

HZLY-30A Double Stage High Vacuum Transformer Oil Filter Technical Documents

I、Product Specifications

Model:	HZLY-30A
Nominal Flow:	1800L/h
Oil Purification Capacity:	30L/min
Ultimate Vacuum Degree:	$\leq 5\text{Pa}$
Pumping Rate:	$250\text{m}^3/\text{h}$
Working Pressure:	$\leq 0.4\text{Mpa}$
Filtration Accuracy:	$1\mu\text{m}$
Working Oil Temperature:	$20\sim 80^{\circ}\text{C}$
Power Supply:	50Hz380VThree-phase Three-wire
Heating Power:	30KW
Total Power:	36KW
Operating Noise:	$\leq 75\text{dB(A)}$
Oil Inlet and Outlet Port:	DN25
Vacuum Interface Flange:	DN25
Dimensions:	$145\times 140\times 165\text{cm}$
Equipment Weight:	760Kg
Continuous Working Time:	$\geq 200\text{h}$
Average Working Hours Without Failure:	$\geq 5000\text{h}$

II、Product Net Oil Index

Oil to be treated (new oil)

Breakdown Voltage: $>30\text{kV}$ (ball electrode);

Moisture Content: $\leq 50\text{ppm}$;

Gas Content: $\leq 10\%$ (Volume ratio);

After multiple processes

Breakdown Voltage: $>80\text{kV}$ (ball electrode);

Moisture Content: $\leq 2\text{ppm}$;

Gas Content: $\leq 0.1\%$ (Volume ratio);

III、 Product Function Introduction

- ◇ Remove moisture from oil.
- ◇ Remove gases dissolved in oil.
- ◇ Remove solid particles from oil.
- ◇ On-site oil treatment of transformers and vacuum drying of electrical equipment.
- ◇ On-site hot oil circulation drying of transformers.
- ◇ Drain the transformer or vacuum-fill the transformer.

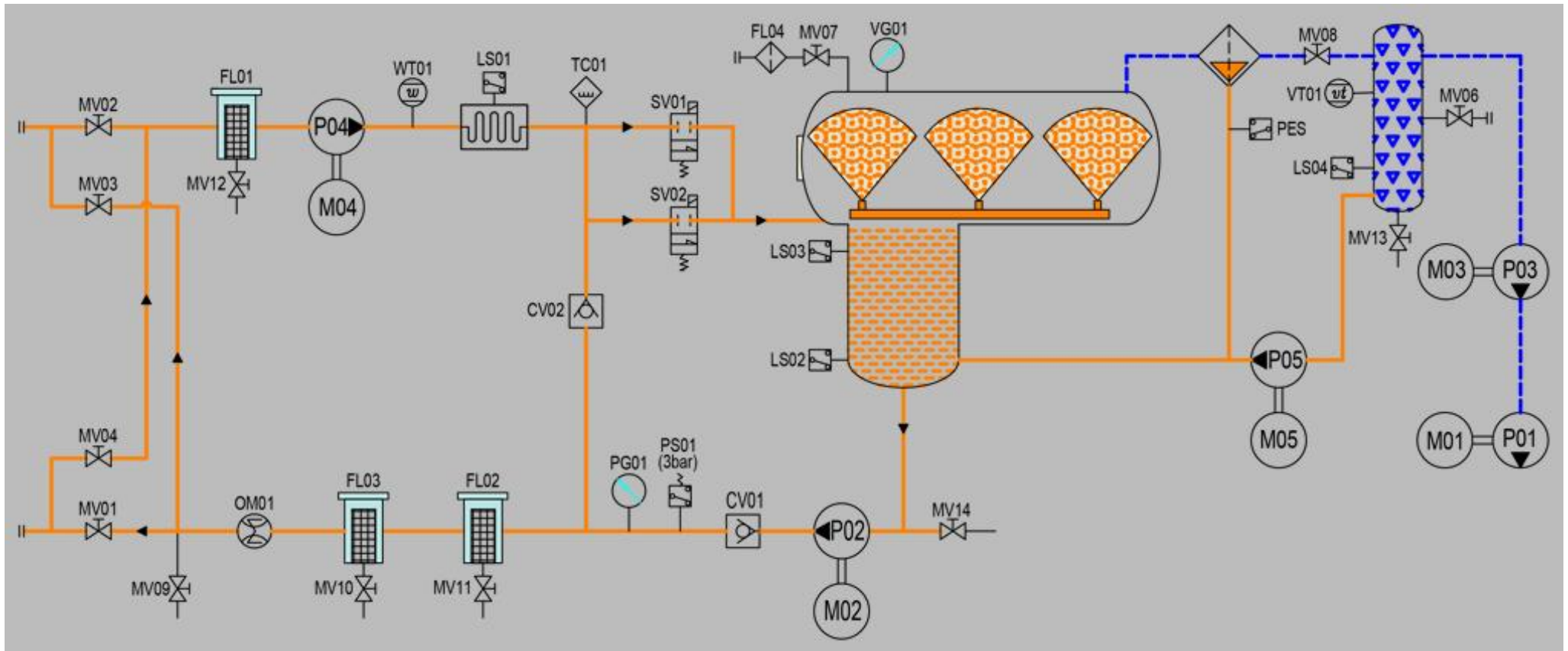
IV、 Product Working Principle

4.1 Vacuum Dehydration Degassing Principle

Vacuum oil filter is designed according to the saturated steam pressure of water and oil, which is composed of coarse filter, oil supply pump, heater, vacuum separation tank, vacuum pump, condenser, fine filter, oil pump and so on. The vacuum pump will exhaust the air in the vacuum tank to form a vacuum, under the working of the oil supply pump (or negative pressure), and after the coarse filter is heated to 40-70°C into the vacuum tank, the oil in the vacuum tank is atomized into a spray, the dissolved water and gas in the oil quickly evaporated into a gas and was continuously discharged by the vacuum pump. The dehydrated and degassed oil is discharged into the fine filter by the discharge pump, and the fine particles of impurities are filtered out through the filter element.

For old transformer oil with excessive dielectric loss, a regenerative device can be selected.

4.2 Product Hydraulic Schematic Diagram



4.3 Main Product Parts List

NO.	Item	Function	Notes
MV01	Oil outlet valve	Control the oil output	
MV02	Oil inlet valve	Control the oil input	
MV03	Oil outlet valve	Control the oil output	Optional
MV04	Oil inlet valve	Control the oil input	Optional
MV07	Gas supplementation valve	Refill the air in the degassing chamber during shutdown or maintenance	
MV08	Vacuum valve	The equipment is used as a vacuum pump set to isolate the vacuum chamber	
MV09	Sampling valve	Sample the oil after treatment	
MV10~16	Drain valve	Empty vessel	
CV01~02	Check valve	One-way oil transmission to prevent the return of oil	
FL01	Primary coarse filter	Filter large particles of impurities	
FL02	Second-stage precision filter	Filter more than 3 μ m of impurities	
FL03	Third-stage precision filter	Filter more than 1 μ m of impurities	
FL04	Air filter	Filter out particles from the air	
SV01	Oil inlet solenoid valve 1	Level control valve	
SV02	Oil inlet solenoid valve 2	Level control valve	
LS01	Heating level sensor	Collect the heater level signal	
LS02	Liquid level sensor	Collect liquid level signal	
LS03	Liquid level sensor	Collect liquid level signal	
LS04	Condenser level sensor	Collect condenser liquid level signal	Secondary oil spray protection
PES	Foam level sensor	Collect foam level signal	Oil spray protection

PT01	Filter pressure sensor	Collect filter pressure signal	Optional
PT02	Vacuum pressure sensor	Collect vacuum pressure signal	Optional
TT01	Temperature sensor	Collected oil temperature signal	
WT01	Moisture sensor	Detect the moisture content of the oil	Optional
OM01	Flow meter	Detecting pump flow	Optional
PS01	Pressure switch	Oil pump discharge pressure high protection	
HT	Heater	Heat the oil to be treated	
P01	Vacuum pump	Primary vacuum extraction	
P02	Oil delivery pump	Drain the oil from the vacuum separation chamber	
P03	Roots pump	Two-stage vacuum extraction	
P04	Inlet pump	Controlled oil feed	Optional
Vacuum Chamber	Vacuum separation chamber	Remove the water and gas from the oil	
Cooling Unit	Condensing unit	Reduce the temperature of the gas entering the vacuum system	
Foam Eliminator	Supercharger defoamer	The foam is pressurized into oil	
VG01	Vacuum gauge	Show the vacuum degree of degassing chamber	
PG01	Pressure gauge	Display filter pressure	

4.4 Product Workflow

Oil tank→Oil inlet valve SV02 or SV04→Primary coarse filter FL01→Oil-feed pump P04→Heater HT→Solenoid valve SV01→Vacuum Chamber→(in two ways):
 Gas→Oil-gas separator→Condensing unit→Roots P03→Vacuum pump P01→Atmosphere;

Oil→Oil delivery pump P02→Second-stage precision filter FL02→Third-stage precision filter FL03→Oil delivery valve SV01 or SV03→Oil tank.

V、Product Main Configuration Table

No.	Item	Specification	Qty.	Brand/Country
1	Vacuum pump	40m ³ /h	1 SET	Domestic
2	Roots pump	250m ³ /h	L SET	Domestic
3	Oil drain pump	ST-40	1 SET	Kracht Tech
4	Oil drain pump motor	Y-90	L SET	Domestic
5	Coarse filter	A050	1 PCS	NingBo RuiGe
6	Primary fine filter	5μm	1 PCS	Domestic
7	Secondary fine filter	1μm	1 PCS	Domestic
8	High density heater	30KW	1 SET	Domestic
9	Inlet and outlet valves	DN25 Ball valve	2 PCS	Domestic
10	Solenoid valve	DN25/DN15/DN8	3 PCS	Domestic
11	PLC	GPU224XP	1 SET	Domestic
12	Touch screen	7寸	1 SET	Domestic
13	Electric		1 SET	DeLiXi
14	Liquid level sensor	GMF-80SL-2A2	3 PCS	Gee/TaiWan
15	Liquid level sensor	GMF-75SI-2A2	1 PCS	Gee/TaiWan
16	Pressure sensor	PK510	1 PCS	Airtag/TaiWan
17	Foam sensor	HPE-50	1 PCS	Domestic
18	Temperature transmitter	HF131	1 SET	Domestic
19	Pressure gauge	YN-60ZT	1 SET	ACUTEK
20	Vacuum gauge	ZN-60ZT	1 SET	ACUTEK