

## Series ZY High Effective Single-stage Vacuum Transformer Oil Purifier/ Dehydration Plant

### IT FILTERS & PURIFIES :

- TRANSFORMER OIL
- INSULATING OIL
- CABLE OIL
- DIELECTRIC OIL
- MUTUAL INDUCTOR OIL
- SWITCHGEAR OIL



- MULTI-STAGE FILTRATION
- HEATING
- VACUUM DEHYDRATION
- DRYING
- DEGASSING
- PARTICLES REMOVAL
- OIL FILLING
- VACUUM PUMPING/ TRANSFORMER EVACUATING
- DIELECTRIC STRENGTH IMPROVING

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# WHO WE ARE

- ◆ **Fuoootech Oil treatment Group** is one of largest R&D based high-tech group engaged in designing, developing, manufacturing and exporting various vacuum oil/fluid purifiers, oil treatment system, oil regeneration machine , transformer evacuation system, dry air generator, electrical testing equipment and oil testing kits for various industries for more than 18 years, helping clients all over the world solve various oil problems.
- ◆ **Fuoootech** develops custom solutions for virtually any application involving industrial oil management. With **Fuoootech** oil management systems, oils can be re-used indefinitely, thus drastically reducing new oil purchasing and waste oil disposal, protecting environment, and improving productivity for industries to be more competitive in the global economy.
- ◆ Nowadays, the company's sales and service network covers all the provinces of China and exports to more than 118 countries. Our products are more and more popular in domestic market and international market based on High quality, advanced technology, competitive price and excellent before & after sales service, as well as continuous technical supports.
- ◆ **Fuoootech**'s oil treatment systems & oil testing kits are extensively used in the fields of electrical power, power station, power transmission, power generation, Petrochemical, petroleum, Paper and Pulp, compressor, mechanical manufacture, steel mills, electrical utilities, engineering contractors, metallurgy, railway, aviation etc. which are consuming various oils. More than 100 standard models are offered to different clients and also can be customized according to actual need of oil solutions in different areas.





# PRODUCT INTRODUCTION & FEATURES

## Introduction

- ◆ As is well known the Transformer plays an important role in the generation, transmission and distribution of electrical energy. Under load the transformer, dissipates heat and the insulating oil acts as a coolant as well as an effective dielectric.
- ◆ Due to the highly hygroscopic nature of the transformer oil, it absorbs moisture from windings, which leads to gradual deterioration of dielectric strength. Also there are some waste impurities, gas contents in the transformer oil which destroy the oil's quality.
- ◆ ZY Series portable single-stage vacuum transformer oil purifier is mainly designed for the power station, industrial and mining enterprises purifying the unqualified transformer oil when power transformer below 110 kV, mutual inductor oil, switch oil and so on.
- ◆ ZY Series can remove liquid water, trace water, gas, particles from oil quickly and effectively, improving oil dielectric strength and makes sure electrical equipment work safely.
- ◆ This is accomplished by the use of high vacuum degasification technology and particulate filters combined with our special brand of earth. After treating, the oil can be reused as new.
- ◆ Also, this oil purifier can be used to power equipments to vacuum drying, vacuum oiling, and vacuum pumping.

## Features

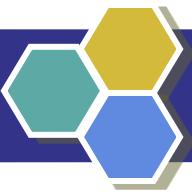
- ◆ Duplex 3D stereo-evaporation, efficient oil film sprayer, eliminating the liquid water quickly, increasing separating size and separating time to ensure the dry-level and dielectric strength improving greatly.
- ◆ Advanced Multi-stage precision filtration system, stainless steel materials filtration combined with molecular adsorption filtering technologies, remove different sizes of impurities and particles thoroughly.
- ◆ UK G technology by which the trace water that is show chain, such as dissolved water, can be removed effectively.
- ◆ Efficient electric carbon fiber infrared heating system, heating uniformity, less power consumption, safe, and reliable.
- ◆ Double-infrared liquid level sensor, pressure protective system to ensure machine operation easy and safely.
- ◆ Adopt interlocked protective system, which connect oil pump, heater and liquid level sensor, avoiding blank heating, blank pumping, oil leak and electricity leak. If there is any fault, machine will be power off automatically.
- ◆ Fully automatic temperature controlling system, digital type temperature gauge and temperature sensor, monitoring and controlling oil's actual heating condition and temperature.
- ◆ Low maintenance cost and time, simple operation and maintenances.
- ◆ Based on different working needs, PLC, Fully enclosure, mobile trailer, explosion-proof, and other types can be designed.
- ◆ Small volume, light weight, easily movable, low maintenance cost and time.



# TECHNICAL SPECIFICATION

Parameters	Unit	ZY-6	ZY-10	ZY-20	ZY-30	ZY-50	ZY-100	ZY-150	ZY-200	ZY-300
Flow rate	LPH	360	600	1200	1800	3000	6000	9000	12000	18000
Working vacuum	MPa					-0.06 ~ -0.095				
Working pressure	MPa	≤0.4	≤0.4	≤0.4	≤0.4	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
Working without Trouble	H					4000				
Continuous Working	H					150				
Temperature range	°C					20 ~ 80				
Power supply						380V, 60Hz, 3 phase (or as per your requirements)				
Working noise	dB (A)	50	61	63	70	70	70	70	70	70
Heating power	KW	7	8.25	9.75	13	18	24	28	30	48
Total power	KW	8	9	10	16.5	20	27	30	37	50
Inlet/outlet caliber	mm	φ22	φ25	φ25	φ25	φ32	φ40	φ50	φ50	φ60
Weight	Kg	105	150	200	260	300	400	450	550	600
Size	L	mm	900	1050	1050	1100	1200	1450	1600	1800
	W	mm	630	750	750	800	950	950	1100	1200
	H	mm	1180	1350	1350	1400	1500	1650	1800	1900

The dimension and weight will be changed with changing of technical specs. FUOOTECH reserves the rights to any upgrading without notification.



# OIL RESULT AND WORKING PRINCIPLE

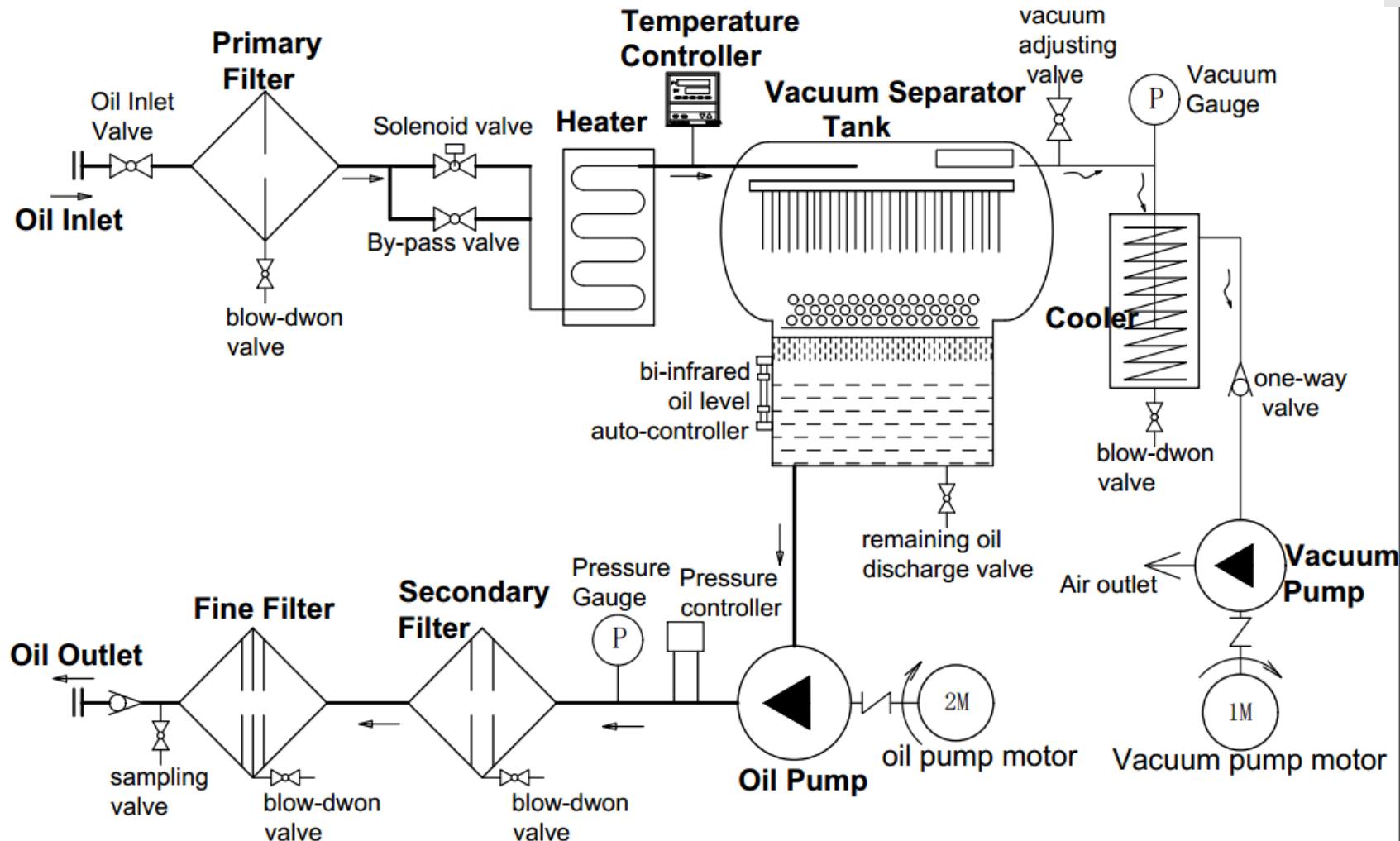
## Oil Result Before and After Treatment

Parameter	Non-treated Oil	After Treatment
Moisture (Water Content)	$\geq 100 \text{ ppm}$	$\leq 5 \text{ PPM}$
Gas Content	10%	$\leq 0.1\% \text{ (Vol)}$
Impurities Degree (Filtration precision)	1%	$\leq 5 \text{ micron (no free carbon)}$
Breakdown Voltage (Dielectric)	20 kV	$\geq 65 \text{ KV}$
Flash Point	70	$\geq 130^\circ\text{C}$
Cleanliness	NAS 1638 Grade 10	$\leq \text{NAS 1638 Grade 6}$

## Working Principle

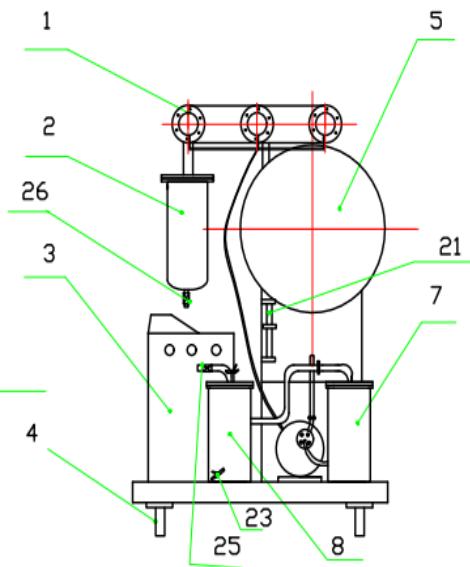
The oil is injected in the primary filter through oil inlet valve, when the oil purifier starts working. The big impurities are purified, and the oil including particles released into vacuum tank after heating. Under the low vacuum pressure and deaeration element, the vapor is separated from oil and vaporized quickly then condensate into water by cooler or drained away by vacuum system. The oil without any water is transferred into secondary filter and precision filter through oil pump then is eliminated all impurities. At last, we get the purified oil.

# FLOW CHART OF SERIES ZY

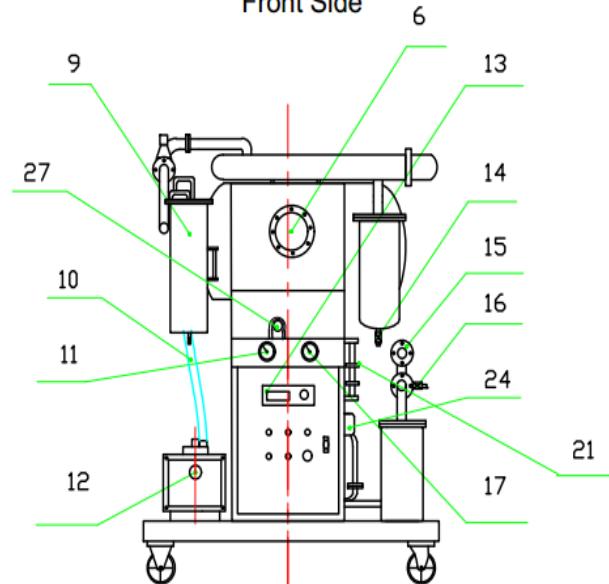


# STRUCTURE DIAGRAM OF SERIES ZY

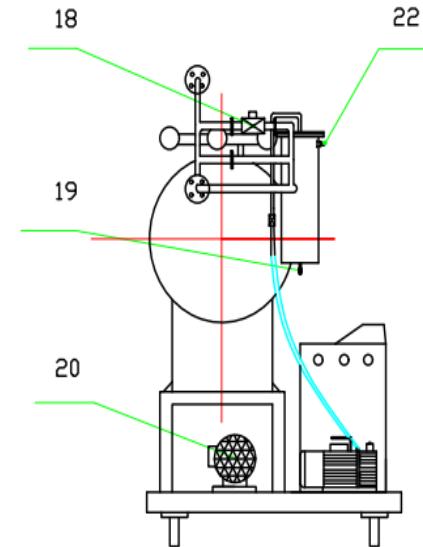
Right Side



Front Side



Left Side



- 1、Heater 2、Primary Filter 3、Electrical Control Box 4、Wheels 5、Vacuum Separator Tank 6、Observation hole 25、Oil Outlet
- 14 & 26、Oil Inlet 7、Secondary Filter 8、Fine Filter 9、Cooler 10、Vacuum Connection pipe 11、Vacuum Gauge 12、Vacuum Pump
- 13、Temperature Controller 15、Flange 16、Sample Valve 17、Pressure Gauge 18、Solenoid Valve 19、Discharge Water Valve 20、Oil Pump 21、Infrared Oil-Level Controller 22、Vacuum Adjusting Valve 23、Blow-down Valve 24、Pressure Controller 27、Alarm



# MAIN ADVANCED TECHNOLOGIES

## Unique Dehydration (Degas) System

- ◆ We adopt Duplex 3D stereo-evaporation technology whose the evaporation area is three times more than that of normal evaporation technology. This innovation can dehydrate and degas effectively and efficiently.
- ◆ Meanwhile, we bring in UK G technology from Japan which eliminates the kinds of trace water content and dissolved water thoroughly so as to increase the breakdown voltage and anti-pressure value enormously, ensure the transformer oil can be used in high level transformer normally.
- ◆ Sight Glass installed for observation of oil evaporation and oil flow level.
- ◆ Effective vacuum adjusting valve is designed specially for adjusting suitable vacuum degree inside of vacuum chamber according to actual operation condition.
- ◆ Blow-down valve and safety valve equipped for necessary operation while use.

## Distinctive Filtering System

- ◆ The filtering system, which is combined double FH trapezoidal network with H.P.M high molecule polymer material absorbing, distinctively remove more than 99% of various impurities and particles. It improves the effectiveness of filtering and extends the lifetime of filter awfully.

### A: First-stage Filter

- ◆ Made of Stainless steel material, Double FH trapezoidal network filtering technology, it removes particles and impurities down to 80 microns.

### B: Second-stage Filter

- ◆ Made of Stainless steel material, Double FH trapezoidal network filtering technology, it removes particles and impurities down to 20 microns.

### C: Fine Filter:

- ◆ Made by High Polymer Materials and imported from Germany, thorough demulsification and separate water from the waste oil, it removes particles and impurities down to 5 microns, making oil clean.
- ◆ Also other filters can be designed to install on the machine according to customer's actual requirements.



# MAIN ADVANCED TECHNOLOGIES

## High performance of Vacuum pump system

- ◆ High performance vacuum pump system keeps oil filtration machine operation with high performance at the high vacuum status.
- ◆ Series ZY has a high quality of rotary vane vacuum pump, keep the machine's filtration jobs at high vacuum degree, and meanwhile pumping air out from the transformers is also available. Its works can be customized according to the actual operation condition and client's requirements.
- ◆ Rotary vane vacuum pump can be chosen as Germany Leybold Vacuum Pump Brand with much higher quality and low noise as option.

## Electrical Control System & Control Panel (Cabinet)

- ◆ Electrical control system is one of the most important parts for oil filtration machine, which control and protect the whole filtration process, keeping danger away from operators.
- ◆ All the electrical parts are chosen and compared by our professional electrical engineers from hundreds of brands products, currently we mainly choose CHINT and Germany Schneider brands. And the wiring & installation of electrical parts are well designed according to operators' operation habit.
- ◆ All Electrical Control Gear, Mains Isolating Arrangement, Starters, Contactors, Fuses, Relays, Indicating Lamps and Interlocking, etc... are well housed in a Compact Control Cabinet, as well as the lights, pushing buttons, vacuum gauge, pressure gauge, temperature controller screen, indicators, etc.. are also well installed on the control panel.
- ◆ German 3UG3 Relay keep the machine safe working efficaciously at any situations such as power off, lack of phase, wrong phase position, etc...
- ◆

## Carbon Fiber Infrared Oil Heating System

- ◆ Heating by Carbon fiber infrared heating system which is the most advanced heating technology, the unique heater structure heats the oil uniformly and easily controlled, it gives out the heat quickly (in 3 seconds after power on) and Efficiency of electricity transforming to heat is very high (more than 98%).
- ◆ Oil Heater System assures less than 1.0 w/cm<sup>2</sup>. During the heating process, the deterioration of the oil caused by overheating is avoided. The oil temperature can be adjusted between 0 ~ 100°C. 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.
- ◆ The material is good at oxidation resistance at high temperature and can be used for more than 10 years.



# MAIN ADVANCED TECHNOLOGIES

## Double-infrared fluid level auto-control system instead of oil-level controlled by manually and float valve

- ◆ Double-infrared fluid level auto-control system is installed in the vacuum vessel to control the oil level automatically so as to avoid the oil leaking in the operation. It can help machine working continuously for 150 hours even online without worker monitor. The new innovation of eliminating froth can avoid the oil ejecting and gushing during the process.

## High Quality components

- ◆ The main component parts of our products such as vacuum pump, oil pump and electric apparatus are from SIEMENS, ABB, SCHNEIDER, FUOOTECH and AMICO etc. Kinds of brands are optional according to customer's specific requirement. It ensures our products high quality and reliability.
- ◆ Some extra components are available to install on our oil filtration machine as per client's requirements, such as flow meter, PLC, hooks, doors, covers, alarms, special Logo, etc...

## Structure and Appearance of Oil purifier

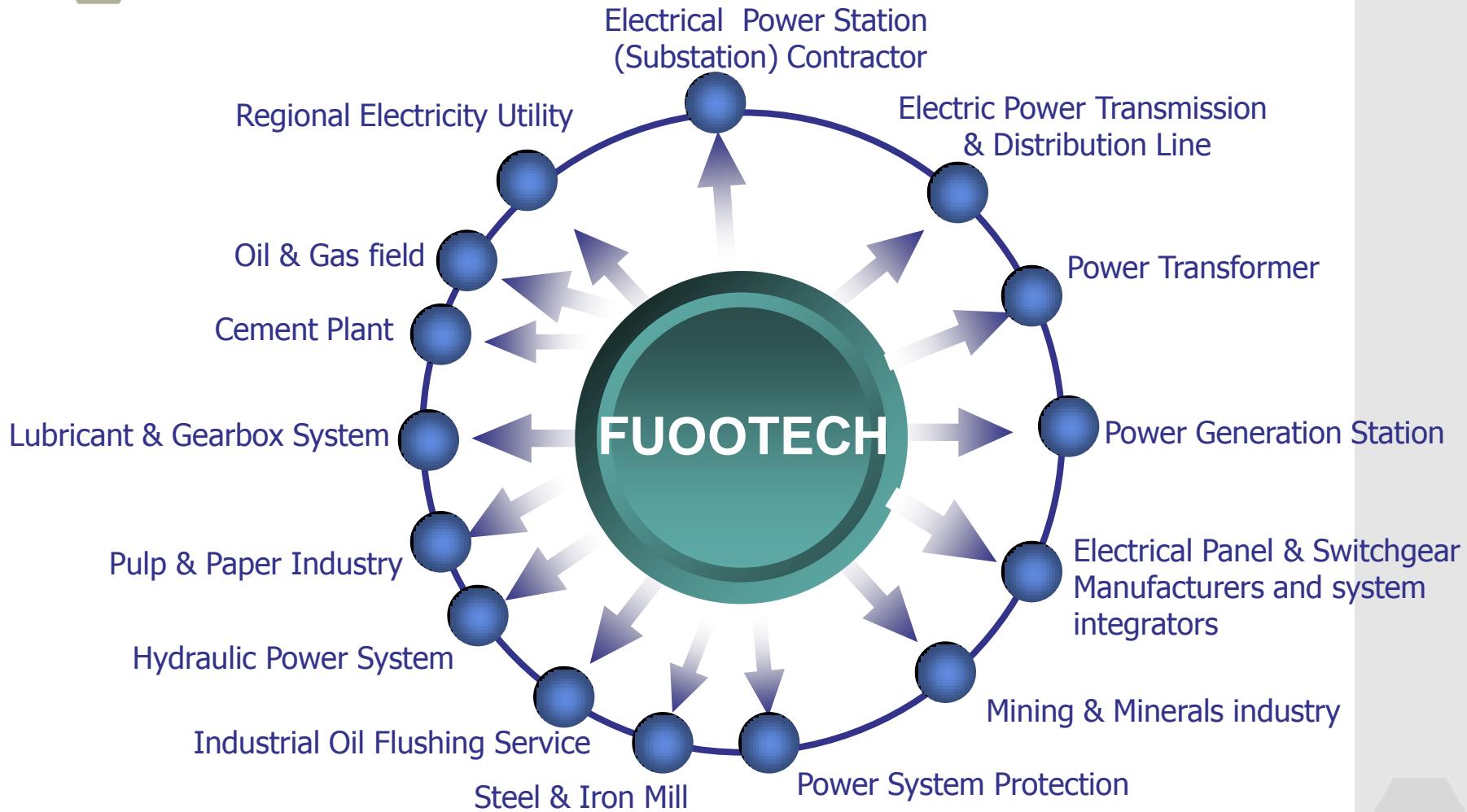
- ◆ Our products adopt ship-shape chassis-mount structure to ensure oil leak proof and protect the environment from pollution. The whole equipment is characterized by small size, light weight and convenient to move around.
- ◆ Available in mobile option, immovable option and trailer, etc...  
Oil purifier can be made in hermetical, canopy-covering, open and frame style, etc...  
Color of the oil purifier can follow customer's favor.
- ◆ Available in installing PLC controller for making machine operation Fully-automatically
- ◆ Equipped with Explosion Proof Materials when the machine is used in hazardous areas is optional

## Cooler, Dielectric Condensation System

- ◆ The system is composed of cooler, condenser, water receiver etc
- ◆ The vapor and other gas, which is evaporated from vacuum separator, first drop in temperature and are rid of moisture in dielectric condenser whose decalescence medium changes water vapour changes to liquid water quickly, then are condensed again in cooler.
- ◆ The reductive condensed water is discharged by water receiver. The dry gas, which are condensed and rid of moisture twice, are discharged to air by vacuum pump so that it protects vacuum pump.



## THE INDUSTRIES WE ARE INVOLVING AND SERVICING



More other industries are also not listed here, but also involved



## FUOOTECH'S PRODUCTS ARE FILTERING, PURIFYING, REGENERATING

- ◆ **Insulating Oil**
- ◆ **Lubricating Oil**
- ◆ **Cable Oil**
- ◆ **Industrial Oil**
- ◆ **Transformer Oil**
- ◆ **Turbine Oil**
- ◆ **Vacuum Oil**
- ◆ **Transmission Oil**
- ◆ **Dielectric Oil**
- ◆ **Mutual Inductor Oil**
- ◆ **Switchgear Oil**
- ◆ **Circulating Oil**
- ◆ **Compressor Oil**
- ◆ **Cutting Oil**
- ◆ **Gear Oil**
- ◆ **Heat Transfer Oil**
- ◆ **Hydraulic Oil**
- ◆ **Cooking Oil (UCO)**
- ◆ **Fire Resistant Hydraulic Oil**
- ◆ **Engine Oil**
- ◆ **Coolant Oil**
- ◆ **Quench Oil**
- ◆ **Soluble Coolants**
- ◆ **Rolling Oil**
- ◆ **and more ...**





# BENEFITS FROM FUOOTECH'S PRODUCTS

- ◆ Removes Dissolved Moisture from Transformer Oil
- ◆ Reduces combustible gases and oxygen
- ◆ Improves oil dielectric values
- ◆ Improves transformer power factor
- ◆ Extends oil service life
- ◆ Extends transformer service life and reliability
- ◆ Protect transformer, power station, power plants
- ◆ Zero disposal of waste oil
- ◆ Eliminate new oil purchases and reduce oil inventories
- ◆ Keep equipment working more efficiently
- ◆ Protect machinery and reduce maintenance time
- ◆ Create a cleaner environment
- ◆ Extended lubricant life
- ◆ Minimized "stick-and-slip" of bearings and gears
- ◆ Less wear on servos and O-rings
- ◆ Reduced machine downtime
- ◆ Less equipment maintenance
- ◆ Significantly reduced overall costs
- ◆ Cost savings from fewer oil changes, less associated labor
- ◆ Eliminate oil changes by always keeping oil like new
- ◆ Fuel consumption savings through increased engine efficiency
- ◆ Extend engine life with resultant increased times between major overhauls and reduced capital expenditure to replace damaged equipment
- ◆ Win profits from our oil purifier machines when you resell or rent to others



"We're saving over \$150,000 a year, and reclaiming almost 100% our oil — our disposal bills are almost nothing. Plus, our employees are happier!"

Purify your waste oil — it's money in the bank.





# FUOOOTECH'S OVERSEA PROJECTS & TRAINING



South Africa



Pakistan



Saudi Arabia



Tanzania



Bangladesh



Malaysia



Cambodia



Dubai, UAE



Zambia



Nigeria



Laos



Zimbabwe

More projects are not listed here

[www.fuoootech.com](http://www.fuoootech.com)



# TECHNICAL SUPPORTS & AFTER-SALE SERVICES

- ◆ **FuooTech Oil Filtration Group** has a professional after-sales service team, We are in the spirit of "high quality, excellent service, create first-class brand" and base on the principle of "quality equipments, reasonable price and warm-heat service". we can provide our customers free installation and adjustment of machine, free training and two years warranty from final acceptance.
- ◆ During warranty period, if the purchaser discovers defects in workmanship and or material and so notifies the supplier promptly in writing, we have the responsibility to dispatch the technician and provide supplementary accessories within twenty days from the date of receipt of written notification from the purchaser.
- ◆ We will provide 24-hour one-stop service to ensure that we can deal with customer issues in first time
- ◆ Service target: Always to provide customers with satisfactory service.
- ◆ We also provide OEM & ODM Service & Solutions to your specific needs according to the actual market plan. Please Contact Us for more details.
- ◆ 7\*24 Technical Supports and After-sale services are also available for all clients.
- ◆ We also provide the professional installation, commissioning, training services for customers at their working site.
- ◆ Technical Upgrade and improvement are also belongs to our experienced services.
- ◆ For more services, please don't hesitate to contact us. We will provide you the best solutions.





## CONTACT US



Thank You!  
LOOK FORWARD TO  
COOPERATING WITH YOU!

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