

RESEARCH INTO THE POSSIBILITIES OF PRODUCING WATER-FUEL EMULSIONS BASED ON LOW-QUALITY FUEL OIL

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The choice of fuel oils as objects of research is justified by the scientific interest in studying the effect of cavitation on high-viscosity hydrocarbon systems, on the one hand, and on the other hand, by the practical task of obtaining high-quality water-fuel emulsions for power plants. In highly viscous fuel oils, an increased water content is observed in the form of individual local accumulations caused by the processes of transportation, pumping, storage and heating of the fuel. The use of specially prepared water-fuel emulsions as fuel is one of the effective methods that can eliminate the negative consequences of this phenomenon. The process of processing fuel oil that did not meet the necessary requirements for water content and composites based on it in hydrocavitation devices was investigated to obtain high-quality water-fuel emulsions, the use of which allows to increase fuel combustion coefficients, reduce emissions of soot particles and carbon monoxide, and also to utilize raw materials unsuitable for use as fuel. The results of the experiments are shown in Table. 1.

Table 1 - Fuel oil parameters before and after cavitation treatment

Oil fuel	Flow time through a calibrated funnel, s (at t=60 °C)			Flash point, °C			Density, кг/м ³		
	initial	after processing	Δ, %	initial	after processing	Δ, %	initial	after processing	Δ, %
Sample 1	155	90	42	120	127	5	925	920	0,5
Sample 2	138	84	39	105	115	9	915	915	0
Sample 3	165	120	25	135	145	7	920	920	0

A series of experimental studies on an industrial boiler unit showed the efficiency of using the obtained boiler fuel and its environmental safety.

References:

1. Ammar W. Saeed. Patterns mass transfer process of oils of hydrocracking and a gidrogenoliz of hydrocarbons in rotor hydrocavitalional devices. – The manuscript.