

Commercial offer

MTK mini-refinery for deep treatment of hydrocarbon raw material

Purpose

The technology of turbulent cavitation is based on the creation of counter-cross flows of the treated liquid in closed space of the channels of cavitation chamber with rated speed. A combination of highly advanced scientific developments ensures processing of a wide range of liquid hydrocarbon raw materials (crude oil) to obtain various final products.

Spheres of application

The MTK-1M module is used to process gas condensate with production of high-octane petrol and diesel fuel.

The treatment process includes homogenization, degassing, condensing of light fractions, regeneration and removal of impurities, etc.

1. Production of petrol.

The choice of the technological mode of processing the initial raw material into motor fuel depends on the composition of raw materials from a specific deposit. For this purpose a preliminary laboratory analysis of the composition of a specific raw material is a must. The results of this analysis are later used for drafting a preliminary mode chart of plant operation.

After the analysis of raw material composition at an experimental plant, which is a copy of its serial analog, but with reduced capacity, the test processing of condensate and production cycle of petrol are performed. Normally, preliminary stages require 20 litres of gas condensate. The produced petrol then undergoes laboratory and operational tests to prove its compliance with GOST (Russian Standard) requirements.

The obtained data is used for correction of design, mode chart and for determination of production capacity and power consumption of a serial plant intended for production of specific grade of petrol from the specified raw material of the specific deposit.

The production output with octane number 78 is 25-32% of the input raw material at the processing temperature of 30-200⁰ C. The product has a reduced content of sulfur due to its transformation into hydrogen sulfide and other chemical links. After introduction of all additives to the initial raw material these components are once again reprocessed in the plant (compounding process) and finally become finished petrol. Production of finished petrol can be made in one stage during one processing cycle of gas condensate in the plant. The production mode is used for producing large quantity of petrol of one grade.

2. Production of diesel fuel

The produced diesel fuel fraction undergoes additional purification to guarantee compliance with GOST requirements for summer-time diesel fuel.

The production process of diesel fuel includes qualitative homogenization of fuel composition and reduction of sulfur content. Adding the required additives and catalysts ensures decreasing of the maximum filterability temperature up to - 24⁰C and below, depending on the composition of the diesel fuel, as well as increased stability of the processed fuel.

Use of MTK-1M module to modify summer diesel fuel into winter fuel allows the increase of the filterability temperature range for moderate climate up to - 5⁰ C.

Distillation residues (5-7% of the processed amount of the initial raw material) can be used for production of roofing materials, anti-corrosion coverings, road construction materials.

Technical characteristics

The MTK module represents an enclosed container, which can be easily installed and moved, no foundation for installation is required, connection to existing infrastructures is secured by flexible hoses.

№	Parameter	Unit of measurement	Value
1	Processed materials		Liquids
2	Temperature of processed materials	°C	0÷120
3	Production capacity	m ³ /h	5÷22
4	Maximum input excess pressure	MPa (kg/cm ²)	0,3 (3,0)
5	Maximum permissible suction height	m	3
6	Installed power	kW	75,0
7	Voltage	V	380
8	Type of current		Alternate current
9	Current frequency	Hz	50
10	Recommended minimum capacity of the power source	kVA	160
11	Specific consumption of electric energy	kW·h/m ³	1,5 ÷ 2,7
12	Dimensions, L x W x H , not exceeding	mm	3000 x 2200 x 2200
13	Weight, not exceeding	kg	1250
14	Technical personnel		1-2 persons (electrical engineers)

The basic module contains:

- System of turbulent-cavitation processing of materials CTKO-1M;
- Degassing, condensation and catalyzing units;
- Power unit;
- Control board.

The module is fitted with equipment suitable for operations in explosion hazard areas in premises and for outside use in plants of class 1 and 2 according to GOST P 51330.9 which can form explosion hazard gas-air mixtures of categories PA and PV and explosion hazard categories T1, T2, T3 and T4 according to GOST P 51530.5.

The module is produced in climatic version UKhL in category 1 according to GOST 15150.

Manufacturer's guarantees

The equipment manufacturer provides the following guarantees for its products:

- Compliance with the requirements of TU U 29.5-24670716-101:2005 and OST 26-06-2003-77;
- Reliable and safe operation during 12 months from the date of commissioning, but not exceeding 18 months from the date of shipment by the manufacturer, under condition of observing by the customer the rules of transportation, storage, installation and operation provided by the technical documentation;

- Removing of defects occurring during the guarantee period as a result of malfunction of module components due to manufacturing defects;
- The guarantee does not cover replacement parts of pump sealing, with operation life depending on the conditions of operation;
- The module must not be disassembled by the customer without the manufacturer's representative until the expiry of the guarantee term;
- The customer is allowed to perform revision of pumps according to their technical requirements;

The guarantee term is 12 months from the date of module commissioning.

Average operational life until malfunction is not less than 2500 hours.

Average repair time with necessary spare parts and repair tools available is not exceeding 8 hours.

Average operational life until capital overhaul (in single-shift operation mode) is not less than 5 years.

Terms and conditions of delivery

Advance payment in the amount of 70% of the module price. The remaining sum is paid upon completion of acceptance tests in the presence of customer's representatives.

Term of delivery - 4 months.

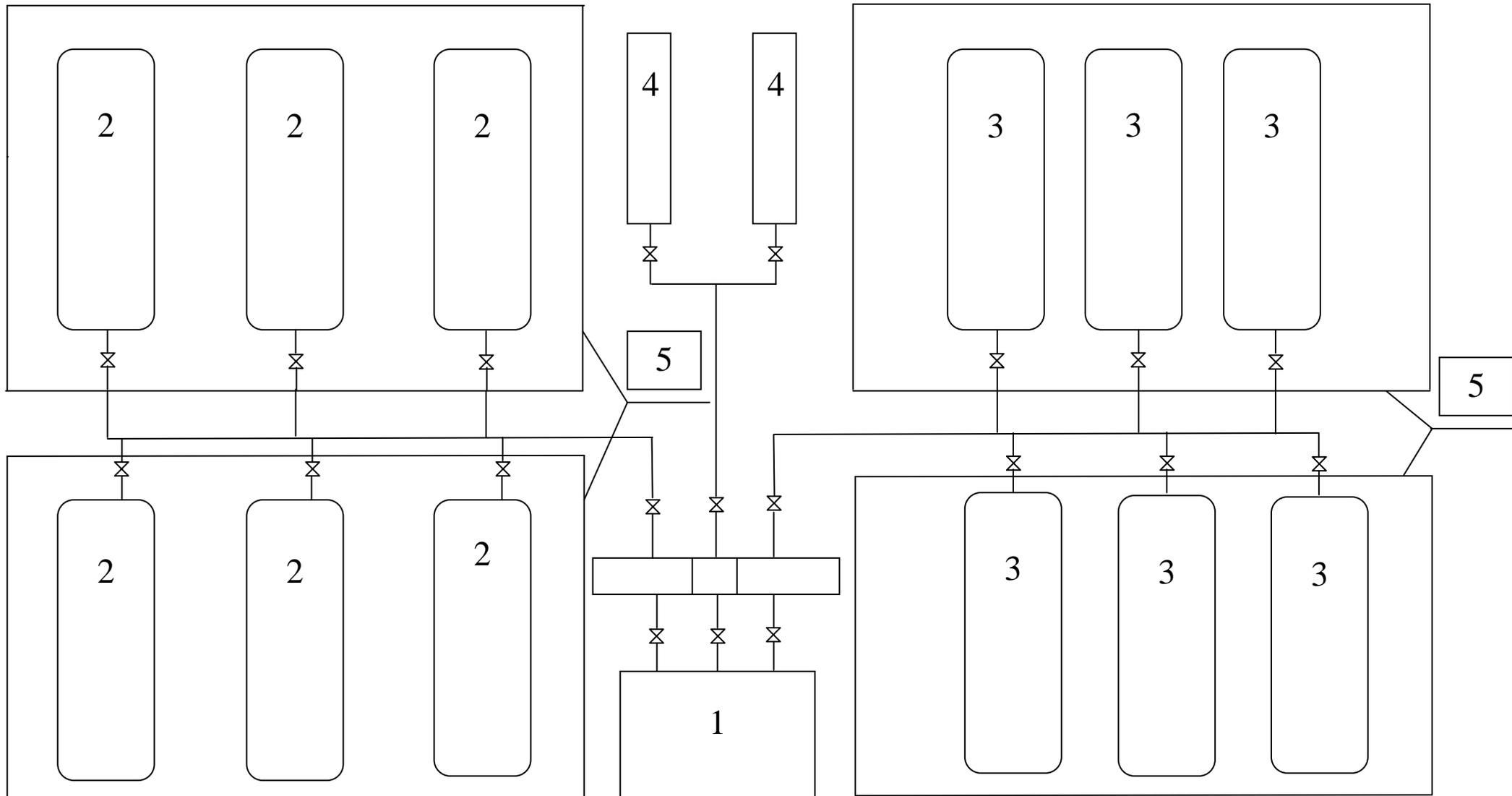
Price of MTK module depending on the quality of the initial raw materials 240 to 260 thousand USD, the price of transportation and commissioning works not included.

Depending on the composition of raw materials and the requirements of the customer selected the final complete set mini-refineries, including the necessary volume of tank farm for storage of raw materials and finished products.

Block diagram of tank farm and photos of the module MTC-1M attached

Diagram of the storage tank infrastructure of mini refinery plant based on MTK-1M module

Legend: 1. Module MTK-1M; 2. Tanks for ready product 120 т;
3. Tanks for raw materials 120 т; 4. Additives for commercial petroleum and diesel fuel;
5. Diking (hermetic concrete border)



Photos of mini refinery plant based on MTK-1M module



Exterior view of the module MTK-1M



Module in the assembly workshop



Turbulent-cavitation unit of the module



Catalyst column (as an assembly)

