## Comparison of rotary and hydrodynamic homogenizer

## A. History of Innovation

Homeland of all homogenizers - Ukraine and Russia. All the design of rotary homogenizer, which are produced in Europe and U.S. - outdated model of the Soviet Union, which had been stolen and put into production.

In the U.S., the main designer of rotary homogenizers is the immigrant from Ukraine, most of the homogenizer in India - American and Spanish copies of the homogenizer. Spanish blenders - it's just static mixers that are only mixed product and can not carry out the process of dispersion - that is, grinding of asphalt tar and particles in the fuel.

Therefore, if you want to get the highest quality homogenizers, its type and design need to look in the USSR, a country which has more than 2000 patents and 6000 publications in this field. Over the past five years, new rotary homogenizers in the Soviet Union developed and produced.

Homogenizers TRGA series are based on all known constructions of such devices and have been upgraded four times over the last 5 years, based on operating experience with the most difficult and sub-standard fuel for boilers and oil storage bases.



working in Siberia since 2009. Fuel - heavy fuel oil. Picture taken one year after installation

main disadvantages exploitation	advantages of hydrodynamic
of rotary homogenizers	homogenizers TRGA
2.1. High noise at work.	2.1. Only the sound of the engine and a
	standard pressure pump. The noise level is 2-3
	times less, and no ultrasound and infrasound.
2.2 High energy consumption. The high starting	2.2 For TBCA 0.5 1 kW/b por 1 top of
current which is required to launch the device and	2.2. FOI INGA 0.3 - I KW/II per I toll of
then is unnecessary, but continues to flow to the	product.
engine.	
2.3. Low productivity and enormous challenges in	2.3. Our range of 3 - 90 cubic meters per hour
establishing and operating devices with a capacity	in one case homogenizer.
of more than 50 cubic meters, per nour.	
2.4. Need for additional pump.	2.4. No need any additional pump.
2.5. Accelerated wear of bearings and vibration,	2.5. There are no moving parts, no bearings, no
which increases as the wear of the rotor.	vibration, no seals, metal structure, which
	vyderzhyvaet high temperature, pressure and
	aggressive flows. no increase in operational
	vibration.
2.6. Rapid wear of the working element and the	2.6. The low wear of working elements.
need for its frequent replacement, ie, the cost of the	Homogenizers TRGA work reliably 2-year on
rotor and the repair work.	the suspensions of heavy fuel oil + carbon
	powder.
2.7. The complexity and high cost of repairs and the	2.7. Repair module TRGA - blowing
impossibility of carrying out repairs on their own	homogenizer by live steam rinse with hot fuel
on board the ship.	pump replacement for the standard and / or
	engine – it is the comprehensive list.
2.8. The need for fine pre-filter for fuel. because the	2.8. Requires a cheap coarse filter. the gap
gap between the working elements is less than 2	between the elements 5 mm or more. Ingress of
mm.	solid particles in the treatment zone does not
	cause destruction of the homogenizer.
2.9. The upper operating temperature of the rotary	2.9. In fuel line TRGA working under pressure
homogenizer is limited, so as the heat is transferred	up to 40 bar and temperatures up to 250
to the motor shaft.	degrees Celsius.

main disadvantages exploitation of <mark>rotary</mark> homogenizers	advantages of <mark>hydrodynamic</mark> homogenizers TRGA
<b>3.1.</b> The rotor is rotated in the body, this way it acts as a separator. The heavy fuel fraction dropped to the walls of the body and lungs are concentrated near the working element (rotor). There is no full and uniform treatment of the fuel.	<b>3.1.</b> The flow continuously and repeatedly mixed in this way provides a complete and uniform treatment of the fuel.
<b>3.2.</b> In the processing of oil, which contains water - the water is cut is not effective and does not form a stable emulsion, as it is thrown on the inner surface of the body.	<b>3.2.</b> In the processing of oil, which contains water - water is ground to form a stable emulsion, dispersion which decreases continuously (design feature).
<b>3.3.</b> The working element - the rotor - begins to break down from the first second and then start the process of destruction increases nonlinearly.	<b>3.3.</b> Working element TRGA - the flow itself, so the destruction of the working elements is the minimum.
<ul> <li>3.4. Rotary homogenizer <u>can not be</u> installed in the fuel line to the ship's boiler (pressure 4- 40 bar temperature 80-130 degrees Celsius)</li> </ul>	<b>3.4. Homogenizer TRGA <u>can be</u> installed in- line fuel for the ship's boiler (pressure 4-40 bar temperature 80-130 degrees Celsius)</b>

There are other advantages homogenizer TRGA but there is no need to enumerate them.

Some results of the TRGA below (all photos belong to us and made our equipment)









TRGA homogenizer capacity 8 cubic meters per hour.

