

## MINI OIL REFINERY PLANTS

### 1. General information

"**TECHNOTRADE**" LTD can perform development, manufacture and delivery of **mini oil refineries** for primary processing of hydrocarbon raw materials:

- gas condensate,
- sweet crude,
- their mixture

with productivity 20 000 – 200 000 tons/year (400 – 4 000 barrels/day). Our equipment is intended for separation of sweet crude, gas condensate and their mixtures into

- petroleum fraction,
- kerosene fraction,
- diesel fraction,
- heavy residual stock (black oil, fuel oil components)

by means of a rectification method.

**Mini oil refineries** made by our enterprise distinguish oneself with compactness and economic rationality. Autonomy of component parts of the equipment gives possibilities to place them operatively at petroleum storage depots, on specially prepared platforms located close to a place of stocks of raw materials, or to a place of consumption of finished products.

The basic consumers of our **mini oil refineries** products, and this is petrol (mainly low-octane), diesel fuel, furnace oil and fuel oil, - are large motor transport companies, agricultural companies and other companies that widely use heavily loaded surface mechanics and which have a big necessity in fuels and lubricants.

### 2. Manufacture technology

The process of rectification at atmospheric pressure is put in the basis of mini oil refineries. The following solutions are used in the project:

- Complex rectifying column of nozzle type;
- Application of a modern highly effective regular nozzle;
- Block-modular placing of the equipment;
- Protection of the equipment from ingress of atmospheric precipitations;
- Vertical tubular furnace with burners of liquid fuel air scattering, allowing effectively and stably operate even at usage of black oil (distillation residue).

### 3. Description of technological equipment

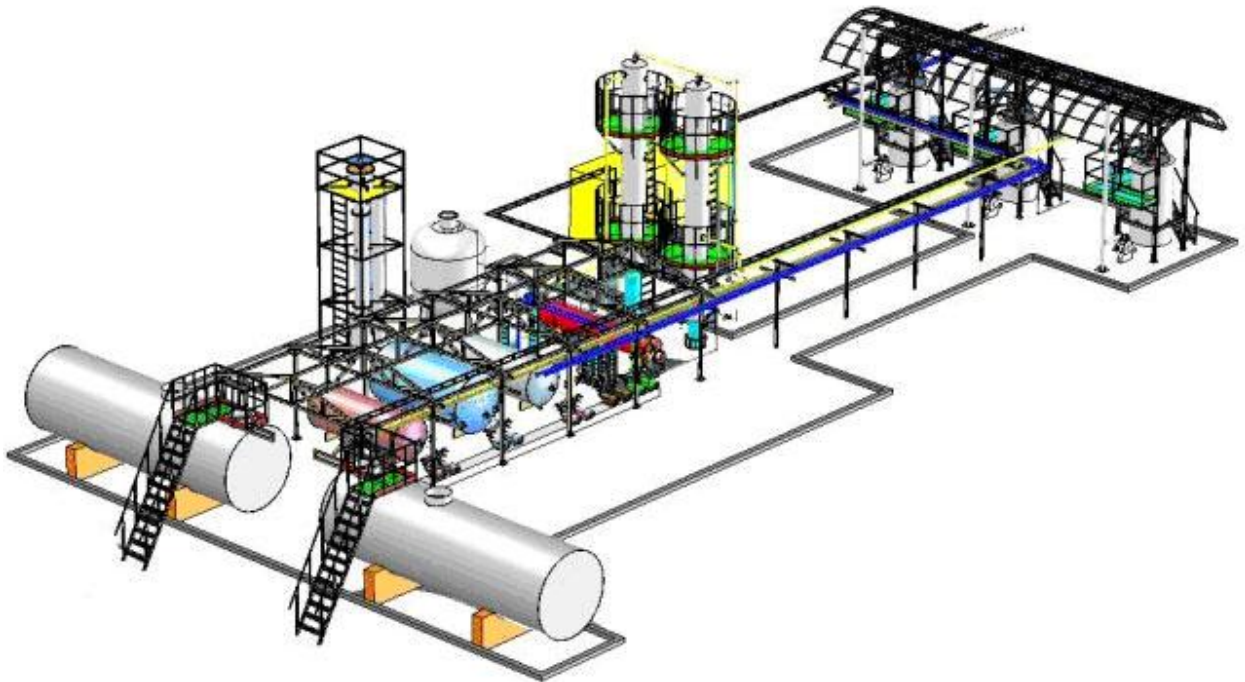
Block-modular mini oil refinery for processing of hydrocarbon raw materials consists of:

- Block of preparation;
- Block of distillation (processing plant);
- Stock of commodities and raw materials;
- Objects of production-auxiliary appointment.

Block of distillation includes:

- Block of columnar equipment;
- Block of heat-exchange equipment;
- Block of furnaces;
- Block of pumps;

- Interblock pipelines with shutoff valves;
- Drainage and emergency capacities;
- Switchboard room;
- Automatic control system for technological processes (at will of the customer).



Processing plant represents an external construction equipped with highly effective process equipment, specially developed for conditions of the refinery process, pumps, armature, means of automatics, control and measurement equipment. The plant equipment is made with account of climatic conditions and is capable to operate at an ambient temperatures ranging from  $-40^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ . Main mechanisms and pipelines are made from steel 20 and 09G2C sorts. Heating of the pipelines that transport stiffening liquids is carried out with the help of pipe heaters (water, steam and electric).

#### 4. Technical characteristics of the mini oil refinery plant

Name of parameter	Value
1. <u>On sweet crude</u>	30 000 tons/year
Output:	
• Petrol	20 - 40%
• Diesel fuel	30 - 50%
• Black oil	30 - 40%
2. <u>On gas condensate</u>	25 000 tons/year
Output:	
• Petrol	25 - 65%
• Diesel fuel	20 - 50%
• Black fuel	20 - 30%
Fuel consumption for a furnace	45 kg/hour
Turnaround water consumption for cooling	30 m <sup>3</sup> /hour.
Installed capacity of pumps electrical drives	18 kW
Pumps consumed power	10 kW
Overall dimensions	16x40x9 m
Weight of main equipment	40 tons

## 5. List of finished products

As a result of processing of hydrocarbon raw materials following production is received:

- Straight-run petrol fraction - 180°C, which can be used as a component of motor fuel or as a raw material for pyrolysis;
- Fraction 150°C - 200°C, which can be used as a solvent of white spirit type;
- Diesel fraction - 360°C;
- Distillation residue, fraction > 360°C, is used as furnace fuel oil.

Having a sufficient experience "TECHNOTRADE" LTD company will execute the following kinds of works under contract:

- Designing of oil refinery plant;
- Designing of automatic control system for technological processes (at will of the customer);
- Participation in designing of a platform for placing of the refinery plant and a stock of raw materials;
- Manufacture of the plant and complete set of the plant with equipment, materials and other accessories;
- Delivery of the refinery plant to the prepared platform of the Customer in block-modular execution;
- Installation of the plant at a place of operation and performance of tests for commissioning;
- Preparation and training of the personnel for the plant operation;
- Delivery of analytical devices for laboratory and training of the personnel to techniques of quality control of mineral oil;
- Participation in preparation of the normative-technical and allowing documentation necessary for operation of mini oil refinery plant;
- Carrying out of starting-up and adjustment works and launching of the refinery plant to constant commercial operation.

**Final cost of mini oil refinery plant much depends on arrangement of a platform, its placing, presence of a capacitive park, sources of the electric power, water, access communications, character and relief of soil, etc.**