



## Ensuring Economical Use of Mineral Oils

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**Abstract:** *Issues of economical use of lubricating oils in technology have always been very relevant regardless of the method of managing. This thesis deals with the economic use of oils.*

**Key words:** *Oil, oils, regeneration, economics, processing, mechanism, lubricating oils, consumption, working capacity.*

The issues of economical use of lubricating oils in technology have always been very relevant, regardless of the method of management. In a centralized system, the need for savings was determined by the steady expansion of the fleet of machines and mechanisms with limited oil production; in market conditions, by the growth of mutual non-payments and a chronic shortage of funds from consumers for the purchase of oils in the required assortment and quantity.

The economy of lubricating oils is carried out simultaneously in several directions: 1) reducing the consumption of oils under operating conditions; 2) increasing the preservation of oils; 3) the use of working – preservation oils (RC - oils) and 4) regeneration of oils directly from consumers. In turn, the reduction of oil consumption under operating conditions is realized by reducing their evaporation at operating temperatures, including oil fumes in the internal combustion engine, reducing oil leaks through sealing materials, increasing the timing of the oil change of the product range, the introduction of oils with extended shift periods, the use of all-season oils.

1. Reducing the evaporation of oils (especially at high temperatures) is achieved by weighting or rationing their fractional composition, using synthetic products or their mixtures with petroleum. The choice of one or another solution is determined by technical feasibility and economic opportunities. For example, the weighting of the fractional composition of oils leads to a decrease in its mobility at low ambient temperatures. Therefore, the implementation in practice of this method of reducing evaporation is possible only when there are no special requirements for the viscosity-temperature characteristics of oils.

Minimization of oil leaks, especially through sealing materials, is carried out by ensuring their mutual compatibility (exclusion of excessive swelling of sealing materials in contact with oil, leaching of active functional ingredients from materials, etc.).

Saving of oils is achieved by increasing their efficiency in technology and implementing their change during operation not in accordance with the design (operational) documentation, but according to the actual condition. At the same time, work is being carried out to establish the limit values of the oil condition indicators, upon reaching which it is required to change it in a technical facility. Currently, according to the actual condition, oils of various functional purposes are being changed: aviation, compressor, marine engine, transmission, etc.

Along with the increase in the timing of the change of oils of the product range, work is being carried out on the creation and commissioning of oils with extended shift periods (oils of increased efficiency). Among these, in particular, are compressor oils Kp-8 and Kp-8C, which have a longer shift period compared to VDL-150 and Stabio-150 oils.



2. Improving the preservation of oils is to ensure the required level of quality of oils, assuming, first of all, their use for their intended functional purpose after long-term storage in various conditions (temperature, humidity, storage method - barrels, cans, tanks, etc.). The warranty periods of oil storage, regulated by regulatory documentation, are to a certain extent conditional and they do not correspond to reality.

Currently, a number of organizations are working to predict the shelf life of oils and establish the actual limit of their preservation in various climatic zones, before which the oils can still be used for their intended functional purpose.

3. As a rule, when laying (setting) equipment for long-term storage, working oils are changed to special conservation oils, which then change back to working ones after deconservation and removal of equipment from storage. With the sequential change of oils in the process of conservation – deconservation, there are significant losses of both conservation and working oils. To facilitate the economical use of oils, RC oils of various functional purposes (aviation - MS-8rk, motor - M-43-8Grk, transmission - TM5-12rk) have been developed and approved for use, which can be used both during the operation of equipment and during its conservation. They make it possible to abandon the use of special working and preservation oils and ensure the savings of products at the stage of putting equipment into storage and its subsequent deconservation.

4. Of great importance for ensuring the economical use of lubricating oils is their regeneration (purification) directly from consumers on small-sized installations with the purpose of subsequent use of regenerated oils primarily for their direct functional purpose. The greatest difficulties are caused by the regeneration of motor oils under these conditions due to the complexity of their component composition and the limitations of the technological capabilities of the regeneration process under dynamic conditions.

In general, in practice, oil savings are achieved in various ways individually or in combination, determined by the economic and technical capabilities of consumers.

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