

Online Transportable Transformer Conditioning and Conservation System

Specifications

1.0 System Usage

The system shall be used for the prevention and treatment of transformer oil ageing via the removal of water and various particles from the oil, thus restoring safe dielectric conditions and assuring a reliable and secure service.

2.0 System Configuration

The system should have the following properties:

- It should be transportable.
- It must be compatible with all mineral oil filled transformers regardless of size and type.
- It should be a combination of a moderate vacuum system (the use of absolute vacuum pumps is explicitly prohibited) with a low temperature thermal process (normal transformer temperature). The system should operate without the need of frequent consumable swaps (e.g. filters, cartridges, etc.).
- The device must be equipped so as to prevent oil over-drying through the volumetric control of the removed water (daily/total). Water measurements should be readable both on-site via visual inspection of the water collection vessel and remotely.
- All oil-containing containers, including pumps, must be hermetically sealed to prevent any oil leakage.
- Special precautions must be taken so that no aromates are distilled during the oil treatment.
- The device must be designed for the online and long-term connection to the transformer and without any service interruption during its installation and operation.
- Inlet and outlet connectors to the transformer's oil circuit must be equipped with spring-loaded electrical valves, ensuring automatic closing in case of any device or power failure, isolating the transformer's oil circuit and protecting the transformer from draining. Solenoid valves are not acceptable.
- Automatic restart after power failure.
- Leakage control for all oil containing compartments.
- Remote control with analogue Modem or GSM connection.
- Going always in secure mode in case of failure.
- Designed for at least 20 years of usable life.
- Power supply voltage 380V.
- Power supply frequency 50Hz.

3.0 Technical data

Power supply voltage	380V (or on request)
Power supply frequency	50Hz (or on request)
<u>Power consumption</u> :	
With oil heater	5.500 W maximum
<u>Oil throughput</u> :	10m ³ per day maximum
Outlet water content	10ppm nominal, 4ppm minimum
Outlet filtering grade	5 µm
<u>Weight</u> :	
Dry weight (without oil)	500kg
Operating weight (oil filled)	400kg
Hydraulic connection	2 x flexible ½ " hose
Communication :	GSM modem

4.0 Operational conditions:

Maximum ambient temperature: 50°C

Minimum temperature of the transformer: 40°C

5.0 Safety

The system must be equipped with protective devices and schemes in order to operate for prolonged time periods without the necessity of any local supervision.

The protections must detect:

- Oil losses: the transformer must be hydraulically isolated from the system by closing the valves within very short time of oil loss detection.
- Overpressure: All components must be secured against the overpressure.
- Operational failure: The system must be equipped with protective schemes that, in case of any operational failure, should automatically stop the operation.

General

- The system must be delivered within five (5) months from signing the contract.
- The delivery destination is the T5DM (ROOF) warehouse.
- The system must be covered by a two years' guarantee
- The operating manuals should be delivered along with the system.
- The system must be equipped with an online process control unit capable of collecting and transmitting data, enabling remote control and monitoring.

- The system must be equipped with a strobe flashing light that will automatically flash while the device is powered on. Moreover, an emergency button that will immediate shut down the system must be installed.
- After the delivery of the system the supplier will demonstrate the system on the field. The demonstration will include its connection, operation, disconnection, and maintenance. The computer control unit will also be demonstrated to our company's personnel. Maintenance procedures of the system and common error troubleshooting will also be demonstrated. During the training, a remote connection from a PC will demonstrate the online abilities of the system.