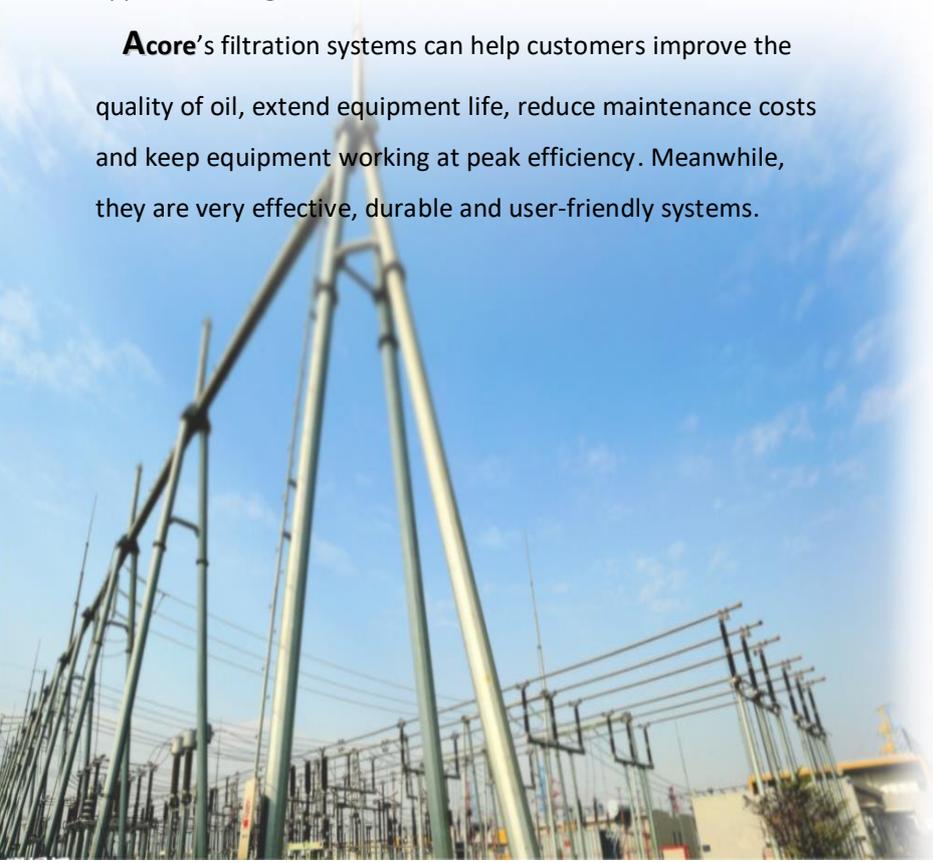




## MTP Double Stages Vacuum Transformer Oil Purification System Mounted On Mobile Trailer

**Acore Filtration Co.,Ltd** provides engineering, manufacturing, sales of industrial oil filtration systems, we have been striving for studying the user's requirement and provide filtration solutions for every demanding application on global scale.

**Acore's** filtration systems can help customers improve the quality of oil, extend equipment life, reduce maintenance costs and keep equipment working at peak efficiency. Meanwhile, they are very effective, durable and user-friendly systems.



### Introduce:

The principal functions of the insulating fluid are to serve as a dielectric material and an effective coolant. During running of oil-filled electric equipment or transportation, the insulating oil becomes contaminated with moisture, gases and solid particulates, which results in complete deterioration of insulating properties and affect the life of the electric equipment in the long run. So it becomes necessary to maintain optimal insulation properties of oil by controlling over moisture, dissolved gases, particulate contamination.

MTP Mobile Trailer Type Double Stages High Vacuum Transformer Oil Purification System(Oil Purifier Machine) is specially developed for transformer oil degasification, dehydration, filtration processing onsite at outside. It adopts full enclosed structure with function of weather proof. MTP mobile trailer can be carried out on road and off road. Meanwhile, it also works with other electrical insulating oil such as cable, circuit breakers, capacitor etc. The Purification Process of MTP Transformer Oil Purifier is able to maintain complete cleanness and improve dielectric strength of insulating oil. The purification range of MTP vacuum transformer oil purifier is for dielectric insulating oil filled in transformers, circuit breakers, capacitor, cable, mutual inductor etc.

MTP Mobile Trailer Vacuum Transformer Oil Purifier is very effective, durable, and user-friendly high vacuum purification system on the market today. Special engineered design features maximize the water extraction rates of our systems, and top-quality components and workmanship ensure years of maintenance-free operation and performance.

### Feature:

- Upgrading of new and used electrical insulating liquids, transformer oils.
- Double stages vacuum pumps, horizontal double vacuum dehydration, degasification chambers and blower capable of pulling vacuum down to 0.05 mbar.
- Micron filter elements with capable of removing 99.5% particles  $\leq 1 \mu\text{m}$ .
- Achieving overall water content of  $\leq 3$  PPM By vacuum dehydration to remove free, emulsified and dissolved water.
- Achieving soluble air and gas content of  $\leq 0.05\%$  and dielectric strength of  $\geq 75\text{kV}$  per ASTM 877.
- Low watt-density less than  $1.5\text{W}/\text{cm}^2$  circulation heater with digital temperature controller.
- Different pressure gauge of filters, pressure protector, vacuum gauge and digital temperature gauge
- Online oil purification processing, vacuum drying and vacuum oil-filling for electric equipment.



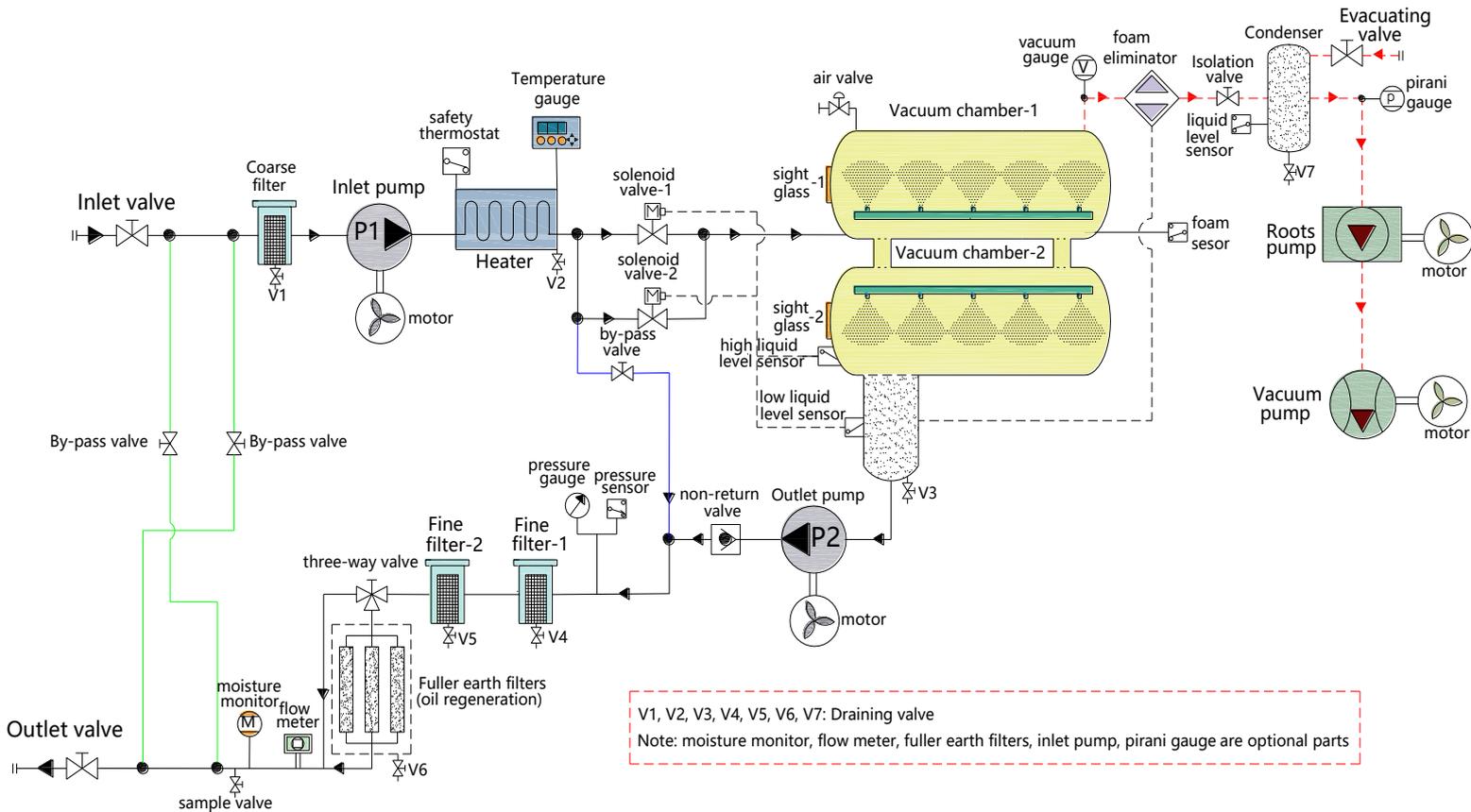
**Technical Specifications**

Model	MTP-50	MTP-65	MTP-80	MTP-100	MTP-150	MTP-200	MTP-250	MTP-300	
Capacity(L/min)	3000	4000	4800	100	150	200	250	300	
Vacuum pressure	-0.06~-0.099 Mpa								
Vacuum System	Double Stages								
Working pressure	≤ 0.4 Mpa								
Temperature range	20 ~ 80°C								
Power supply	380V, 50HZ, 3PH (or customized )								
Working noise	65 dB								
Trailer Type	Single Axle				Double Axles				
Heating power (kw)	30	40	48	60	90	110	130	150	
Total power (kw)	32	45	54	66	100	120	145	168	
Inlet/outlet(mm)	38	40	44	50	55	60	65	70	
Purifier Weight (kg)	650	700	800	900	1050	1500	1800	2000	
Trailer Weight (kg)	350	380	420	500	580	650	800	900	
Purifier Dimension (mm)	L	1600	1700	1750	1850	1950	2050	2150	2250
	W	1400	1450	1500	1600	1700	1750	1800	1850
	H	1500	1650	1700	1750	1800	1850	1900	2000
Trailer Dimension (mm)	L	2800	2800	2800	2900	2900	3000	3100	3200
	W	1450	1500	1550	1650	1750	1800	1850	1900
	H	900	900	1000	1000	1000	1100	1100	1100

**Specifications after purification:**

Item	Specifications
Breakdown voltage	≥ 70KV
Water content	≤ 3ppm
Gas content	≤ 0.05%
Filtering rate	≤ 0.5 micron (ISO 14/12/10)
Flash point (close cup)	≥135°C
Interfacial tension performance	> 40 Dynes / cm @ 25 C
Power factor performance	< 0.005 % @ 25 C
Acid value	≤0.03 mgKOH/g

## Flow Diagram



## Specification Introduction of Components

### 1. Electric Control Panel

The plant is controlled by a complete automatic PLC controlling system with touch screen, which allows easy and safe operation, it also allows operation over buttons on the control panel by manual. The controlling system of the plant has interlocked protective system and pressure protective device which will avoid overload, over voltage, pumping without oil, heating without oil, oil leak, electricity leak and prevent any damages to equipment due to operating error or power failure. The control panel also has alarm system for any fault, the alarm lamp will lighten and fault message will display on screen. Meanwhile, Timing counters for each running time and total running time.

### 2. Vacuum Dehydration & Degasification Chambers

Vacuum chambers are composed of double stages vacuum chambers. Under the high vacuum status, vacuum evaporation chambers enlarge evaporation area efficiently, leading to the formation of film-like oil and stereo-evaporation.

A row of prayers is provided in the vacuum chamber and become an evaporator, which greatly improves the surface area of oil exposed in vacuum chambers and ensure maximum working efficiency in the removal of gas and moisture.

A foam sensor in vacuum chamber connected with foam eliminator to prevent oil getting into the vacuum pumps and damaging vacuum pump. Sight Glass are provided for observation of oil flow

### 3. Liquid-level Controller of Vacuum Chambers

The latest Magnetic Liquid Level controlling system is provided to prevent the oil level in the chamber from getting too high and two low. It connects with inlet/outlet pump, electromagnetic valve to control balance of inlet and outlet oil quantity, also prevents oil penetrating into vacuum pump and avoid outlet pump running without oil.

Automatic solenoid valves and non-return valve are provided to avoid mixing of processed and unprocessed oil, and prevent oil entering degassing chamber in case of power failure.

## 4. Heating System

The plant equips a digital temperature controller as a safety thermostat, which connects a reliable thermocouple sensor mounted in heating vessel, it can check the oil level in heater and avoid heating without oil, at same time, the deterioration of oil caused by overheating is avoided. The temperature can be set by manually and with capable of heating oil from 20°C to 80°C.

The heating components can warm up temperature around and heat radiation container can uniformly warm up the oil, adopting low load of heated surface with 1.5W/cm<sup>2</sup>. The replacement of heating components is easy.

## 5. Feed Pump & Discharge Pump (Feed Pump is optional)

**Feed Pump(inlet pump):** Positive inlet pump driven by electric motor to fill oil into plant. An interlocking arrangement is provided between high liquid level switch and inlet pump to avoid excessive rise of oil level in the vacuum chambers, and flow control valve is provided to avoid damage of inlet pump by over-pressure. Meanwhile, an interlocking arrangement is provided between the inlet pump and the heater, so that heater can start only when inlet pump is ON.

**Discharge Pump(outlet pump):** Discharging oil out from the vacuum chambers held under vacuum. This is fully tested for pressure and vacuum leak rate. An interlocking arrangement between low liquid level switch and discharge pump to prevent running of discharge pump without oil, and flow control valve is provided to avoid damage of outlet pump by over-pressure.

## 6. Vane Vacuum Pump & Roots/Booster Vacuum Pump

A rotary vane vacuum pump combining with booster(roots) pump is a sort of vacuum production equipment suitable for pumping air and make the oil purifier working under high vacuum status, this combination can improve the vacuum level more quickly. Meanwhile, this combined vacuum pump system can be used for transformers vacuum drying

Vacuum pump and booster pump installed air cooling systems, which can ensure working of pumps safety and reduces the frequency of oil's replacement and extends the life of vacuum pump.

Vacuum gauge is provided to measures vacuum pressure in vacuum chamber.

## 7. Filtering System

**Coarse filter:** The coarse filter can remove all impurities above 100 micron to prevent any damage to inlet pump. This filter element can be clean easily.

**Fine filter-1:** This filter element is made of specialized glass fiber, which has large impurities holding capacity and can retaining all particles above 5 micron.

**Fine filter-2:** This filter element allows accept a standard filter separating particles as small as 1 micron.

Pressure gauge and pressure protector is provided to ascertain condition of the filter vessel and indicate replacement of filter elements to avoid the overpressure to break the filter elements.

## 8. Cooling Unit

A cooling condenser condenses the vapors to water, where water is collected in a condensate tank with high liquid level sensor. A condenser between vacuum pump and vacuum chamber reduces the temperature of vapor and avoids the vacuum pump damaged by high temperature of vapor.

## 9. Pipe Work

All pipe work, the vacuum chamber and the filter housings are made from high quality carbon steel. (Option: Stainless steel). The piping joints are flanged type with O'ring sealing.

## 10. Valves

Different ball valves: inlet/out valves, drain valves of all tanks, electromagnetic /solenoid valves, sample valve etc. are provided.

## 11. Oil Hoses

Two Nos. transparent steel spring type hoses each 10 meters long with flanged end connection on both sides are provided. Oil Hoses are capable of handling the transformer oil at 100°C (max.) and vacuum.