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The necessity for an adjustment of the draft of the Energy Strategy of Russia for the Period up to 2035 in order to consider such vital factors as the light oil production in the USA and the transition to alternative vehicles and fuels

Abstract. For the last 100 years, the main purpose of the oil refining industry was the production of motor fuels from crude oil for the internal combustion engines (ICE). Accordingly, the increase in the production of crude oil was correlated with an increase in the production of ICE for the automotive industry. However, with the development of alternative vehicles the goals and challenges for the petroleum industry will be changed. A study shows the tendencies of changing the markets of hydrocarbon resources and petrochemical products, as well as the problems that petroleum industry should solve in the medium and long term.

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**ACCENT of the ISSUE:
Tribology to machinery manufacturing**

Buyanovskiy I.A.

**Outstanding specialist in friction science Rostislav Mitrofanovich Matveevsky
(to 100 anniversary)**

Oreshenkov A.V., Grishin N.N., Stepanova S.E.

Tribological characteristics fuels and lubricating materials

Keywords: devices and test methods of tribological characteristics; tribological characteristics of fuel, oil and plastic greasings.

Abstract. Schemes of devices, test methods and quality indicators tribological characteristics commodity fuels, liquid and plastic lubricants of different function, and also norm on the specified indicators, established in the standard documentation for the listed products, and a range of their values are resulted.

*FAE «The 25th State Research Institute of
Chemmotology of the Ministry of Defence»*

Tsvetkov O.N., Cheremiskin A.L.

Tribological evaluation of properties of lube oils

Keywords: tribological properties, tribometer, wear, lube oils.

Abstract. The article covers the offered and tested evaluation method for antiwear properties and friction coefficient of lube oils with use of friction test machine (tribometer) SMT-1. Through the example of engine oils it shows the differentiation of wear performance of roller mechanism depending on oil viscosity and composition. The method is recommended for comparative tests of lube oils under service conditions of boundary and elastohydrodynamic lubrication.

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Development of the temperature method for estimation of lubricant ability of oils'

Keywords: temperature method, transition temperatures, friction coefficient, laboratory machine, lubricant, volume heating, kinetic approach.

Abstract. The temperature method of assessment lubricant ability of oils is based on idea that the determining factor of tribological behavior of any lubricant at friction in the condition of boundary lubricant is summary temperature in tribological contact. Its experimental basis is carrying out tribological tests of lubricants at low speeds of relative movement of the rubbing bodies to minimize frictional rise in temperature. Rise in temperature is performed from an external source of heat so temperature is almost equal in the place of contact of these bodies to the set heating temperature. Kinetic approach allows to distribute his provisions to real operating conditions of the greased frictional units.

*Federal budget-funded research Mechanical Engineering
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The influence of dispersion medium on the efficiency of additives in sulfonate greases

Keywords: lubricating greases, sulfonate greases, additives, tribological properties.

Abstract. Lubrication ability greases is their important performance. Therefore, great importance is the right choice of additives and their concentrations. In this paper, we investigate the influence of the dispersion medium to work additives and their effectiveness. To study the tribological performance are selected as the diameter of the wear scar, the critical load and welding load. Additives showed greater efficacy in lubricants based on synthetic oils and mixtures of petroleum and synthetic.

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Protivovetrovye properties of lubricants

Keywords: installation, an estimation method, pitting, oils motor, gas-turbine, transmission, gear, an indicator, norms, values, additives.

Abstract. Conditions of occurrence and the process mechanism pitting destructions of the interfaced surfaces of metal, devices, methods of an estimation of this indicator of quality of lubricants are resulted. Results of an estimation and norm on values of indicators of fatigue failure motor, gas-turbine, transmission and gear oils are presented.

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Solid lubricant coverings

Keywords: a firm lubricant covering, friction factor, hardness, adhesion, weight loss, time abrasion, application conditions, knot of a friction, the technician.

Abstract. Definition, appointment, structure, technology of drawing, the nomenclature, physical and chemical properties and operational characteristics of solid lubricant coverings for the interfaced surfaces of knots of a friction of the technics working in extreme conditions are resulted.

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PETROLEUM PRODUCTS: TECHNOLOGY, INNOVATION, MARKET

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The study of the polyisobutylene destruction in the protective fluid for tank- accumulators in power plants

Keywords: protective fluid, industrial oil, high molecular polyisobutylene, dynamic viscosity, destruction of polymer, molecular weight.

Abstract. During production and application exploitation properties of protective liquids are deteriorated due to the degradation of high molecular polyisobutylene in them. Research results of the polymer destruction under the mechanical and ultrasonic treatment are presented comparatively to thermal oxidation stability. The degree of polyisobutylene destruction was assessed by dynamic viscosity of protective liquid and the molecular weight of the polymer. Protective fluid becomes a Newtonian fluid under the influence of mechanical dispersion for 10 minutes at a speed of 10000 rpm and the molecular weight of polyisobutylene is reduced by 76%. With increasing time of mechanical treatment of the protective liquid the temperature in a thermostatic cell increases and becomes stable after 10 minutes which indicates a maximum degradation of polyisobutylene. The temperature depends on the concentration of polyisobutylene in the industrial oil. With the method of experiment mathematical planning the parameters of maximum degradation of the polymer within protective liquid was determined. The maximum degradation of the polymer in the composition of the exhaust protective fluids and subsequent adsorption may allow to regenerate base oils.

It is shown that the mechanical and ultrasonic treatments have a more significant effect on the polyisobutylene destruction than thermal oxidation. Thus mechanical treatment (10000 rpm, 10 minutes) reduces dynamic viscosity of the protective liquid by 89%; ultrasound treatment (22 Hz, 25 mA, 10 minutes) reduces dynamic viscosity by 94%; thermal oxidation (140°C, 6 hours) reduces dynamic viscosity by 38%. But if use antioxidant Agidol-1 the dynamic viscosity is reduced by only 25%.

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