



Tongrui ZJA Double-stage High-efficiency Vacuum Transformer Oil Purifier



Application

Tongrui ZJA series is main used to improve the properties of insulation oil. It can remove trace water, gas, particulate matters etc. From the insulating oil effectively and rapidly so as to boost performance of transformers, circuit breakers, mutual inductors, cable and capacitors which has insulation system. ZJA series specialize in purifying branded oil, insulating oil of high voltage and super high voltage transformer. Additionally, it is suitable for treating low viscosity lubrication oil.



Description

Tongrui ZJA series utilizes coacervation technology, coalescing technology, separating technology and refined purification technology. To remove free, soluble water, carbon, free and dissolved gases and particulate matters from insulating oil effectively and rapidly.



Edges of ZJA

- ◆ To remove free, soluble water, carbon, free and dissolved gases and particulate matters from insulating oil effectively and rapidly.
 - ◆ Enhance the value of breakdown voltage greatly..
 - ◆ Easy handling and maintenance.
 - ◆ Inject oil into the transformers.
 - ◆ Online work
 - ◆ Lower maintenance and replacement expenses.
 - ◆ High efficiency and effectiveness.
 - ◆ Small size, light weight, low noise
 - ◆ Various sizes and configurations (shield) available.
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- ◆ Low maintenance and replacement expenses.
 - ◆ Low operation cost.
 - ◆ High regeneration rate.
 - ◆ Automatic reverse-washing system will extend the lifetime of filters and improve the performance of the filters.
 - ◆ High performance security system including pressure protection device and automatic temperature controller makes purifier operate safely.
 - ◆ Small size, light weight, low noise.

Structure

◆ Dehydration (Degas) System

- 1, The vacuum vessel can evaporation area efficiently. The heater, being placed on the vacuum vessel, becomes an evaporator. Thus the evaporation area of vacuum vessel is three times more than that of the general vacuum vessel. This innovation can dehydrate and degas effectively and efficiently.
- 2, The optimal structure of the dehydration (degas) system enlarges the surface area of oil exposed to the vacuum system and extends the flowing distance of the oil in the vacuum system. Thus there has sufficient time to remove the moisture and gas from the oil by vaporization.

◆ Filtering System (particulate matter removal)

- 1, The filtering materials with variable apertures are made of specialized glass fiber. The sizes of the filtering fiber and aperture dwindle gradually in the different filtering stages. The impurities with different particulate sizes are filtered step by step. The capability of removing particulate matters and impurities is improved greatly by this method.

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- 2, The filtering system has stable and perfect filtering fineness. The filtering fineness has several grades, including 1, 2, 3, 5, 6, 10 um etc. Oil $\beta \geq 1000$ after filter.
- 3, The filtering system is equipped with reverse rinse and filth device. It improves the effectiveness of filtering and extends the lifetime of filter awfully.

◆Oil heating System

- 1, The unique heater structure heats the oil uniformly.
- 2, Oil Heater System assures less than 1.0 w/cm². During the heating process, the deterioration of the oil caused by overheating is avoided.
- 3, The oil temperature can be adjusted between 20C to 80C. The heater is controlled manually or automatically. The heater will stop automatically when the oil temperature reaches a certain degree.
- 4, Being installed with safety protection devices, the heating system is secure and reliable. The heater will stop operation automatically when the oil volume of inlet is too low to avoid the damages of the heater.

◆Electrical Apparatus Controlling System

- 1, The main components of the electrical apparatus made by Schneider, Siemens and so on ensure the safety of the controlling system.
- 2, Having several protection systems which will avoid oil ejection, overload and over voltage etc.

◆Oil-level Controlling System

- 1, The oil-level floating ball or infrared liquid level automatic controller system are installed in the vacuum vessel to control the oil level so as to avoid the oil being suctioned into vacuum pump in the operation.
- 2, The new innovation of eliminating froth can avoid the oil being suctioned into vacuum pump.

◆High quality components

The main components parts of Tongrui products such as vacuum pump, oil pump and electric apparatus are from SIEMENS, LEYBOLD, OMRON, SCHNEIDER, HYDAC, TONGRUI, AMICO etc. It ensures TONGRUI products high quality and reliability.

Structure and Appearance options



◆ Stationary

No wheel, no pneumatic tyre. Mounted on base frame and covered steel frame. Installed on worksite.

◆ Mobile

Mounted on 4 wheels base frame and covered steel frame.

◆ Single axle trailer

Mounted on chassis with 2 pneumatic tyres, 1 pre-leg; covered steel shield. Air brake system, hand brake, rear lights, tow-eye etc.

◆ Double axle trailer

Mounted on chassis with 2 pneumatic tyres, 1 pre-leg; covered steel shield. Air brake system, hand brake, rear lights, tow-eye etc.

Instrumentation options

◆ Foam Level Detector

When there is foam in the tank and foam reaches a certain level (resetable), a signal will be sent to the magnetic valve, the magnetic valve will automatically shut on. The foam will be removed quickly. After removing foam, the magnetic valve will shut off.

◆ Digital Vacuum Gauge

Measure Scope: $1.0 \times 10^5 - 1.0 \times 10^{-1} \text{Pa}$

Display Type: Digital

Accuracy: $\pm 1.0\%$

◆ Digital Hygrometer

Measure Scope: 0—100PPM

Display Type: Digital

Output Singal: one is PPM, the other is temperature.

◆ Digital Flow Meter

Display Type: LCD

Mode: 1) accumulative total value 2) online flow value 3) accumulative total value for each time (reset adjustment)



◆ Breakdown Voltage Tester

Printer output

Input voltage: AC 220v

Output voltage: AC 0—80kv

Voltage rising rate: 2kv/s \pm 10%

Test precision: 1.0grade

Test times: 1---9, stirring time: 0---99seconds, stewing time: 0---9 minutes 59 seconds

Misc option

Oil hose

Power cable

Special option

Misc option

◆ Pre-filter

Utilizes a 50-80 mesh strainer to remove any large particles

◆ Electric heater

Oil Heater System assures less than 1.0w/cm². During the heating process, the deterioration between 20C to 80C. The heater is controlled manually or automatically. The heater will stop automatically when the oil temperature reaches a certain degree. Being installed with safety protection devices, the heating system is secure and reliable. The heater will stop operation automatically when the oil volume of inlet is too low to avoid the damages of the heater.

◆ Vacuum chamber

Utilizes coacervation technology, coalescing technology, separating technology and refined purification technology. To remove free, soluble water, free and dissolved gases. The oil-level floating ball or infrared liquid level automatic controller system are installed in the vacuum vessel to control the oil level so as to avoid the oil being suctioned into vacuum pump in the operation. The new innovation of eliminating froth can avoid the oil being suctioned into vacuum pump.

◆ Oil cooler

Connected to between vacuum chamber and the roots pump, the vacuum pump to avoid oil entering roots pump and vacuum pump. Secondly, to cool the heated air.

◆ Oil discharge pump

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Featuring high suction capabilities removes oil from the processing chamber and discharges the oil through a filter before it is directed either through the discharge port or is re-circulated within the system.

◆ **Fine Filter**

Oil receives its final “polishing” treatment by passing through a high performance element. The filter is rated to capture 99.5% of particles from 5 to 10 micron absolute.

◆ **Sampling probe**

Two (2) sampling probes shall be provided, one for the incoming oil and one for the processed oil.

◆ **Inlet & discharge valves**

Manual valves are provided for the inlet and discharge connection.

◆ **Manual re-circulation valve**

One manual valve is provided for re-circulation purposes.

◆ **Transformer dry-out connection**

One transformer dry-out connection.

◆ **Control panel**

Instrumentation, alarms & interlocks instrumentation & electrical controls are located in NEMA 12 type enclosure. Several pilot lights are provided to indicate operational status (on/off) of key components and alarm conditions.

Guarantees & documentation

TONGRUI warrants the plant supplied under this specification against defects in material and workmanship under normal use and service for a period of sixteen (16) months from date of shipment or twelve (12) months after the start up of the system. TONGRUI’s obligation under this warranty is limited to repairing or furnishing, without change F.O.B. point of manufacture, a similar part to replace any part, which was proven to be defective within warranty period. TONGRUI shall not in any event be held responsible for any indirect or consequential damages. The performance guarantee will be within limitations as detailed in duty & performance paragraph of this specification.

Two (2) copies of operating & maintenance manuals are supplied with each purifier. These systems are designed to operate with the utmost simplicity and is required, please contact TONGRUI for additional charges.



◆ Mobile mounted on 4 wheels base frame and covered steel frame





Specification of Machinery

Item	Unit	ZJA-10	ZJA-30	ZJA-50	ZJA-100	ZJA-150	ZJA-200	ZJA-300	
Flow Rate	L/H	1000	1800	3000	6000	9000	12000	18000	
Vacuum Range	MPa	-0.092----0.099							
Max Vacuum Range	Pa	<=50							
Working Pressure	MPa	<=20							
Temperature Range	C	45-65							
Water Contact	PPm	<=4							
Gas Contact	%	<=0.1							
Breakdown Voltage	Kv	75							
Power Supply	V	-20Hz 380V (or as needed)							
Working Noise	dB	<=72				<=78			
Heating Power	Kw	30	30	48	90	120	180	240	
Total power	Kw	30	33	52	5	126	186	248	
Inlet(Outlet)Diameter	Mm	DN25	DN25	DN32	DN40	DN60	DN65	DN65	
Net Weight	Kg	300	350	480	750	750	1250	1420	
size	Length	Mm	1300	1500	1500	1900	1900	2400	2600
	Width	Mm	1000	1100	1250	1400	1400	1700	1800
	Height	Mm	1500	1750	1750	1900	1800	1900	2000



Our products as follows :

1. Insulating oil purifier

- 1.1. Series ZJB: Tongrui vacuum insulation oil purifier
- 1.2. Series ZJB-A: Tongrui Vacuum insulation oil automation purifier
- 1.3. Series ZJB-R: Tongrui vacuum insulation oil regeneration purifier
- 1.4. Series ZJA: Tongrui Double-stage vacuum insulation oil purifier
- 1.5. Series ZJA-A: Tongrui double-stage vacuum insulation oil automation purifier
- 1.6. Series ZJA-R: Tongrui double-stage vacuum insulation oil regeneration purifier
- 1.7. Series ZJA-M: Tongrui Mobile Type Transformer Oil Purification Plant, Oil Recycling

2. Turbine oil purifier

- 2.1. Series ZJC: Tongrui vacuum turbine oil purifier
- 2.2. Series ZJC-R: Tongrui vacuum turbine oil regeneration purifier
- 2.3. Series ZJC-A: Tongrui vacuum turbine oil automation purifier

3. Lubricating oil purifier

- 3.1. Series ZJD: Tongrui vacuum lubricating oil purifier
- 3.2. Series ZJD-R: Tongrui vacuum lubricating oil regeneration purifier
- 3.3. Series ZJD-M: Tongrui vacuum lubrication oil automation purifier
- 3.4. Series ZJD-F: Tongrui Oil Purifier for Fuel oil, Light oil and Vegetable oil

4. Portable Mini Oil Purifier and Oiling Purifier

- 4.1 Series YL Tongrui Portable Mini Oil Purifier and Oiling Purifier
- 4.2 Series YL-V Tongrui Vegetable Oil Purifier

5. Engine oil purifier

- 5.1. Series NRC Tongrui engine oil purifier
- 5.2. Series NRF Tongrui engine oil recycling plant
- 5.3. Series NRY Tongrui engine oil recycling plant

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