

METHODS OF PROCESSING CRUDE OIL AND AREAS OF APPLICATION OF THE PRODUCTS OBTAINED

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Abstract: Today, the level of oil and gas energy consumption is one of the important indicators of the development of a country. This represents the objective picture of the present time, because without energy, not a single issue of the development of industry, transport, and agriculture can be solved. Currently, 39.38% of the energy consumed in the world is oil, 25.84% is gas, 24.77% is coal, 8.98% is nuclear energy, and 1.03% is hydroelectric energy. is doing.

Key words: Petroleum, crude oil, conversion, vacuum distillation, fractionation, extraction, hydrotreating, sweetening, synthetic rubber, coke, visbreaking, carbon black.

Introduction: The first oil refinery, opened in 1861, produced kerosene by simple atmospheric distillation. Its by-products include tar and naphtha. It was soon discovered that high-quality lubricants could be obtained by distilling oil under vacuum. This incident caused many inventions. The two most important events that changed this situation: 1. The invention of the electric lamp, which reduced the demand for kerosene. 2. The invention of the internal combustion engine, which created the demand for diesel fuel and gasoline (naphtha).

The advent of mass production led to a dramatic increase in the number of gasoline-powered cars, and a corresponding increase in the demand for gasoline. However, only a certain amount of gasoline could be obtained from crude oil through atmospheric and vacuum distillation processes. The first thermal cracking process was developed in 1913. Thermal cracking applies both pressure and intense heat to heavy fuels, breaking their large molecules into smaller ones. Produced additional gasoline and distillate fuels. In the late 1930s, a sophisticated form of thermal cracking, visbreaking, was developed to produce more desirable and valuable products[1]. Oil refining has been constantly evolving in response to consumer demand for better and more diverse products. The original process requirement was to produce kerosene as a cheaper and better lighting fuel than whale oil. The development of the internal combustion engine led to the production of benzene, gasoline and diesel fuel. The evolution of the airplane created the need for high-octane aviation gasoline and jet fuel, a complex form of kerosene, the original petroleum product.

Methods: The refining process involves several steps that convert crude oil into useful products. The process begins with heating and drilling, where crude oil is extracted from the ground. Crude oil is then transported to refineries, where it undergoes a series of physical and chemical processes to produce valuable products such as gasoline, diesel fuel, and other petrochemicals. Recycling is divided into two main categories: upstream and downstream. The upstream sector includes exploration and drilling, while the downstream sector includes processing and distribution. Today, oil refineries produce a variety of products, many of which are used as raw materials for cracking processes and the production of lubricants and the petrochemical industry. These products can be broadly classified as fuels, petrochemical raw materials, solvents, process oils, lubricants, and

specialty products such as wax, asphalt, and coke[2]. (See Table 1.) The number and types of different processes used in modern oil refineries depend primarily on the nature of the raw materials and the requirements for the finished product. Processes are also influenced by economic factors, including costs, product value, utilities, and transportation availability. Chronology of introduction of various processes, separation. Crude oil is physically separated by fractionation in atmospheric and vacuum distillation towers into groups of hydrocarbon molecules with different boiling point ranges, called "fractions" or "cuts".[3]

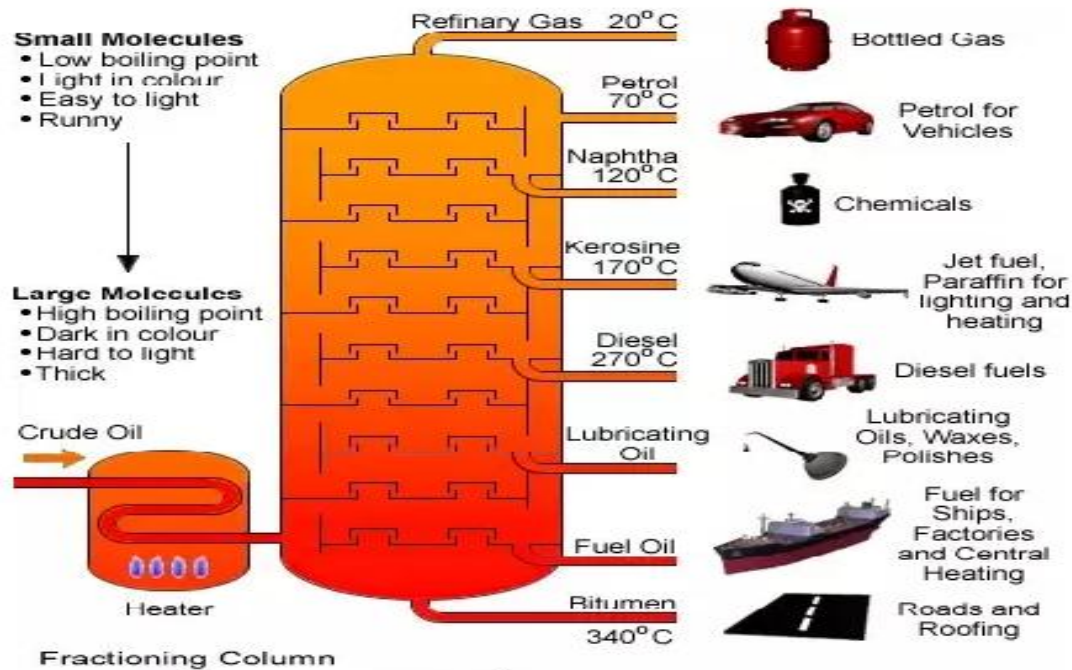


Figure 1. Use of petroleum products

Results: Many byproducts of crude oil refining, such as ethylene, propylene, and butadiene, are olefinic hydrocarbons obtained from cracking processes in oil refineries, and are used in the petrochemical industry to produce plastics, ammonia, synthetic rubber, glycol, etc. used as raw material for [4,5].

Table 1. The main products of crude oil refining

Hydrocarbon gases	Usage
Liquefied gases	Cooking and industrial gas Engine fuel gas Lighting gas, Ammonia, Synthetic fertilizer, Alcohol Solvents and acetone, Plasticizers Resins and fibers for plastics and textiles Paints and varnishes

Chemical industry raw materials	Rubber products
Carbon black	Printing inks Rubber industry
Light distillates	
Light naphthas	Olefins, Solvents, Extraction solvents Chemical industry raw materials
Intermediate Naphthas	Aviation and motor gasoline Solvents for dry cleaning
Heavy naphthas	Military aircraft fuel Jet fuel and kerosene Tractor fuel
Diesel fuel	Corrupt stock Oil and diesel fuel heating, Metallurgical fuel Absorber Oil - Benzene and Gasoline Recovery
Heavy distillates	
Technical oils	Textile oils, vegetable oils and cosmetics White oil - food industry
Oils	Transformer and spindle oils, Engine and motor oils, Machine and compressor oils Turbine and hydraulic oils, Transmission oils Equipment and cable insulation oils
Paraffin wax	Rubber industry Pharmaceuticals and cosmetics Food and paper industry Candles and matches

Leftovers	
Petrolatum	Petroleum jelly Cosmetics Rust inhibitors and lubricants Cable coating compounds
Residues of fuel oil	Boiler No. 6 and technological fuel oil
Asphalts	Asphalt laying, Asphalt lubricants Roofing materials Insulation and foundation protection Waterproof paper products
By-products of the oil refinery	
Root	Electrodes and fuel
Sulfonates	Emulsifiers
Sulfuric acid	Synthetic fertilizer
Hydrogen	Carbohydrate intake

Summary: Oil products have been known to us since ancient times, and the first oil product was kerosene, which was used as a light source. As it became clear that other products can be obtained from the composition of oil, the demand for oil also increased. As we saw above, oil products occupy almost all sectors. This shows us how much oil is a necessary find.

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