

Chudinovskikh D.A. **World oil market**

Consideration and analysis of problems and characteristics of global oil trade is the major task when describing the functioning not only of global power system, but also of the world economy in general. Crude oil as also products of its processing are goods for trading of leading positions, both by volumes and by cost. In comparison with other traditional types of energy resources such as natural gas and coal, oil possesses the highest level of energy intensity. Despite an outlined tendency of recent years towards reduction of oil and oil products share within the structure of world power consumption, this energy resource remains the largest primary power source on the planet.

PETROLEUM PRODUCTS: TECHNOLOGY, INNOVATION, MARKET

Karpov N.V., Vasilyev G.G., Nikolaev S.I., Zheleznov M.V., Smirnov V.K., Irisova K.N., Talisman E.L.

Base oils production at the LUKOIL-Nizhegorodnefteorgsintez JSC

Keywords: base oils, selective solvent treatment raffinates, a hydrougrading, catalysts, viscosity index, viscosity at 100°C, evaporability by NOACK.

It is shown that the key role in first group base oils production from feed arriving to lubricant oil and bitumen production plays the hydrogenation process providing chemical transformation of undesirable components of feed (mainly heteroorganic compounds and polycyclic aromatic hydrocarbons) into hydrocarbons of desirable structure, i.e. naphthenic and monocyclic aromatic hydrocarbons with long lateral iso-paraffin chains.

Results of analysis of key technology parameters of the G-24 unit, quality of feed, structure of catalytic system used at hydrotreatment is described; influence of the listed above factors upon the quality of hydrotreated raffinates and products of their dewaxing is considered; opportunity and reserves of quality improvement of produced base oils components due to regulation of activity and selectivity of the catalyst, optimisation of its operation conditions, including regulation of feed quality is shown. High efficiency is shown of the RK-438 series catalysts use in one-stage process of oil raffinates hydrougrading, performed to produce low-sulphur stable high-index base oils.

Yakovlev S.P., Kerm L.Ya., Davydov D.V.

Technology of dewaxing solvent regeneration avoiding damp solvent formation

Keywords: dewaxing process, modernization of solvent regeneration technology, elimination of damp solvent formation.

A technology is developed of solvent regeneration out of dewaxed oil and gatch solutions, which allows to avoid formation of damp solvent. As a result all solvent circulating within dewaxing unit will be considered as dry. It will allow not only to solve many problems caused by presence of water in solvent, but also to rise efficiency of dewaxing process in general. Realization of the proposed technical solution demands insignificant capital expenditure and with high economic effect pays off within several months.

Sentyurhina M.I., Rubtsova O.A.

New polyurea grease for electrical contacts VNIINP-585

Keywords: grease, sliding low-current electrical contacts, technology, polyurea, ether PET, silicone fluid, properties.

The new polyurea grease for sliding low-current electrical contacts is developed. The operating temperature range of the new grease is from -60 to 250°C. Oil basis of the grease is a mixture of ether PET and silicone fluid 132-24 or PAOM-6. Article provides technology of the grease and its main properties – tribological, electrical, reological.

EQUIPMENT and DEVICES

Makaryan I.A., Savchenko V.I.

Evolution of the reactor constructions for Fischer-Tropsch synthesis

Keywords: Fischer-Tropsch synthesis, synthetic liquid fuel, reactor, reactor system, construction, design, slurry reactor, multitubular reactor, microchannel reactor, monolithic reactor, membrane reactor.

Evolution of development and modernization of the reactor systems for Fischer-Tropsch synthesis with production of synthetic liquid fuels has been reviewed. A comparative analysis of advantages and shortcomings of the new types of Fischer-Tropsch reactors for commercial application was done. Search of optimal reactor design for Fischer-Tropsch synthesis is still in progress.

Korneev S.V., Pilyaeva Y.A., Demin M.A.

Reliability of heat exchange equipment

Keywords: reliability, maintenance, costs, resource heat-exchange equipment, productivity, quality indicators, operation.

The article is devoted to reliability and durability, heat transfer equipment. Discusses the basic parameters of quality, employees criteria of operational properties of the unit, major of them: the technical level, reliability and durability. Grounded and presents a new method of calculating maintain the reliability of heat-exchange equipment during operation.

ANALYTIC METHODS FOR OIL and PETROLEUM PRODUCTS

Zakharova M.A., Dorogochinskaya V.A.

Simultaneous determination of microelements in crudes and heavy residues by wavelength dispersive X-ray fluorescence technique

Keywords: sulfur, chlorine, trace elements, petrol, heavy oil residue, Wavelength X-ray Fluorescence Spectroscopy.

New analytical procedure for S, Cl, V, Ni, Fe, Si, Al, Ca, Zn, P determination by WXRF (Wavelength X-ray Fluorescence Spectroscopy) in petrol and heavy oil residue was developed and certified (№ 0,1,000257-2008/17606-13). Confidence limits of the relative error for this analytical procedure don't exceed 10 %. This developed analytical procedure can be used for the analysis of crude oils with different density and viscosity/ The X-ray fluorescence (XRF) is non destructive and rapid test method (typical measuring times by element are 8–12 s depending on power of spectrometer). The analytical procedure can be expanded for the analysis from Na to U in case of necessity.

The article also describes Petroilquant Program that allows analysis of 25 elements in any types of oil liquid petrochemicals. As for the program Uniquant based on fundamental parameter method, it helps to analyze microelements from Na to U in unknown samples without using certified reference materials for calibration.

REVIEW of FOREIGN PUBLICATIONS

Evdokushin S.P.

Influence of E-85 fuel upon operational properties of motor oils (foreign publications review)

Keywords: alternative fuel E-85, motor oil, oil specifications, the effect of ethanol on the work of oil, additives for motor oil.

As part of an overview of foreign publications on the subject of engine oil, in the case of alternative fuel E-85. The data on the effect of ethanol on the performance of motor oils and car engine. It is shown that the problem of the application of alternative fuel E -85 cars resolved.

STUDYING TOGETHER

Abridged English-Russian dictionary of Himmotologiya terms and expressions: D-H

The Compiler – Danilov A.M.

MATERIALS of the PETROCHEMICAL and REFINERS ASSOCIATION

Extracts of the protocol #117 of ANN board meeting of 22.01.2014 / Subject: Modern competitive projects of oil and petrochemical refineries at the ANK Bashneft JSC and Gazprom neftekhim Salavat JSC