The Research Institute of chemical technology

НИИХТ

EQUIPMENT AND TECHNOLOGY OF DEEP PROCESSING OF HEAVY OIL RESIDUES

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THE PURPOSE OF THE EQUIPMENT

The purpose of the equipment is processing of heavy oil residues (masut, tar - HOR) with continuous production of a wide fraction of hydrocarbons, energy gas and carbon coke.

An example of the balance of the masut M100 processing

Raw material, 100%	Products, 100%
Straight-run masut – 100	SMF (IBP90C – EB450C) – 79,4
	Coke – 6,3
	Energy gas (C1-C4) – 14,3

Carbon coke

Wide fraction of hydrocarbons WFH

CHARACTERISTIC OF THE PRODUCTS

The characteristics of the wide hydrocarbon fraction allow it to be used as marine motor fuel.

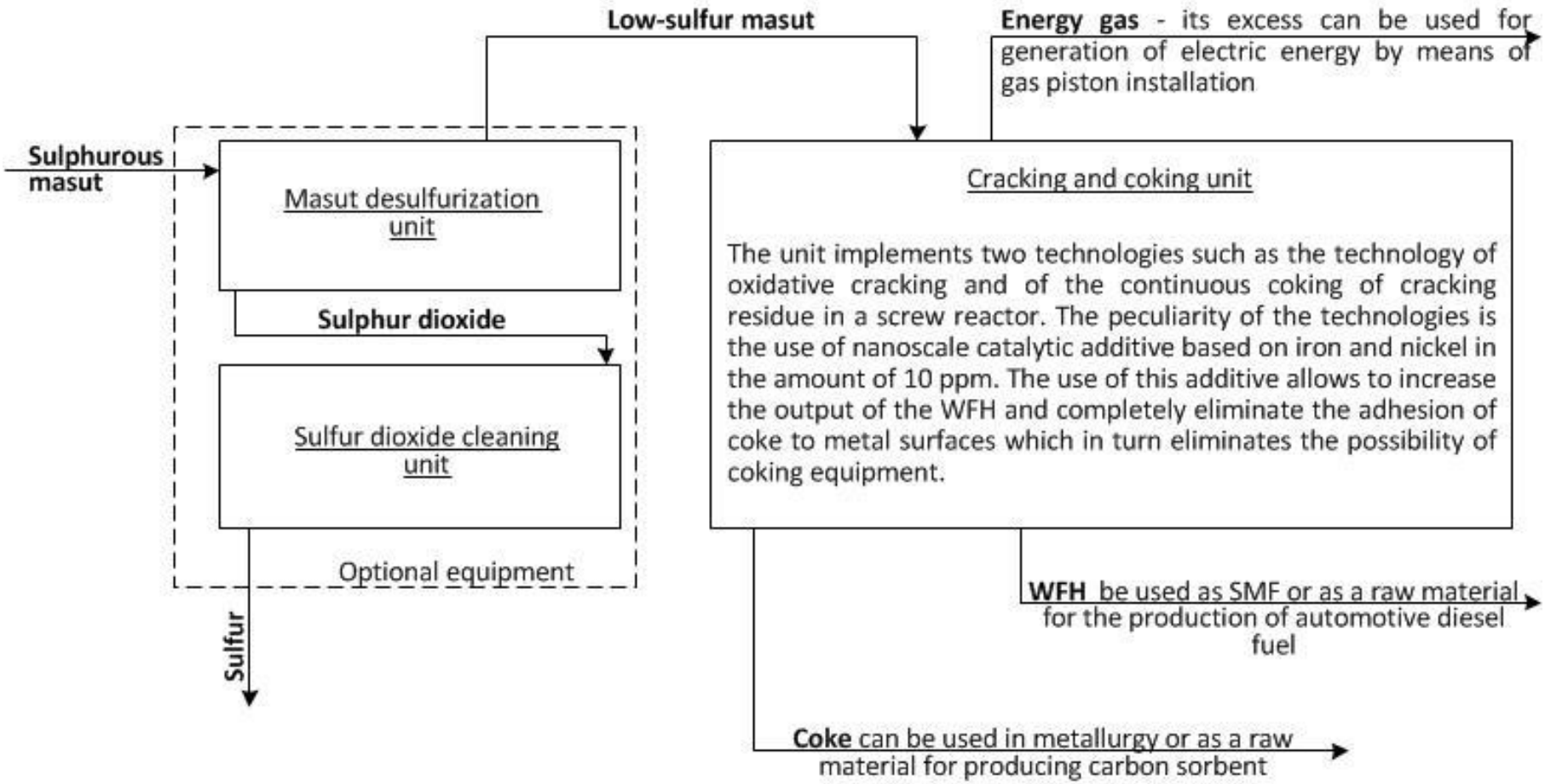
Fractional composition	°C
Initial boiling point	85
10% distilled at a temperature	150
20% distilled at a temperature	195
30% distilled at a temperature	221
40% distilled at a temperature	268
50% distilled at a temperature	286
60% distilled at a temperature	314
70% distilled at a temperature	335
80% distilled at a temperature	342
90% distilled at a temperature	354
95% distilled at a temperature	367

Mass fraction of hydrocarbons	%
Olefinic	15,7
Aromatic	24,8
Benzene	absence

Cetane number : 46,2
Lubricity according to ISO 12156-1 – 212 mm
Kinematic viscosity at 40 ° C-4200 mm / s*
Ash content-0.008%
Coking ability of 10 % residue of distillation (micromethod) – 0.26% wt.
The acid number of 0.37 mg of KOH/g
Flash point in closed crucible - 61,5°C

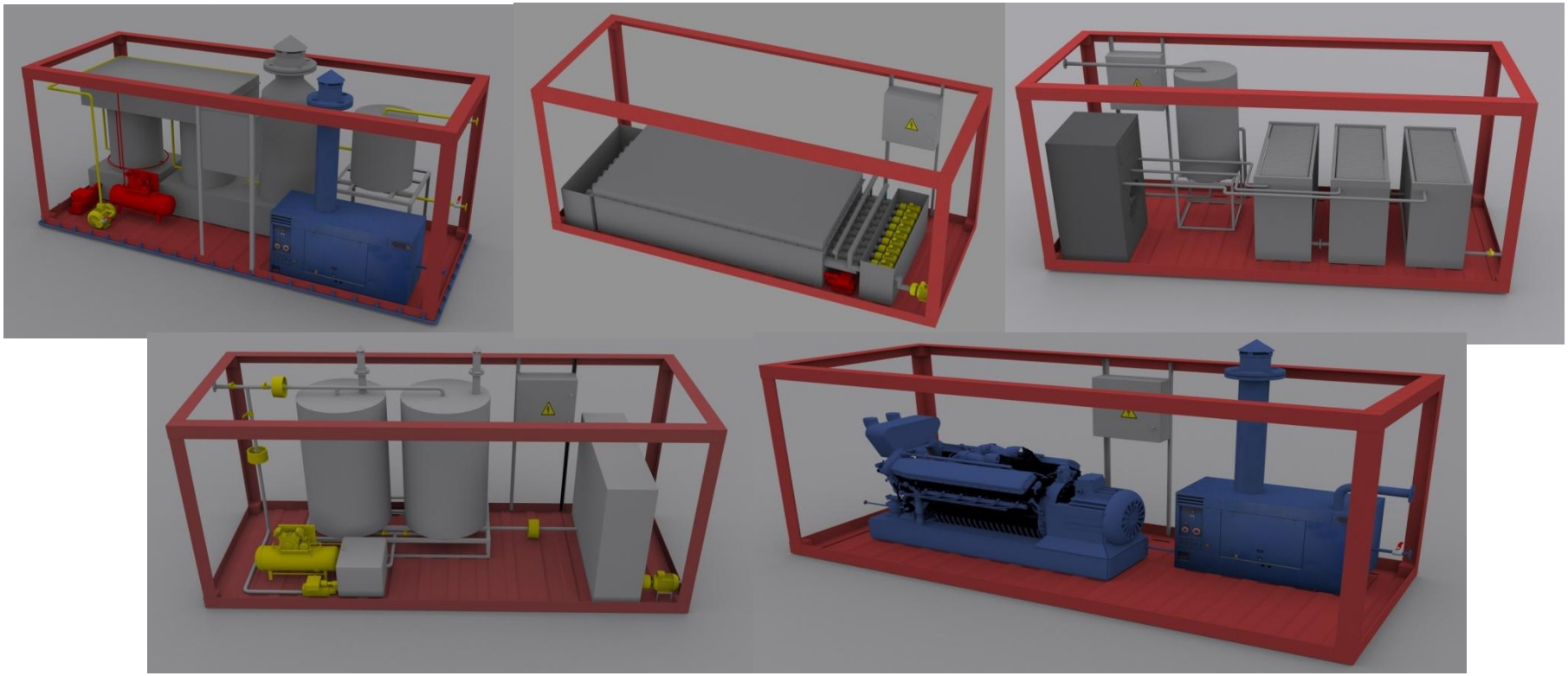
Note. The sulfur content in the WFH corresponds to its content in the refined petroleum residue (HOR). The sulphur content of WFH can be reduced to the required value, if it is necessary, by pre-desulfurization of HOR with an optional desulfurization unit.

THE BLOCK DIAGRAM OF PROCESSING OF HEAVY OIL RESIDUES



PRINCIPLES OF OPEN ARCHITECTURE AND MODULARITY DURING EQUIPMENT DESIGNING

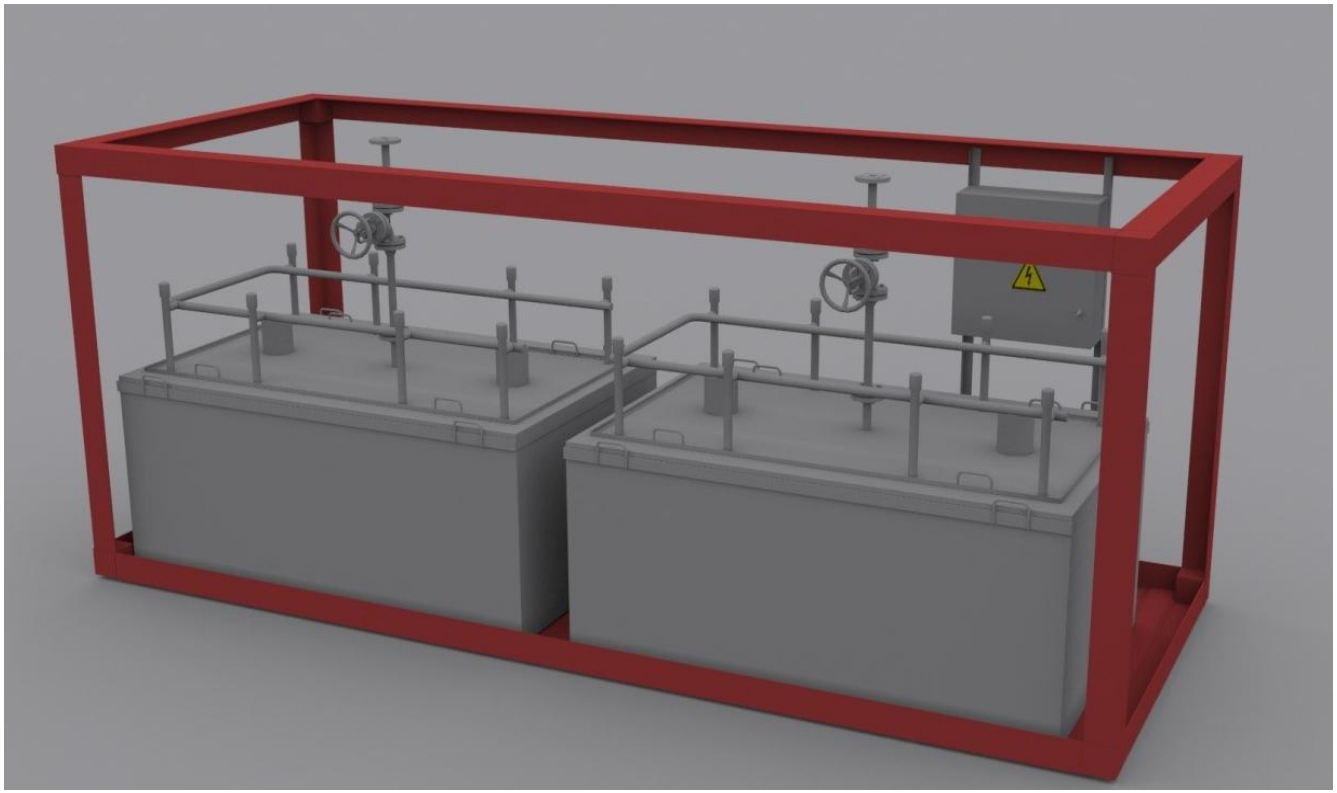
The equipment is designed and manufactured in the form of large-sized blocks with a high degree of factory readiness. It minimizes the time required for its installation and commissioning. Each module of equipment has an open architecture and is compatible with others. It allows to obtain any required productivity of the equipment using the same type of modules, and if necessary, to expand its functionality.



Examples of individual modules

THE POSSIBILITY OF FURTHER PROCESSING OF THE RECEIVED WIDE HYDROCARBON FRACTIONS AND COKE

Base modules of equipment for processing HOR into WFH and coke can be supplemented by the modules of equipment that allows to increase the quality of WFH to the indicators of the quality of automotive diesel fuel by means of the destructive isomerization in the melt of the catalyst. Coke, by activating superheated water vapor, can be processed into a carbon sorbent with a specific surface area up to 1500m2/g.



Module of destructive isomerization in the melt of the catalyst

Diesel fuel

Carbon sorbent