**20.03.2020**

**группа СЭГГ-218**

**Тема: Переработка нефти и газа**

**Processing of Oil and Gas**

Ознакомьтесь с терминологией настоящего урока, выпишите и заучите

незнакомые слова

|  |  |
| --- | --- |
| refinery | нефтеперерабатывающий завод (НПЗ) |
| process :processing | обрабатывать: обработка |
| gasoline | бензин // бензиновый; общее название ряда  легких дистиллятов нефти |
| diesel fuel | дизельное топливо |
| jet fuel | топливо для реактивных двигателей |
| fraction | фракция |
| fractional distillation | фракционная перегонка |
| chemical processing | химическая обработка |
| conversion | химическое превращение |
| catalytic cracking | каталитический крекинг |
| coking | коксование |
| catalytic reforming | каталитический риформинг |
| alkylation | алкилирование |
| reforming | реформинг |
| high octane hydrocarbons. | высокооктановые углеводороды |

**Read the text**

As a raw product, crude oil is of limited use. Refineries must separate and process the mix of

hydrocarbons which make up crude oil before they can be transformed into hundreds of useful

products such as gasoline, diesel and jet fuels.

The first and most important step is to separate it into various component or fractions. This takes

place in a fractionating column, also known as an atmospheric distillation tower.

This is a tall steel tower with perforated trays. Since each fraction has a different boiling range, a

distillation tower is able to separate the various fractions using heat and cooling.

Heavier hydrocarbons boil at much higher temperatures than lighter hydrocarbons.

They settle in trays at the bottom of the tower closest to furnace. The lighter fractions collect at

the top. Distillation is a continuous process which begins by heating crude oil in a furnace. Then it turns into a vapor. The vapor rises through perforations in the trays that are fitted with bubble caps.These caps force the vapor to pass through a previously liquefied fraction in the tray. This cools the vapor enough for it to shed that fraction. The remaining vapor repeats this process as it continues upwards. As each fraction reaches the tray where the temperature is just below its own boiling point, it condenses, liquefies and is drawn off the tray by pipes. A number of trays are needed to collect the liquids from each fraction.

The products of distillation can be divided into four categories:

|  |  |  |
| --- | --- | --- |
| 1 | Gases and light gasoline | The gases (methane, ethane, propane and butane) are  commonly used to fuel refinery furnaces while the light  gasoline is routed to gasoline blending. |
| 2 | Light distillates  (naphta, kerosene) | Naphta is used in the production of gasoline and  petrochemicals. Kerosene is used as a jet fuel and  stove oil |
| 3 | Middle distillates  (light and heavy gas oils) | Light gas oils are made into jet, diesel and furnace fuels.  Heavy gas oils undergo further chemical processing  such as cracking to produce naphta and other products. |
| 4 | Residual products | Residual products are further processed to produce  refinery fuels, heavy fuel oil, waxes, greases and  asphalt. |

The next step is conversion. During this process fractions from distillation towers are transformed into streams (intermediate components) that eventually become finished products. The most widely used conversion method is called cracking because it uses heat and pressure to “crack” heavy hydrocarbon molecules into lighter ones. A cracking unit consists of one or more tall, thick-walled, bullet-shaped reactors and a network of furnaces, heat exchangers and other vessels.

Fluid catalytic cracking, or “cat cracking”, is the basic gasoline-making process. Using intense heat, low pressure and a powdered catalyst (a substance that accelerates chemical reactions), the cat cracker can convert most relatively heavy fractions into smaller gasoline molecules.

Hydrocracking applies the same principles but uses a different catalyst, slightly lower temperatures, much greater pressure and hydrogen to obtain chemical reactions..

Cracking and coking are not the only forms of conversion. Other refinery processes, instead of splitting molecules, rearrange them to add value. Alkylation, for example, makes gasoline components by combining some of the gaseous byproducts of cracking.

The process, which essentially is cracking in reverse, takes place in a series of large, horizontal

vessels and tall, skinny towers that loom above other refinery structures. Reforming uses heat,

moderate pressure and catalysts to turn naphtha, a light, relatively low-value fraction, into high-octane gasoline components.

**Лексические упражнения**

1. **Переведите следующие предложения с английского языка на русский:**

1. Refineries must separate and process the hydrocarbons which make up crude oil before they can be transformed into gasoline, diesel or jet fuels.

2. The most widely used conversion method is called cracking.

3. Cracking takes large hydrocarbons and breaks them into smaller ones..

4. The products of alkylation are high octane hydrocarbons.

5. Alkylation makes gasoline components by combining some of the gaseous byproducts of

cracking

6. A cracking unit consists of one or more tall, thick-walled, bullet-shaped reactors and a network of furnaces, heat exchangers and other vessels.

2**. Составьте свои вопросы к каждому параграфу текста.**

svetapretty 1964@mail.ru