

FUEL-WATER FILTERS FOR POWER UNITS

A.N. Semernin, N.A. Semernin, D.A. Shamahmudov

M.H. Dulati Taraz State University, Kazakhstan

The fuel-water filter (FWF) is designed for installation in the fuel system of power units in order to ensure the purity of the fuels.

It is recommended for implementation in enterprises and organizations operating the vehicles, tractors, fixed installations, as well as construction and agricultural machinery equipped with diesel engines.

Filtrating water separating element has a cylindrical shape and stands along the fuel flow from the inside to the outside of the filter and the coagulation steps.

The filtration step is made of paper BM-120. To increase the filtering surface it is made in the form of corrugated star curtains.

As the coagulating step water separating element consisting of three layers is used: the first two layers of glass fiber materials with a fiber diameter of 1,5-2 and 3-6 microns, arranged in order of increasing the diameter of fibers in the direction of fuel flow, a third layer is polyurethane PPU- EO-130. Filtration and coagulating step are adhered to the covers. The principle of operation of the filter-water separator consists of the following: contaminated fuel enters the element from the inside and moves outward through all partitions. In the filtration stage fuel is cleaned from mechanical impurities, then in the coagulating stage fuel is cleared of water. In the coagulating stage there is an integration of water droplets that linger in the last partition from polyurethane foam.

When the critical pressure drops ejected from this partition and under the action of its own weight, the deposition occurs in a settling zone of the fuel-water filter. This ensures a high degree of purification of fuel from water and mechanical impurities.

Applying a filter-separator significantly improves the quality of cleaning fuel from water and mechanical impurity up to 96-98%, which makes it possible to increase the reliability of power units by 40-60%.

The fuel-water filters are designed for power units in 2014 and passed the performance test at the enterprises of the city and the region.

For the manufacture of the fuel-water filters technical documentation CD No 92-01-154 is available.

Annual production capacity of FWF within 600-800 pieces.

The estimated cost of of FWF is about 500 KZT.

Expected annual savings of up to 100 thousand. KZT to one power unit. The payback period of the filter-separator is 2-3 months.

Organization-developer: M.H.Dulati Taraz State University. Department of "Transport equipment and technologies".