

IN SIGHT

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Liquefied natural gas production: Yesterday, Today and Tomorrow

Keywords: liquefied natural gas, source energy, market LNG, large-capacity and small-capacity production LNG, state LNG, project LNG.

Abstract. In this review was considered of the most promising types of source energy - liquefied natural gas: history, state and development prospects of the LNG world industry, its advantages and competitiveness. This article described state and development prospects of liquefied natural gas production in Russia as well as large-capacity and small-capacity LNG production today and in the future.

Russian State University of Oil and Gas named I.M. Gubkin

**PETROLEUM PRODUCTS:
TECHNOLOGY, INNOVATION, MARKET**

Agazade E.J.

Use of compositions based on liquid rubber, natural oil and nitro acid salts as liquid conservation

Keywords: conservative liquids, corrosion, inhibitor, natural petroleum acids (NPA), liquid rubber, α -olefin, nitro compound, "corrosionbox", tetradecene-1.

Abstract. In this proceeding, the compositions of the T-30 turbine oil with Ni, Co, Zn salts of the natural petroleum acids (NPA) boiling in the range 310–360°C, nitro compounds those are produced on the basis of the α -olefins and liquid rubber have been investigated in different ratio and contents as conservative liquids. The researches have been operated with different concentrations of inhibitor on the steel sheets in condensation and environment phases in the experiment chamber called "corrosionbox". It has been revealed that, the conservative liquid that is produced by the composition of the synthesised inhibitor and nitro compound in the presence of liquid rubber has a great protection against corrosion than their individual usages, meets the requirements and has a great practical importance.

Institute of Petrochemical Processes named after Academician Yu.G. Mamedaliyev

Smirnov V.K., Telyashev R.G., Khuramshin R.T., Irisova K.N.

Comparative tests of russian catalysts for middle oils hydrotreating

Keywords: hydrotreating, catalysts, tests, diesel oils, pilot device, sulphur content, polyaromatic content.

Abstract. Results of tests new version RK catalysts are presented, namely RK-250Co and RK-250Ni in comparison to earlier middle oils hydrotreating catalysts RK-231 and foreign commercial AlCoMo catalyst. Tests are carried out in pilot centre VNJJNP using device with reactors in single furnace with united feed and hydrogen and separate methods of product and circulatory H-containing gas. There are taken advantages of selection and analysis products, methods which except or diminish interaction H₂S with hydrocarbons. Tests exhibited what catalysts RK-250Co and/or RK-250Ni protected receipt of diesel oil component Euro-5 for processing of run or blend feed.

The All-Russia Research Institute of Oil Refining, JSC-VNII NP

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Single-column layout of oil primary distillation for small oil refineries with use of hydrocarbon steaming agent

Keywords: petroleum, primary distillation, hydrocarbon vapors, stripping agent, a distillation column, a separator.

Abstract. We have proposed a schematic diagram of One-column unit for primary oil refining with preliminary evaporator. Hydrocarbon vapor from the evaporator is used as a stripping agent in the process of distillation. Optimization of the distillation process, the method of mathematical modeling (ASPENHYSYS) showed that the use of hydrocarbon vapor as a stripping agent can significantly improve the quality of the fractions. This technology allows you to use less equipment and thus reduce the capital and operating costs, which is important in the design of mini-refineries to meet domestic needs in the remote regions of Russia, especially such as Yakutia.

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ECOLOGY and INDUSTRIAL SAFETY

Makhmudov M.J.

Methods of reducing the content of aromatic hydrocarbons consisting in benzene

Keywords: benzene, aromatic hydrocarbons, azeotropic distillation, extraction, rectification, adsorption.

Abstract. Road transport has become a major source of air pollution. Every year from car exhaust gases emitted millions of tons of toxic substances. In the composition of exhaust gases of car engines contain toxic compounds more than 300, about 60% of aerosols ejected into the atmosphere falls on the proportion of vehicles. Special danger to humans of particles of toxic emissions of aerosols with a radius of less than 20 microns, linger in the atmosphere for a long time and fall along with the air into the airways. In contact with carcinogens aerosol particles adsorb them on its surface. Carcinogens, getting into the body, causing the formation of malignant tumors. The way to solve the environmental problems of one - the car must be environmentally friendly.

The growth of the vehicle fleet and the increase in pollution of the environment associated with it are placing ever more stringent demands on the quality of gasoline produced in terms of their environmental properties. The aim of this work is historical - technical analysis v formation and development of the production of motor gasoline and aromatic hydrocarbons, as well as the analysis of modern requirements to the quality of motor gasoline and trends in the production of environmentally friendly fuels.

Articles are presented in a variety of treatment methods to improve the ecological environment protection and reduce the amount of aromatics in motor gasoline.

MATHEMATICAL SIMULATION

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Mathematical modelling and optimization of diesel cuts and atmospheric gasoil catalytic dewaxing

Keywords: catalytic dewaxing, diesel cut, atmospheric gasoil, cloud point, freezing point, mathematical model.

Abstract. The mathematical model of straight-run diesel cuts and atmospheric gasoil catalytic dewaxing process, devoted to produce components of summer, winter and arctic grade diesel fuels, was developed. The thermodynamic and kinetic parameters of the model (changes in Gibbs free energy of reactions and reaction rate constants) were determined. The verification of the model showed satisfactory correspondence of calculated and full-scale experimental values (absolute error of calculation does not exceed 1.16 wt.%). Applying the model the dependence of conversion degree of long-chain unbranched paraffins (which contribute to product low-temperature properties the most) on industrial unit operating conditions (temperature in the range (335–365)°C, raw materials flow rate (295–360) m³/h, hydrogen-containing gas flow rate (35000–65000) m³/h and dependence of product composition on raw materials composition were established. By model calculation prognosis and optimization for various raw materials compositions were performed towards raw materials flow rate and temperature in order to define optimal operating conditions for production of diesel fuels with improved low-temperature properties (cloud point is -26°C, freezing point is -35°C). It was shown that in the raw materials flow rate range (300340) m³/h the optimum temperature in the dewaxing reactor lies within (359–369)°C for raw materials with low long-chain unbranched paraffins content (20 wt.%) and within (357–362)°C for raw materials with low long-chain unbranched paraffins content (14 wt.%).

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