ENGINE OIL RESOURCE ANALYSIS

Камолов М. К.

Норов С. Н.

Бухарский инженерно-технологический институт

ABSTRACT

The article presents the effect of contaminated oil on the reliability of a diesel engine and the influence of the physical and chemical composition of the oil

Keywords: oxidation, additive actuation, overhaul, specific oil consumption, performance tests.

INTRODUCTION

The aging process of oil in a diesel engine is a complex of complex physical and chemical processes, among which oil exchange, oxidation, additive actuation and contamination are distinguished [1].

In order to find out the effect of contamination of the engine lubrication system on the dynamics of oil contamination, operational tests were carried out. The tests were carried out with preliminary cleaning of the engine lubrication system. Engines K A M AZ - 740, YaMZ - 236, dump trucks KAM AZ - 5511, M A Z - 5335, tractors with semi-trailers KAM AZ - 5410 were selected as the objects of the study. Engines usually run from 140,000 to 200,000 km to overhaul, 60,000 to 80,000 km to the second overhaul.

During this period, the operation of the engine lubrication system is almost not cleaned, as a small part of the deposit is usually removed during maintenance-2 and routine repairs.

Sediments from the accumulating and oil discharge pipelines were not affected, as in these places, due to the intensive circulation of oil during the operation of the engine, an insignificant amount of precipitation is deposited.

In order to determine the influence of individual engine properties affecting the dynamics of crankcase oil contamination, experiments were carried out on the same cars.

In terms of all technical condition, the engines were close to the study. The specific oil consumption during the test was 0.30 - 0.34 l/.100 км

The engines ran on commercial oil, diesel oil. The working conditions were the same (They were used for the transportation of building materials - concrete, crushed stone, sand, etc.).

Samples were taken in this way, samples were taken after determining the mileage of the car, the engine was washed with diesel fuel the entire engine system with a washing machine, after which a sample was taken from the engine crankcase and the engine fine filter. The engine was started, and when clean oil was topped up and at medium idle speed, samples were taken from the flowing oil after one hour of engine operation.

Clean sampling at the beginning is explained by the fact that, as preliminary tests have shown, the contamination of freshly poured oil occurs more intensively at the beginning, after starting the engine, and then stabilizes and the accumulation of contaminants in the oil occurs more slowly.

Flushing is carried out with the help of a flushing room with a unit with fuel (diesel fuel) within a few minutes.

After assembling, the engine was filled with fresh oil and worked for 60 minutes at medium speed, after which the oil was drained, a sample was taken. This operation was carried out in order to remove loosened contamination products remaining after washing and lubricating all rubbing parts.

During the test, the vehicles were constantly monitored and the operating conditions of the vehicle, oil consumption for refueling (Initial) and for refilling were recorded in the logbook. The oil sampled and drained during the change was also taken into account. The oil level was checked daily with an oil dipstick. During the examination, the engine was in normal technical condition and all these indicators were brought to normal. The engine was tested on standard diesel fuel - diesel fuel.

Thus, it follows from the above that the condition of the engine is determined by the quality of the oil and the mode of operation of the engine. However, the influence of the engine mode on deposits has not been sufficiently studied, especially the influence of the regime factors, which acts simultaneously, as well as their contribution to the formation of deposits and changes in the physicochemical and spectral parameters of the oil. In addition, the relationship between engine condition and changes in oil quality is not well understood. For this purpose, this work was an all-outside study of oil quality indicators and engine operating conditions that affect the condition of engine parts.

For this purpose, it was necessary to solve the following tasks.

• To analyze the correlation between the quality indicators of engine oils and the condition of the engine based on the results of performance tests:

• To determine the cause, the relationship between the indicators of the engine condition and the quality of engine oils:

• To carry out an experimental verification of the results of theoretical studies:

• To study the interrelations of the existing methods for assessing the condition of the cylinder-piston group and to select the most typical indicators for automotive diesel engines for its assessment.

• To study the influence of the operating factors of the engines on the change in the state of the cylinder-piston group on the change in the quality indicators of the oil.

All this leads to a sharp decrease in the reliability and durability of the engines. In addition, in the arid climate of Central Asia, the contamination of oil, resin and varnish deposits is ten times more intense than in temperate climatic conditions.

The continuous improvement of engines in the direction of increasing their specific power and weight indicators has significantly increased the intensity of the friction pairs and their sensitivity to wear by abrasive particles.

Therefore, the establishment of the relationship between operating conditions, changes in the quality of engine oils and the condition of the main parts of the engine and the development of optimal mileage rates for oil change is of scientific and practical interest and is relevant.

1. Shilin, B.I. Prichy i vliyaniye obvodneniya lubricatnogo masle v exploitatsii na izmeneniya ego motornykh svojstvennosti [Causes and influence of lubricating oil flooding in operation on the change of its motor properties]. Conf. "Issues of Improving the Efficiency of Ship Technical Equipment". Vladivostok, 1990. P. 3-4.