Globecore GmbH

ISO 9001-2000 CERTIFIED COMPANY

TRANSFORMER OIL PURIFICATION PLANT
CMM-1.0
(Capacity 1000 l/h)

ES France - Département Bio-Tests & Industries - 127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 90 - Fax. 01 47 01 16 22 - e-mail: bio@es-france.com - Site Web: www.es-france.com

CMM-0.5.0.00.000 TD

GENERAL INFORMATION

Transformer Oil Purification Plant model CMM-1.0 purifies insulating oils of mechanical particles and employs thermal vacuum for water and gas removal. Operate the Unit when assembling, servicing and exploiting oil filled equipment. Moisture, solids and gaseous contaminants can seriously affect the function of insulating fluids as a coolant and insulator. Unit is used for installation, repair and maintenance companies which are dealing with transformer oil tre atment.

This specification describes the equipment as supplied by *GlobeCore*™ for the processing (degasification, dehydration, filtration) of oil. The purifiers are designed for processing of oil in workshops or in the field, in storage tanks, drums. For purification of oil in the field, a mobile type purification plant, mounted on a roadworthy trailer is recommended.

The scope of supply of this specification shall include the design, fabrication and factory testing of Oil Purification Plant CMM-1.0. Equipment will be mounted on a common base or in a trailer and supplied in the form of a pre-piped and pre-wired package and shall provide a fully workable unit in accordance with this specification when received by the purchaser.

Parameter		Value
1. Capacity, m^3/h		
Adjustable flow rate, m^3/h		***1,0***
2. Treated oil parameters (after several passes):		
	- maximum moisture content, ppm	***10***
	- maximum gas content, %, max.	***1,5***
	- filtration rating, μm	***5***
	- maximum mechanical impurities content, ppm	***8***
	- ISO 4406 industrial purity class	***-/14/12***
3. Maximum oil output temperature in heating mode, °C		***55***
4. Oil heater power, kW		***12***
5. Outlet pressure, bar		***3***
6. Maximum power consumption, kW		***15***
7. Electric current supply parameters (3 Ph + N):		
	- voltage, V	***400 / as required***
	- AC frequency, Hz	***50 / as required***
8. Maximum dimensions, mm		
	- length	***900***
	- width	***620***
	- height	***1500***
9. Weight, kg		***280***

CMM-0.5.0.00.000 TD

Technical description of equipment.

The oil purification plant CMM-1,0 is designed for removal of solids, water and gasses from insulation oils, with viscosity not exceeding 70 mm/s2 (cSt) at 50 C.

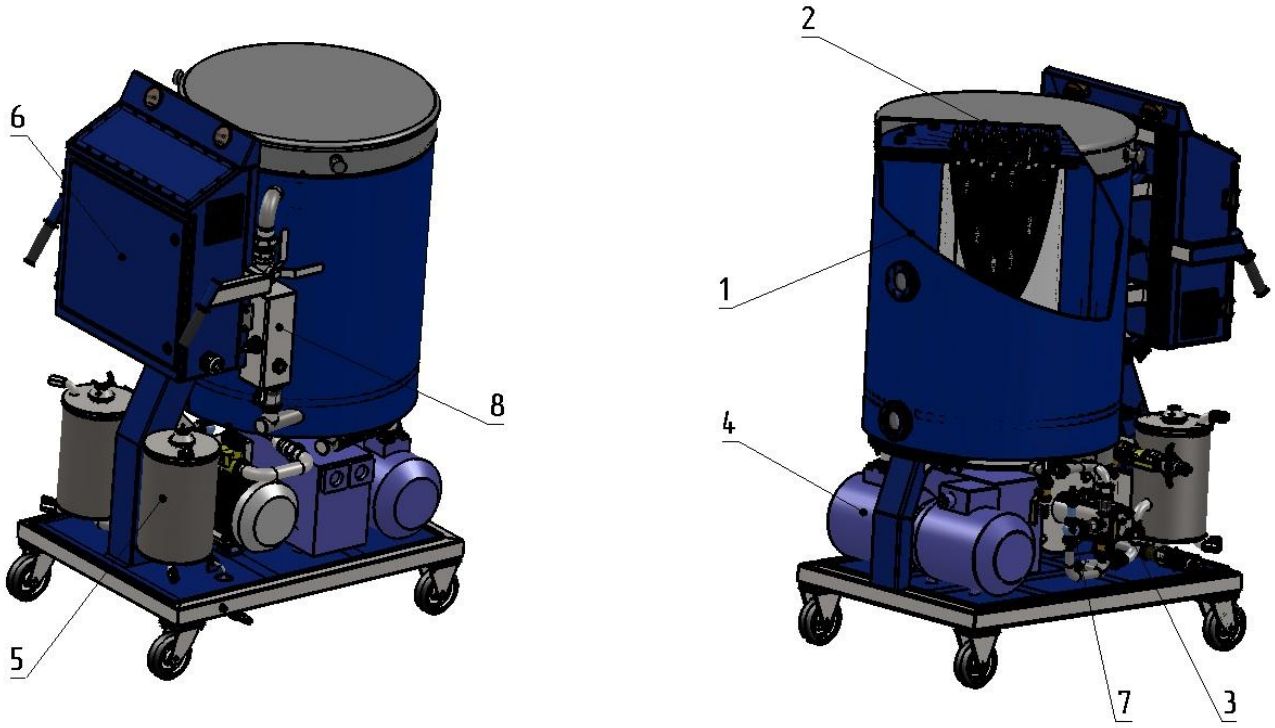
The plant is used during mounting, maintenance and operation of oil-filled high voltage equipment (power transformers, high-voltage switchgear, etc.).

Design and configuration of equipment

The CMM-1,0 unit consists of the following components:

- metal frame and containment tray on castor wheels;
- vacuum chamber with built-in oil heater 1,2;
- output positive displacement gear pump 3;
- vacuum pump 4;
- cartridge filters 5;
- electric control cabinet 6.
- safety valve 7

All process equipment is connected by pipelines. The equipment and Control cabinet equipment can be enclosed and protected against climatic conditions (to be discussed separately).



CMM-1.0 general view

CMM-0.5.0.00.000 TD

The vacuum chamber is a cylindrical heat-insulated vessel equipped with set of Raschig rings installed in its upper part. Raschig rings section design allows for oil intensively exhaling gases and moisture. Sight windows allow making visual control of unit operation and oil presence inside the vacuum chamber.

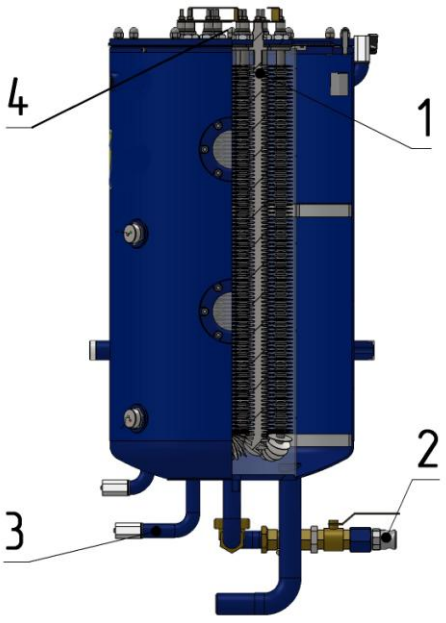
Lower-upper level sensors control outlet pump.

The vacuum chamber is connected to the atmosphere by air inlet valve.

To prevent oil spillage CMM-1.0 unit is equipped with a floating oil spillage sensor interlocking the system if any emergency occur.

Oil heater is a cylindrical vessel installed inside the vacuum chamber, which contains ceramic electrical heater and equipped with drainage valve. Automation system devices are installed in heater: temperature sensor and thermostat. These devices show oil temperature and protect heater from overtemperature, as well as allow to adjust oil heating temperature as required. Heater is equipped with separate thermostat for extra-control and protection against overheating interlocked with heating elements and all electric devices of the unit.

Heater has a demountable structure to provide easy heating elements replacement.

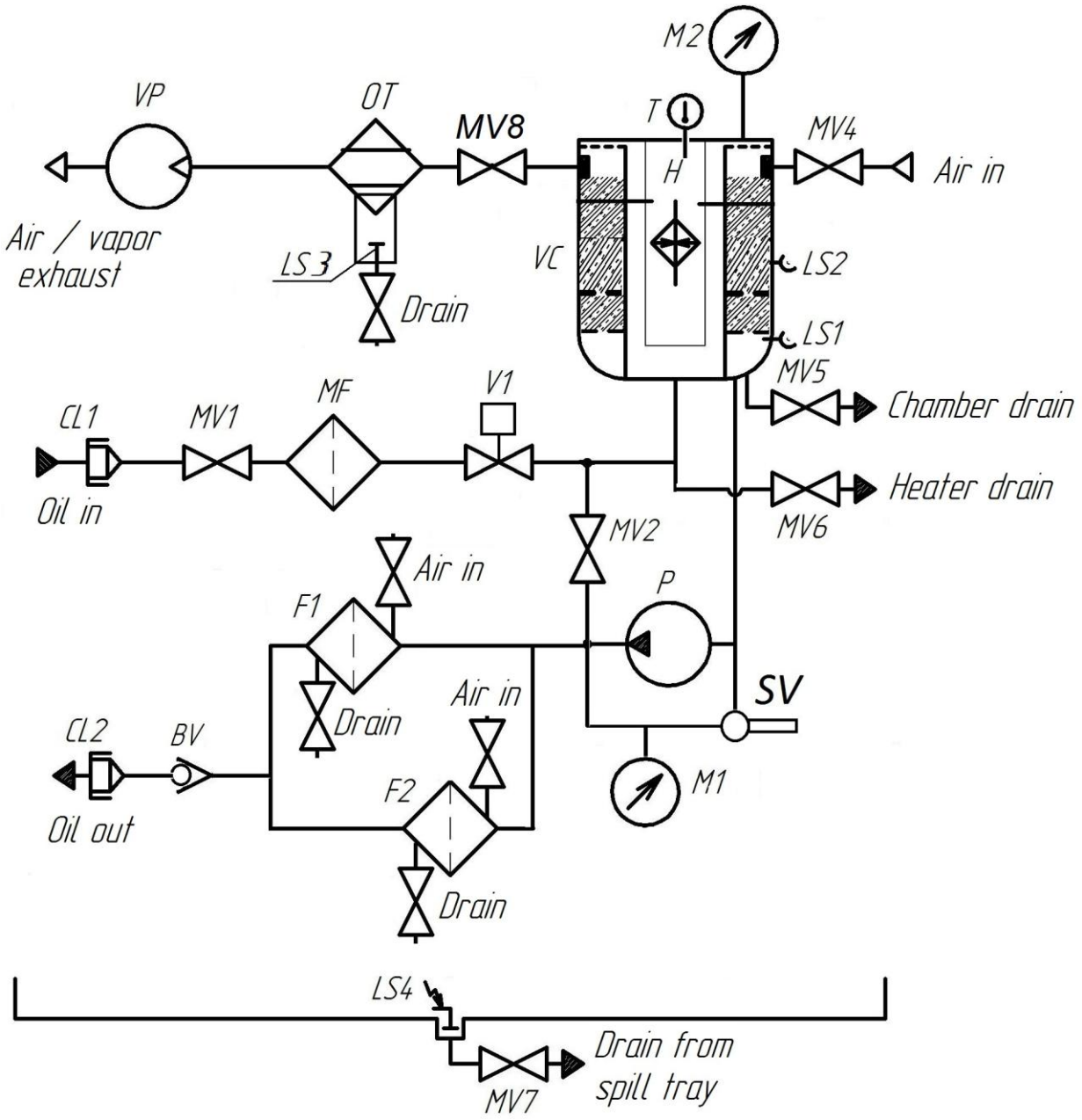


Vacuum chamber with oil heater

1 – heating element
2 – oil inlet
3 – oil drain valve
4 – thermal resistance

For ultimate pressure (vacuum) indication, vacuum gauge is installed in the vacuum vessel. Measurement range -1….0 bar (kgs/cm^2).

CMM-0.5.0.00.000 TD

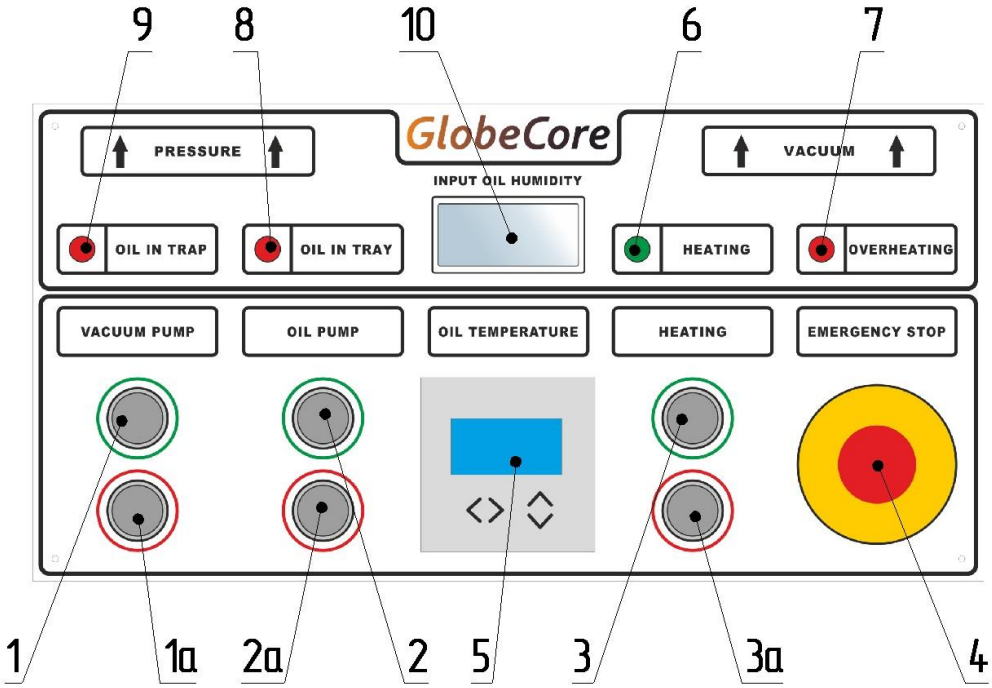


CMM-1.0 flow diagram

CL1, CL2 – Camlock quick coupling connections; ***MV1*** – inlet valve ; ***MF*** – mesh filter; ***V1*** – solenoid valve; ***H*** – oil heater; ***VC*** – vacuum chamber; ***T*** – temperature sensor; ***P*** – oil pump; ***F1, F2*** – filters, ***BV*** – return valve; ***OT*** – oil trap; ***VP*** – vacuum pump; ***MV4*** – vacuum release valve (1/4"); ***LS1-LS2, LS3-LS4*** – level sensors, ***M2*** – vacuum gauge; ***M1*** – pressure gauge; ***MV5-MV7*** – drain valves; **SV** – safety valves, ***MV8*** – vacuum chamber valve

CMM-0.5.0.00.000 TD

CONTROL CABINET



1 Vacuum pump ON
1a Vacuum pump OFF
2 Oil pump ON
2a Oil pump OFF
3 Oil heater ON
3a Oil heater OFF
4 Emergency switch
5 Oil temperature indicator
6 Oil heating indication/green light when ON
7 Overheating indication/light when temperature over 90^0C/Oil heater OFF automatically.
8 Tray oil spill/light when oil spillage/oil pumping, heating, vacuum pump automatically OFF/ valves V1 and V2 closed.
9 Oil in trap/ light when oil in trap/heating, vacuum pump automatically OFF/ valves V1 and V2 closed.

For further information contact:
Andrej Kulish
Manager
Sales Department
Globecore GmbH
sales@globecore.com