



FUOTECH OIL FILTRATION GROUP LIMITED

Vacuum Lubrication Oil Filtration Machine Series TYA

Specially for Hydraulic Oil, Gear Oil, Lube Oil, Compressor Oil, Coolant Oil, Quench Oil



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I. Company Profile

FuooTech Oil Filtration Group Limited is a leading oil purifier manufacturer in China, which engages in developing, producing, selling a series of oil purifier such as transformer oil purifier, turbine oil purifier, engine oil purifier, lube oil purifier and so on. We practice in this line for eight years, so we have a strong technology and gain rich experience. Our products have been exported to many countries, and get a high reputation.

Since the foundation of our company, under the duty of devoting our efforts to develop the advanced purifier for saving energy sources, adopting the advanced management like SUBI, and with the reliance on the strong technical force, advanced equipments of production, perfect quality check method, fast and outstanding after-sales service, our company has developed into a national big base specialized in producing oil purifier. Our products are outstanding because of its excellence in quality, stability in service, and diversity of products.

FuooTech Oil Filtration Group Limited owns a number of national-class oil purifier experts and experienced engineers. Encouraged by the company's modern management mechanism, we have developed six big series, including hundreds of models oil purifier equipments which have the independent property right and advanced filter technology. Those equipments can be applied to many fields, such as the electric power, petroleum chemical, metallurgical industry, mine, aviation, shipping and railway, and so on.

We adhere to the tenet of mutual-benefit and both-win. With the sincere and pragmatic work attitude, we would like to open up new Sci &Tech oil purify era with our customer.

II. Application and Features

Application

This oil filtration system is special for purifying all kinds of lubricating oil, gear oil, hydraulic oil, motor oil, mechanical oil, transmission oil, diesel oil, gasoline oil, waste vegetable oil, waste tire pyrolysis oil, heat treatment oil and so on.

[This machine can rapidly remove water content, gas content, dirt, sludge, particulates and the other waste residues from used oils](#), so as to make the oil to meet customer's requirements and to be reused as new oil's quality.

Features

1. With the strong ability to filter the impurity, which can filter the particles completely.
2. With the strong ability of breaking emulsification, remove the free water and dissolved water content.
3. Advanced dielectric condensation device
4. This machine installs the new pressure protector, which can control the temperature automatically; also it can drain water on line by the water-separator device. So it is easy to control this machine.
5. We adopt the high quality filter materials, which has a good function in anti-corrosive, thermostable, mechanical strength. Especially, the precision of eliminates impurity is high and the service life is long. Also, it has a large volume for storing the impurities.
6. The unique degas and dewater system: Using the Stereo-Evaporation technical, which can separate the water and gas from the oil quickly by the Multi-level water-oil separation technology.

Advantages

[This oil filtration system can fast degas, dewater, and remove the impurity and the volatile matter](#) (for example



ethyl alcohol, gasoline, ammonia and so on). Enhances the oil quality and improves the operational performance. The machine is suit for many lines, such as the mine, metallurgy, electric power, transportation, manufactures and so on.

III. Working Principle and Structure

1. Working Principle

When it starts working, the used oil will be poured into the heater to heat under the vacuum pressure, then the heated oil enter into the primary filter which will eliminate the big impurities, then the oil enter into the vacuum separator the oil will flow the special radiation device, which make the unit/volume oil to produce a large surface area, lets the pollution oil exposure in the low humidity atmosphere, thus the water, air and gas can be eliminated. The treated vapor and gas form the gaseous mixture becomes the liquid through the water tank and the chiller condensation, then the liquid enters water receiver together, the vacuum extracts the surplus gas.

The oil which is drained away water flow into precision strainer where can exhaust particulates (oil purification). According the quantity of the water content, a whole purification needs many times circulation to drain away the water.

2. Flow Chart

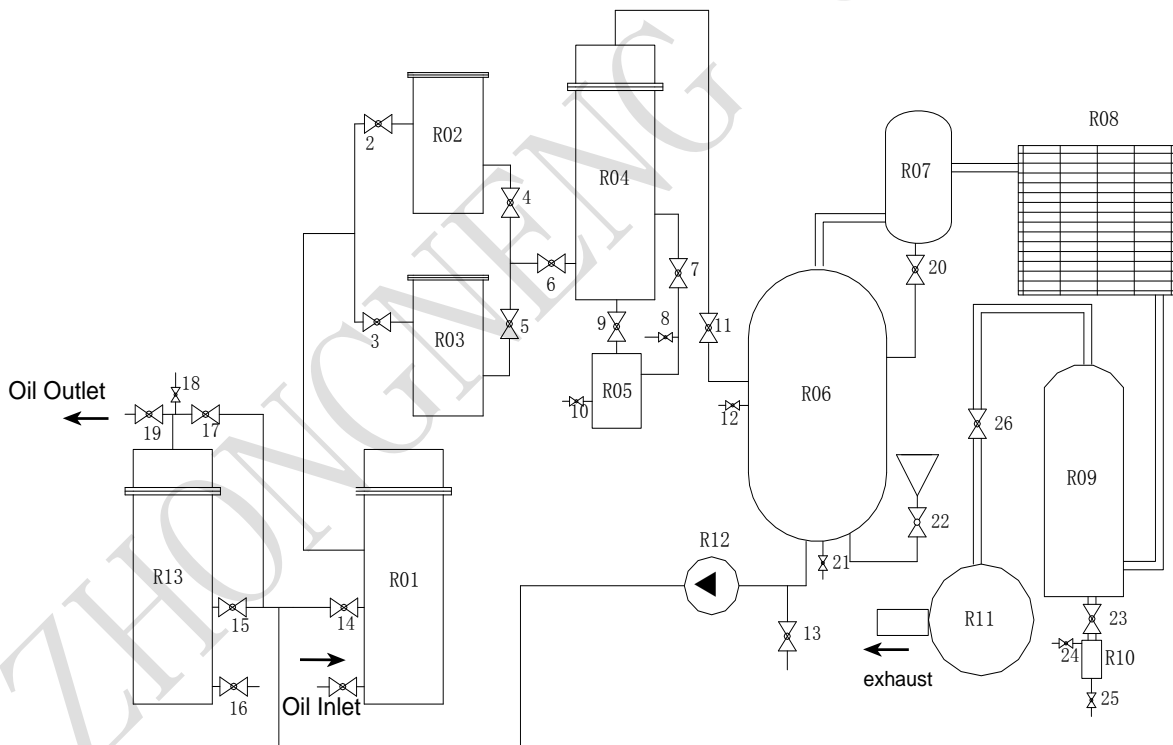


Chart 4 TYA Series Flow Chart

1-26 Control Valve, Sampling Valve, Blowdown Valve

R01、Heater R02、Primary Filter R03、Second-stage Filter R04、Water Separation Filter R05.R10、Water Receiver R06、Vacuum Separator R07、Foam Destroyer R08、Air Forced System R09、Cooler R11、Vacuum Pump R12、Oil Pump R13、Fine Filter



IV. TECHNICAL SPECS

Item	Unit	TYA-10	TYA -20	TYA -30	TYA -50	TYA -100	TYA -150	TYA -200	TYA -300
Flow rate	L/HR	600	1200	1800	3000	6000	9000	12000	18000
Vacuum degree	Mpa	-0.06 ~ - 0.095							
Working pressure	Mpa	≤0.4							
Temperature Control Range	°C	0 ~ 100							
Operation Temperature	°C	50 ~ 70							
Demulsification	Min	New oil≤15min, running oil≤30min							
Power supply		380 VAC, 50 Hz, 3 Phase (or as per required)							
Working noise	DB (A)	≤ 65 ~ 90							
Electric heating power	KW	18	24	26	30	48	60	96	135
Total electric power	KW	19.3	25.3	27.6	32.6	56	69	106.5	147
Inlet (outlet) caliber	mm	Φ25	Φ25	Φ25	Φ32	Φ42	Φ50	Φ50	Φ60
Size	mm	1500 x1000 x 1200	1550 x1050 x1600	1600 x1050 x1650	1600 x 1150 x1700	1750 x1250 x 1850	1900 x1600 x1950	1900 x1700 x2000	2100 x1700 x2100
Weight	Kg	450	550	600	750	850	1000	1200	1500

The dimension and weight will be changed with changing the technical specification

V. Oil Data after Purification

Moisture (water content)	≤100 PPM (remove 100% of free water and 99% of dissolved/ emulsified water)
Gas Content	≤0.01%
Suspended Particles (Filtration precision)	≤ 5 micron
Demulsification	New oil≤15min, running oil≤30min
Cleanliness	≤NAS 1638-Grade 5



VI. Machine's 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.

● High-tech Demulsification

The quality of the lubricating oil purifier depends on the technology of breaking emulsification by the machine, if the machine cannot break the emulsification, it cannot dewater at all.

Many traditional factories usually adopt two methods to solve this problem, one is to add the Emulsion-breaking agent or use the glass fiber cotton. But there are two defects by adding the emulsion-breaking agent: One is to damage the oil, the other one is that the oil will be emulsified again after putting the emulsion-breaking agent.

Although it can break the emulsion by using the glass fiber cotton, the emulsion-breaking filter's life will be short and changed more often because of its easy-blocked disadvantage.

Our company adopts **H.P.M high molecule polymer material** of breaking emulsion, it contains a large number of active elements of free verse polymer materials, these free verse polymer materials can directly go into the emulsion oil emulsified oil will be cut off of molecular chain, separate the Oil molecules and water molecules, it easily solve the problem of emulsion. And it won't damage the oil, and use repeatedly without exhausting any supplies.

● Distinctive Filtering System

The filtering system, which is combined double FH trapezoidal network with **H.P.M high molecule polymer material absorbing for demulsification**, distinctively remove various impurities, particles and water content. The filtering system owns back flush function to clean the filters and clear the impurities automatically. 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: Coalescence & separation Filter

Made by lignocellulose and imported from Italy, separates and removes 100% of free water and 99% of dissolved / emulsified water in the waste oil directly and effectively.

D: 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.

● Safe Electrical Apparatus Controlling System & German 3UG₃ Relay



All brands (made in China, in Siemens, etc...) of the main components of the electrical apparatus are available to customers, ensure the safety of the controlling system. Having several protection systems which will avoid oil ejection, overload and over voltage etc...

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 Heating System assures less than 1.0 w/cm². 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.

- **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, Zhongneng and AMICO etc. Kinds of brands are optional according to customer's specific requirement. It ensures our products high quality and reliability.

- **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.

VII. Use Instruction

- a) The temperature range in working is between $-20\sim 45^{\circ}\text{C}$.
- b) The altitude of the work point can affect the vacuum degree of the machine. The altitude is higher, the vacuum degree is lower.
- c) The used oil should not be too dirty (there are many impurities), or else must use other filter device to filter firstly (for example: JI series portability purifier) in order to avoid the effect of dehydrates, degas or jam the filter parts.

VIII. Maintenance

1. after a certain period of running, the machine should be checked to see whether:

- a) The electrical control system is safe and reliable;
- b) The temperature controller is sensitive, reliable and accurate;
- c) Oil seals of the pump shaft are broken with leakage;
- d) There is any blockage with the running system and any abnormal noise with pumps or related motors;
- e) There is any air or oil leakage with the oil running system and at sealing joints.

2. after each 3000 hours' running, grease shall be replenished to prevent motors from being burnt.

3. Special vacuum pump oil or lubricating oil N46 should be used fro the vacuum pump and oil replaced or replenished if necessary at any time.

4. If the machine will not be used over 1 month, Place the machine in a dry environment with the panel door and all valves closed, and the machine proper protected by a covering.

IX. Warranty Period

FuooTech Warrants the plant supplied under this specification against defects in material and workmanship under normal use and service for a period of 16 months from date of shipment.

FuooTech's obligation under this warranty is limited to repairing or furnishing, without charge F.O.B. point of manufacture, a similar part to replace any part(except filter), which was proven to defective within warranty period.

FuooTech will not in any event be held responsible for any indirect or consequential damages.



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