AKFEN MUHENDISLIK

High-Tech Oil Recycling

Product Catalog

About Us

Akfen Engineering carries out turnkey projects in domestic and abroad for the establishment of crude oil refineries, waste oil recycling facilities and mineral oil facilities. (Europe, Arab countries and Africa) countries, the production, installation, design, electrical installation, piping work, personnel training, automation, insulation, performance tests and commissioning of the projects in the desired capacity, provides a turnkey quality and price guarantee. At the same time, we manufacture filter press, gas filter, tubular heat exchanger, mixer-blender, hot oil boiler and stock tanks. We have ISO 9001: 2015, ISO 14001: 2015 and CE Certificates.

WASTE MINERAL OIL REFINERY FACILITY

Waste oils, which are among the Hazardous Wastes, have become an important part of countries' management plans. Waste oil recycling facilities play an important role in minimizing the negative effects of waste oils that harm the environment and human health and in order to use these hazardous waste oils with the best possible technologies to benefit the country's economy.

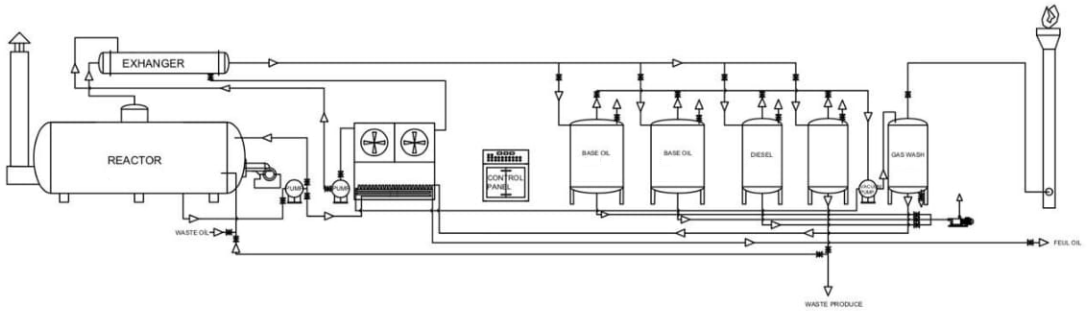
Countries form the basis of waste oil management; Mineral oil facilities, recycling and disposal organizations, waste oil carriers must work in accordance with the regulations determined by the law and regulation.

In the management of waste motor oil recovery facilities, it is necessary to try to improve continuously by protecting the environment and human health at every stage, as well as maintaining awareness in all services regarding safety.

Waste oil and used oil recycling plants are specially designed to convert used oil into quality base oil. Waste oil plants are an economical method of waste oil re-refining, which is beneficial not only as an investment but also from an environmental point of view. We perfect the combination of various primary separation and finishing steps and incorporated them into front-end and back-end systems of waste oil recycling plants.

It ensures proper dehydration and pretreatment of the used oil so that it can be distilled with high vacuum to avoid cracking in the uncracked evaporation unit. This finishing process uses an adsorption-type process to remove any unwanted chemicals from the processed oil. Sulfur is capable of sieving from 2000 ppm to less than 300 ppm in a single pass. The processing of used oil at our waste oil re-treatment plant results in an oil that is stable against oxidation at any measured time scale and meets the highest refining standards of the effluent oils.

USED OIL RECYCLING FLOW CHART



TECHNICAL FEALTURES OF THE OIL RECYCLING PLANT

- It is produced with advanced technology.
- It conforms to European standards.
- it is long lasting.
- System can be operated in open or closed environment
- It is resistant to high pressure fluctuations and high pressures.
- Can produce high quality base oil
- It can easily process all kinds of waste oil (engine oil, mineral oil, bilge oil, machine oil)
- It is resistant to rust.
- It has maximum heating surface thanks to its suitable interior design.
- It is high efficient.
- Compact, takes up little space.
- It is easy to use, clean and maintain.
- There are various models suitable for multipurpose use and a wide range of products.

USED OIL RECYCLING PLANT USAGE INTRUCTIONS

- The waste oil is sent to the reactor from the stock tanks with a pump, the amount of waste oil in the reactor will be monitoring by a level device. The product input valve is closed when it reaches the maximum fill level.

- For operating the reactor we put a burner under the vacuum and start the evaporation process of the petroleum elements, and we get the following output products:

1. Waste Produce (water)
2. Diesel
3. Thın Base Oil
4. Thick Base Oil
5. Reziduum
6. Gas

- The method that we use to heat the system is to apply heat by burner and it can be preferred in different ways. The zone where the burner is applies heat is heated to the furnace inside the reactor and we can use oil, sludge, diesel or gas for the burner fuel.

- The heat exchanger operates in three (3) stages; pipes inside the heat exchanger, the steam passes inside the pipes and the water passes permanently outside the pipe. Hot water is reused with continuous cooling

- We made the cooling tower in order to cool the hot water coming from the heat exchanger with the air force and sending it to the water bath.

- There are sections which are connected to the cooling pool such as the vacuum pump, the gas washing section, the reactor pitch discharge section, the heat exchanger...etc. These sections need continuous cold water for continuing the operation and they are met by the water pool.

- Dual control (Automatic & Manual) design make sure that all the statuts of this plant will be running properly including the temperatures, pressures, oil levels...etc

- When the reactor begins the operation between 0° to 130°; the first accumulated product are waste products

- When reactor temperature is between 130° to 270° we produce diesel we proceed to the separation process of sections in order to maintain the product quality.

- With our technique we can produce thin base oil between temperature 270° to 330°, then we move to the separation section to maintain the quality of the thin base oil.

- When reactor temperature is between 330° to 380° we produce thick base oil and we proceed to the separation process of sections in order to maintain the product quality.

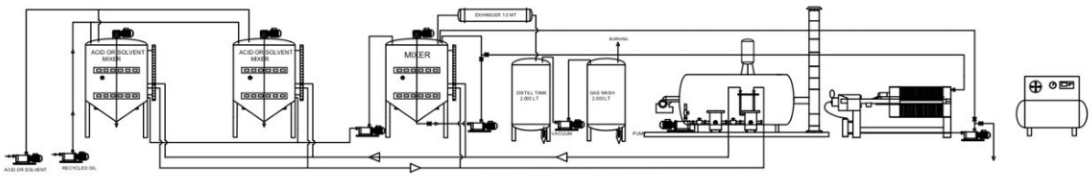
- The vacuum pump is the most important part of reducing the boiling temperature and discharging the gas into the reactor, the gas is stuck in a vacuum so that the gas cannot return to the reactor and this only works with output direction.

- In order to guarantee a complete safe operation, we equipped the second gas safety device with gas decompression valves at the level of product separation sections allowing an automatic discharge at 7 bars.

- We offer technical solutions and we wish to create a pollution minimized atmosphere by following our mission of protecting the nature; so that we clean the gas leaving the reactor by washing with water to prevent environmental odors, and then we move to the second stage which is sent the gas to the disposal department

- Up to this stage we have carried out the process oil separation, the second step of decolorizing/bleaching process is very necessary which is carried out with various chemicals substances. Finally we get a high quality product

COLOR AND SMEL PLANT USAGE INTRUCTIONS



- Our project is designed in conformity with the Country's laws, also we can choose various chemicals substances that are used for treat the colors and odors of refined products.

- Up to this stage, the final product and the sulfuric acid or solvent are taken to the mixer by a pump and mixing them in/by the pipe where we can get a good mixing of acid or solvent and oil.

- When the reaction is complete the mixture must be left on standby for 12 hours in order to separate the oil and the acid or solvent. Because that the acid or solvent is heavy it settles at the bottom of the mixer and separated from the oil. The acid or solvent is removed from the mixer's bottom and sent to the waste section.

- After that, the Processed product oil is taken from the side and sent to the second chemical transfer section. To avoid bed odors, the oil is heated to 180° under the vacuum so the acid or solvent and the other fine products are removed.

- Then the oil is cooled to form a second chemical mixture.

- We use an oil boiler as a heating system for the mixers, and we have a heat exchanger and a distillation tank for cooling theses products.

- The gas coming out of the system is washed and destroyed in the combustion chimney.

- The chemical blending product is ready for use by passing through the filter for the last time and the finished product is sent to the storage tank by the pump. Finally we get a high quality product

TECHNICIAL SPECIFICATIONS

MODELS	AK-AM 5	AK-AM 10	AK-AM 20	AK-AM 30
Daily Transaction Capacity	5.000 LT	10.000 LT	20.000 LT	30.000 LT
Total processing time	12 Hour	17 Hour	24 Hour	24 Hour
Required factory space	300 m2	500 m2	800 m2	1000 m2
Products to be produced	Diesel, Thin Base Oil, Thick Base Oil and Rizidium (Fuel Oil)			
Raw materials	Waste oil (Engine Oil, Mineral Oil, Bilge Oil, Hydraulic Oil, Gear Oil)			
Operation System	PLC Automation System or Semi-Automatic Manual System			
Laboratory	Standard Basic Laboratory Equipment Required for System Operation			
Warming Type	Gas Burner, Fuel Oil Liquid Fuel Burner, Dual Fuel Burner, Diesel Liquid Fuel Burner			
Heating Fuel	Diesel, Fuel Oil, Waste oil, Natural Gas or Own Process Fuel			
Required Manpower	1 Operator 1 Assistant	1 Operator 2 Assistant	2 Operator 4 Assistant	2 Operator 4 Assistant
Delivery time	40 Work day	45 Work day	50 Work day	60 Work day
Setup time	5 Work day	10 Work day	15 Work day	15 Work day

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HIGH - TECH OIL REFINERY

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