

1: Chemex Modular, LLC | Refineries - Gas Plants - Measurement

Oil refining processes are the chemical engineering processes and other facilities used in petroleum refineries (also referred to as oil refineries) to transform crude oil into useful products such as liquefied petroleum gas (LPG), gasoline or petrol, kerosene, jet fuel, diesel oil and fuel oils.

Print Once crude oil is extracted from the ground, it must be transported and refined into petroleum products that have any value. Those products must then be transported to end-use consumers or retailers like gasoline stations or the company that delivers heating oil to your house, if you have an oil furnace. The overall well-to-consumer supply chain for petroleum products is often described as being segmented into three components shown graphically in Figure 2. Upstream activities involve exploring for crude oil deposits and the production of crude oil. Examples of firms that would belong in the upstream segment of the industry include companies that own rights to drill for oil e. Midstream activities involve the distribution of crude oil to refiners; the refining of crude oil into saleable products; and the distribution of products to wholesalers and retailers. Examples of firms that would belong in the midstream segment of the industry include companies that transport oil by pipeline, truck or barge e. Downstream activities involve the retail sale of petroleum products. Gasoline stations are perhaps the most visible downstream companies, but companies that deliver heating oil or propane would also fall into this category. Upstream midstream and downstream Some companies in the petroleum industry have activities that would fall into upstream, midstream and downstream segments. ExxonMobil is one example of such a firm. Others have activities that fall primarily into only one segment. The KinderMorgan pipeline company is an example of a specialized petroleum firm, in this case belonging to the midstream segment. Many regions have local gas station brands that would specialize in the downstream segment of the industry. One of the best-known regional examples is the WaWa chain of gas stations and convenience stores in eastern Pennsylvania, but large grocery stores and retailers like Costco and Wal-Mart are increasingly involved in downstream sales of petroleum products. Petroleum refineries are large-scale industrial complexes that produce saleable petroleum products from crude oil and sometimes other feedstocks like biomass. The details of refinery operations differ from location to location, but virtually all refineries share two basic processes for separating crude oil into the various product components. Actual refinery operations are very complicated. The link below will take you to a minute long video that provides more details on the various refining processes. For crude oil to be used effectively by modern industry, it has to be separated into its component parts and have impurities like sulfur removed. The most common method of refining crude is the process of fractional distillation. This involves heating crude oil to about degrees Celsius, to turn it into a mixture of gases. These are piped into a tall cylinder, known as a fractional tower. Inside the tower, the very long carbon chain liquids, such as bitumen and paraffin wax, are piped away to be broken down elsewhere. The hydrocarbon gases rise up inside the tower, passing through a series of horizontal trays and baffles called bubble caps. The temperature at each tray is controlled so as to be at the exact temperature that a particular hydrocarbon will condense into a liquid. The distillation process is based on this fact. Different hydrocarbons condense out of the gas cloud when the temperature drops below their specific boiling point. The higher the gas rises in the tower, the lower the temperature becomes. The precise details are different at every refinery, and depend on the type of crude oil being distilled. But at around degrees, diesel condenses out of the gas. At around degrees, kerosene condenses out. Petrol, or gasoline, condenses out at around degrees, while petroleum gas is drawn off at the top. The distilled liquid from each level contains a mixture of alkanes, alkenes, and aromatic hydrocarbons with similar properties, and requires further refinement and processing to select specific molecules. There is not much demand for the longer chain, high molecular weight hydrocarbons, but a large demand for those of lower molecular weight-- for example, petrol. A process called cracking is used to produce more of the lower molecular weight hydrocarbons. This process breaks up the longer chains into smaller ones. There are many different industrial versions of cracking, but all rely on heating. When heated, the particles move much more quickly, and their rapid movement causes carbon-carbon bonds to break. The major forms of cracking are thermal cracking, catalytic, or cat cracking,

steam cracking, and hydrocracking. Because they differ in reaction conditions, the products of each type of cracking will vary. Most produce a mixture of saturated and unsaturated hydrocarbons. Thermal cracking is the simplest and oldest process. The mixture is heated to around 200 to 300 degrees Celsius, at a pressure of several kilopascals. That is, around seven times atmospheric pressure. This process produces alkenes, such as ethane and propane, and leaves a heavy residue. The most effective process in creating lighter alkanes is called catalytic cracking. The long carbon bonds are broken by being heated to around 400 to 500 degrees Celsius in an oxygen-free environment, in the presence of zeolite. This crystalline substance, made of aluminum, silicon, and oxygen, acts as a catalyst. A catalyst is a substance that speeds up a reaction or allows it to proceed at a lower temperature than would normally be required. During the process, the catalyst, usually in the form of a powder, is treated and reused over and over again. Catalytic cracking is the major source of hydrocarbons, with 5 to 10 carbon atoms in the chain. The molecules most formed are the smaller alkanes used in petrol, such as propane, butane, pentane, hexane, heptane, and octane, the components of liquid petroleum gas. In hydrocracking, crude oil is heated at very high pressure, usually around 5, kilopascals, in the presence of hydrogen, with a metallic catalyst such as platinum, nickel, or palladium. This process tends to produce saturated hydrocarbons, such as shorter carbon chain alkanes, because it adds a hydrogen atom to alkenes and aromatic hydrocarbons. It is a major source of kerosene jet fuel, gasoline components, and LPG. In one method, thermal steam cracking, the hydrocarbon is diluted with steam and then briefly heated in a very hot furnace, around 800 degrees Celsius, without oxygen. The reaction is only allowed to take place very briefly. Light hydrocarbons break down to the lighter alkenes, including ethane, propane, and butane, which are useful for plastics manufacturing. Heavier hydrocarbons break down to some of these, but also give products rich in aromatic hydrocarbons and hydrocarbons suitable for inclusion in petrol or diesel. Higher cracking temperature favors the production of ethene and benzene. In the coking unit, bitumen is heated and broken down into petrol alkanes and diesel fuel, leaving behind coke, a fused combination of carbon and ash. Coke can be used as a smokeless fuel. Reforming involves the breaking of straight chain alkanes into branched alkanes. The branched chain alkanes in the 6 to 10 carbon atom range are preferred as car fuel. Smaller hydrocarbons can also be treated to form longer carbon chain molecules in the refinery. This is done through the process of catalytic reforming. When heat is applied in the presence of a platinum catalyst, short carbon chain hydrocarbons can bind to form aromatics, used in making chemicals. A byproduct of the reaction is hydrogen gas, which can be used for hydrocracking. Hydrocarbons have an important function in modern society, as fuel, as solvents, and as the building blocks of plastics. Crude oil is distilled into its basic components. The longer carbon chain hydrocarbons may be cracked to become more valuable, shorter chain hydrocarbons, and short chain molecules can bind to form useful longer chain molecules. Seth Blumsack The first process is known as distillation. In this process, crude oil is heated and fed into a distillation column. A schematic of the distillation column is shown in Figure 2. Each fraction corresponds to a different type of petroleum product, depending on the temperature at which that fraction boils off the crude oil mixture. Crude Oil Distillation Click for text description. This will expand to provide more information.

2: Large Soybean Oil Refinery Processing Equipment

www.enganchecubano.com offers 60 oil refinery equipment list products. About 81% of these are oil pressers, 1% are steel pipes, and 1% are waste management. A wide variety of oil refinery equipment list options are available to you.

History[edit] The Chinese were among the first civilizations to refine oil. However, the modern history of the petroleum industry is said to have begun in when Abraham Gessner of Nova Scotia , Canada devised a process to produce kerosene from coal. Shortly thereafter, in , Ignacy Lukasiewicz began producing kerosene from hand-dug oil wells near the town of Krosno , Poland. In the early twentieth century, the introduction of the internal combustion engine and its use in automobiles created a market for gasoline that was the impetus for fairly rapid growth of the petroleum industry. The early finds of petroleum like those in Ontario and Pennsylvania were soon outstripped by large oil "booms" in Oklahoma , Texas and California. At one point, the refinery in Ras Tanura , Saudi Arabia owned by Saudi Aramco was claimed to be the largest oil refinery in the world. For most of the 20th century, the largest refinery was the Abadan Refinery in Iran. This refinery suffered extensive damage during the Iranâ€™Iraq War. Prior to World War II in the early s, most petroleum refineries in the United States consisted simply of crude oil distillation units often referred to as atmospheric crude oil distillation units. Some refineries also had vacuum distillation units as well as thermal cracking units such as visbreakers viscosity breakers, units to lower the viscosity of the oil. All of the many other refining processes discussed below were developed during the war or within a few years after the war. They became commercially available within 5 to 10 years after the war ended and the worldwide petroleum industry experienced very rapid growth. The driving force for that growth in technology and in the number and size of refineries worldwide was the growing demand for automotive gasoline and aircraft fuel. In the United States, for various complex economic and political reasons, the construction of new refineries came to a virtual stop in about the s. ExxonMobil oil refinery in Baton Rouge, Louisiana the fourth-largest in the United States [17] The size of oil refining market in was valued over USD 6 trillion in and is set to witness a consumption of over million barrels per day MBPD by Oil refining market will witness an appreciable growth because of rapid industrialization and economic transformation. Changing demographics, growing population and improvement in living standards across developing nations are some of factors positively influencing the industry landscape. Oil refining in the United States[edit] Main article: Petroleum refining in the United States In the 19th century, refineries in the U. There was no market for the more volatile fraction, including gasoline, which was considered waste and was often dumped directly into the nearest river. The invention of the automobile shifted the demand to gasoline and diesel, which remain the primary refined products today. Today, national and state legislation require refineries to meet stringent air and water cleanliness standards. In fact, oil companies in the U. In the earliest data provided , the United States operated refineries with a combined capacity of In , there were operable U. Indeed, in order to reduce operating costs and depreciation, refining is operated in fewer sites but of bigger capacity. In through , as revenue streams in the oil business dried up and profitability of oil refineries fell due to lower demand for product and high reserves of supply preceding the economic recession , oil companies began to close or sell the less profitable refineries. Operation[edit] Raw or unprocessed crude oil is not generally useful in industrial applications, although "light, sweet" low viscosity, low sulfur crude oil has been used directly as a burner fuel to produce steam for the propulsion of seagoing vessels. The lighter elements, however, form explosive vapors in the fuel tanks and are therefore hazardous, especially in warships. Instead, the hundreds of different hydrocarbon molecules in crude oil are separated in a refinery into components which can be used as fuels , lubricants , and as feedstocks in petrochemical processes that manufacture such products as plastics , detergents , solvents , elastomers and fibers such as nylon and polyesters. Petroleum fossil fuels are burned in internal combustion engines to provide power for ships , automobiles , aircraft engines , lawn mowers , dirt bikes , and other machines. Different boiling points allow the hydrocarbons to be separated by distillation. Since the lighter liquid products are in great demand for use in internal combustion engines, a modern refinery will convert heavy hydrocarbons and lighter gaseous elements into these higher value products. The oil refinery in Haifa, Israel is

capable of processing about 9 million tons 66 million barrels of crude oil a year. Oil can be used in a variety of ways because it contains hydrocarbons of varying molecular masses , forms and lengths such as paraffins , aromatics , naphthenes or cycloalkanes , alkenes , dienes , and alkynes. While the molecules in crude oil include different atoms such as sulfur and nitrogen, the hydrocarbons are the most common form of molecules, which are molecules of varying lengths and complexity made of hydrogen and carbon atoms , and a small number of oxygen atoms. The differences in the structure of these molecules account for their varying physical and chemical properties , and it is this variety that makes crude oil useful in a broad range of several applications. Once separated and purified of any contaminants and impurities, the fuel or lubricant can be sold without further processing. Smaller molecules such as isobutane and propylene or butylenes can be recombined to meet specific octane requirements by processes such as alkylation , or more commonly, dimerization. The octane grade of gasoline can also be improved by catalytic reforming , which involves removing hydrogen from hydrocarbons producing compounds with higher octane ratings such as aromatics. Intermediate products such as gasoils can even be reprocessed to break a heavy, long-chained oil into a lighter short-chained one, by various forms of cracking such as fluid catalytic cracking , thermal cracking , and hydrocracking. The final step in gasoline production is the blending of fuels with different octane ratings, vapor pressures , and other properties to meet product specifications. Another method for reprocessing and upgrading these intermediate products residual oils uses a devolatilization [[permanent dead link](#)] process to separate usable oil from the waste asphaltene material. Oil refineries are large scale plants, processing about a hundred thousand to several hundred thousand barrels of crude oil a day. Because of the high capacity, many of the units operate continuously , as opposed to processing in batches , at steady state or nearly steady state for months to years. The high capacity also makes process optimization and advanced process control very desirable. Major products[[edit](#)] Crude oil is separated into fractions by fractional distillation. The fractions at the top of the fractionating column have lower boiling points than the fractions at the bottom. The heavy bottom fractions are often cracked into lighter, more useful products. All of the fractions are processed further in other refining units. A breakdown of the products made from a typical barrel of US oil. The majority of petroleum is converted to petroleum products, which includes several classes of fuels. These are not usually transported but instead are blended or processed further on-site. Chemical plants are thus often adjacent to oil refineries or a number of further chemical processes are integrated into it. For example, light hydrocarbons are steam-cracked in an ethylene plant, and the produced ethylene is polymerized to produce polyethene. Because technical reasons and environment protection demand a very low sulfur content in all but the heaviest products, it is transformed to hydrogen sulfide via catalytic hydrodesulfurization and removed from the product stream via amine gas treating. Using the Claus process , hydrogen sulfide is afterwards transformed to elementary sulfur to be sold to the chemical industry. The rather large heat energy freed by this process is directly used in the other parts of the refinery. Often an electrical power plant is combined into the whole refinery process to take up the excess heat. According to the composition of the crude oil and depending on the demands of the market, refineries can produce different shares of petroleum products. The largest share of oil products is used as "energy carriers", i. These fuels include or can be blended to give gasoline, jet fuel , diesel fuel , heating oil , and heavier fuel oils. Heavier less volatile fractions can also be used to produce asphalt , tar , paraffin wax , lubricating and other heavy oils. Refineries also produce other chemicals , some of which are used in chemical processes to produce plastics and other useful materials. Since petroleum often contains a few percent sulfur -containing molecules, elemental sulfur is also often produced as a petroleum product. Carbon , in the form of petroleum coke , and hydrogen may also be produced as petroleum products. The hydrogen produced is often used as an intermediate product for other oil refinery processes such as hydrocracking and hydrodesulfurization. Petroleum products are usually grouped into four categories: These require blending various feedstocks, mixing appropriate additives, providing short term storage, and preparation for bulk loading to trucks, barges, product ships, and railcars. This classification is based on the way crude oil is distilled and separated into fractions. Lubricants produces light machine oils, motor oils , and greases , adding viscosity stabilizers as required , usually shipped in bulk to an offsite packaging plant. Paraffin wax , used in the packaging of frozen foods , among others. May be shipped in bulk to a site to

prepare as packaged blocks. Used for wax emulsions, construction board, matches, candles, rust protection, and vapor barriers. Sulfur or sulfuric acid, byproducts of sulfur removal from petroleum which may have up to a couple percent sulfur as organic sulfur-containing compounds. Sulfur and sulfuric acid are useful industrial materials. Sulfuric acid is usually prepared and shipped as the acid precursor oleum. Bulk tar shipping for offsite unit packaging for use in tar-and-gravel roofing. Asphalt used as a binder for gravel to form asphalt concrete, which is used for paving roads, lots, etc. An asphalt unit prepares bulk asphalt for shipment. Petroleum coke, used in specialty carbon products like electrodes or as solid fuel. Petrochemicals are organic compounds that are the ingredients for the chemical industry, ranging from polymers and pharmaceuticals, including ethylene and benzene - toluene - xylenes "BTX" which are often sent to petrochemical plants for further processing in a variety of ways. The petrochemicals may be olefins or their precursors, or various types of aromatic petrochemicals.

3: Oil Refinery Equipment List Manufacturer

Illustrative List of Oil Drilling and Refinery Equipment Share The Islamic State in the Levant (ISIL) views control of energy resources as more than a source of revenue.

4: Oil Refinery Process Units, Refinery Equipment List

High walnut efficiency oil refinery equipment list or animal Oil Refinery Equipment is an industrial process plant where crude oil is processed and refined into more useful products such as petroleum naphtha, gasoline, High walnut efficiency oil refinery equipment list diesel fuel, asphalt base, heating oil, kerosene, and liquefied petroleum.

5: Refinery Equipment & Supplies

Oil Refinery Equipment List, Find Complete Details about Oil Refinery Equipment List, Oil Refinery Equipment List, Edible Oil Refinery Project, Edible Oil Refinery Project from Oil Pressers Supplier or Manufacturer-Zhengzhou Qi'e Grain And Oil Machinery Co., Ltd.

6: High Efficiency Oil Refinery Equipment List

We has been a leading global supplier to the refining industry providing industrial Petroleum Refining Process Equipment, Oil Refinery Process Units, Refinery Equipment List, Crude Oil Refinery Plant, Coal And Petroleum Refining Process Equipment, Natural Gas Production And New Energy Device With Excellent Technology And Service.

7: Palm Oil Refinery - Palm Oil Mill Machine Leading Manufacturers and Suppliers

Refining operations Petroleum refining processes and operations can be separated into five basic areas: Fractionation (distillation) is the separation of crude oil in atmospheric and.

8: Petroleum Refining Process Equipment, Oil Refinery Process Units, Refinery Equipment List

Oil refinery or petroleum refinery is an industrial process plant where crude oil is transformed and refined into more useful products such as petroleum naphtha, gasoline, diesel fuel, asphalt base, heating oil, kerosene, liquefied petroleum gas, jet fuel and fuel oils.

9: Heavy Oil Recovery Equipment/Oil Refinery Machine | Oil Making Machine Supplier

List of Refinery Equipment. Complete Equipment/ Infrastructure for Crude Oil Distillation Refinery. Item Location:

OIL REFINERY EQUIPMENT LIST pdf

Bakersfield, California. United States. Las Palmas Oil & Dehydration, Inc. located in Bakersfield, California (previously Sabre Refining) owns this crude oil distillation refinery.

Steam Transport on the Roads Poets Market 2008 (Poets Market) Spicy Mystery Stories Fragrance of kindness 1. The nexus between nationalism, democracy and national integration Constructing ancient Judaism from the Scrolls Martin Goodman A handful of lavender Hometown appetites Louis vuitton annual report 2016 Lecture notes for constitutional law Potential criminality : the body in the digital archive Subtracting Fears for the Future A little boy and Santa Claus. Let There Be Life The fighters guide to hard core heavy bag training Warriors who ride the wind The International Political Economy of the Environment War Damage in Western Europe Evolution and structure of the Internet Mazda miata service manual Catcher in the rye chapter 2 Cadence monte carlo simulation tutorial Catcher in the rye chapter 19 Hematology : red and white blood cell tests Piper PA-28 series 180G-AVBI and Piper PA-28 series 180G-AVBD Illustrated catalogue of plaster ornaments Contents: Olga takes a bite Olgas second house Olga makes a friend Olgas special day. Nan-ching-The Classic of Difficult Issues (Comparative Studies of Health Systems and Medical Care) Bourdieu practical reason on the theory of action Kaffir, kangaroo, Klondike Case history in psychology Raspberry pi programming book DSM-III-R Diagnostic Statistical Manual IIR Layout Optimization in VLSI Design (Network Theory and Applications) Complete Handbook of Greek Verbs Life of Madame Guyon Mystery of the Jubilee Emerald The Pillars of the Earth Part 2 of 3 Basketball drills practice plans Doing Business in the Czech Republic (Doing Business With the Czech Republic)