors, Pilot Lamp, Push Buttons, HRC Fuses, Relays, Indicating Lamps and Interlocking shall be housed in a Compact Control Panel and made of CRCA Sheets. A Mimic diagram with Indicating Lamps shall be provided on the Control Panel. The Plant shall be suitable for operation on 415 V, 3 Ph, 4 Wire, 50 Hz, A.C. Supply.

Plant shall be provided with

- Interlock for vacuum system
- Interlock for heating system
- Interlock for oil handling system
- Other misc system

### **14. OIL HOSES - 2 NOS.**

Two Nos. Nitrile Rubber Hoses each 10 Mtrs long with flanged end connection on both sides shall be provided. One for Oil Inlet & one for Oil Outlet. Oil

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|                                                                                                               |                                |                                                               | <b>SHEET 3 of 4</b>                                         |

Hoses shall be capable of handling the transformer oil at 100oC (max.) and vacuum.

### **15. PIPE LINE & VALVES**

The entire Plant along with all components mounted shall be tested for a total vacuum leak rate of less than 1 torr Ltrs/Sec

### **16. LIFTING HOOKS**

Lifting Hooks for Plant shall be provided to facilitate ease of Plant Loading / Unloading.

### **CLEANING & PAINTING**

Before despatch from Supplier's works, all exposed surfaces shall be cleaned off Rust, Dirt, Scale and foreign matter and shall be applied with a coat of rust preventive primer on interior and exterior surface of steel before being painted with two coats of paint .

### **INSPECTION & TESTING**

The Plant shall be offered for Inspection & Testing with Silicon Oil at Supplier's works. Supplier shall demonstrate the Plant performance as per parameters mentioned in the specifications.

The supplier should arrange testing facilities at their works for carrying out the following tests

1. Break Down Voltage
2. Moisture Content
3. Suspended Particles
4. Gas Content
5. Acidity
6. Plant capacity test for flow rate
7. Electrical interlock test
8. Vacuum leak rate test
9. IR & HV test of Control panel

|                                                                                   |                                |                                                               |                                                 |
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|                                                                                   |                                |                                                               | SHEET 4 of 4                                    |

### **INSTRUCTION MANUAL**

Two copies Instruction Manual containing details of Plant Operation & Maintenance along with all relevant drawings shall be supplied with the Plant.

### **COMMISSIONING**

Supplier shall depute their Engineer to our site for commissioning of the Plant.

### **INSTRUCTION MANUAL**

Six copies of Instruction Manual containing details of Plant operation and maintenance along with all relevant drawings shall be supplied with the Plant.

### **PERFORMANCE GUARANTEE**

Supplier shall stand guarantee for performance of the Plant for a period of 12 months from the date of commissioning of the Plant or 18 months from the date of despatch, whichever is earlier. During guarantee period supplier shall undertake upon written request of the purchaser to repair or replace & as soon as possible any parts of goods delivered which can be proved to be damaged or unfit due to bad material, faulty design or poor workmanship.