

Oil and Gas Discovery and Production Transformed the Economy of Modern Qatar

Name

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Subject

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Introduction

For centuries, the core sources of livelihood for Qataris were fishing, trade and pearling. However, the impact of Great Depression and the start of the Japanese cultured pearl sector, trade and peeling industry in Qatar declined. In the year 1935, Qatar was granted oil concession to the government petroleum company, the Qatar Petroleum Company which was a subsidiary of the Iraq Petroleum Company (Yousef, 2004). The company was owned by the France, Anglo-Dutch, and US. After high exploration levels of oil was discovered on the Western side of the Peninsula a place called Dukhan. Between the 1950s and 1960s, oil revenue brought economic prosperity, social progress, rapid immigration and the start of the current Qatar's modern history.

Location of the Main oil Refineries in Qatar

The main refineries include:

Qatar Petroleum Refinery

One of the main refineries in Qatar is Qatar Petroleum Refinery which is located at Mesaieed. Mesaieed is located approximately 40 kilometers south of Doha and on the east of Qatar. In fact, the city of Mesaieed has transformed itself for the past couple of years from a simple port for exporting crude oil to other countries into Qatar's main industrial city as well as center for oil refining and petrochemical activities (Qatar Petroleum, 2015).

Qatargas Refineries

Qatargas operates refineries from two key locations in Qatar. The first refinery is located in their headquarters building which is at the Ras Laffan Industrial City and the second in the Doha in the West Bay Area Qatargas, (2017). The Ras Laffan Industrial City, where the main refinery of Qatargas operates from is located approximately 80 kilometers northeast of Qatar's mainland Qatargas, (2017b).

Qatargas Refinery

a. Type of refineries used by Qatargas

The type of refineries for Qatargas includes Petroleum oil refinery, which is used to convert crude oil into different petroleum fuel-based products such as diesel oil, LPG, naphtha, kerojet, and hexane.

b. General characteristic of the Qatari crude oil API, Content

The sample observed to determine the American Petroleum Institute (API) rate was liquid at room temperature and had a good flow of properties. In fact, after cooling the H₂S content on the vapor of the samples in the original containers were analyzed and noted to in the level of 3000-1400 ppm in the container. The portion of the selected sample was taken and tested for API and water contents (Brett, 2006). It was observed that the Qatar crude oil has a 27.97° API and the content as 0.18% Vol. also, the Dry API was 28.03° API.

c. Production Capacity

Qatargas refinery has two main refineries. Laffan Refinery 1 and Laffan Refinery 1. Laffan Refinery 1 started its production in 2009 and has a capacity of 146,000 barrels per stream day (bpsd). The refinery also has a production capacity of 61,000 bpsd of naphtha, 52,000 bpsd of kerojet, 9,000 bpsd of Liquefied Petroleum Gas (LPG) and 24,000 bpsd of gasoil (Qatargas, 2017c).

Laffan Refinery 2 began its commercial activities in 2016. It has a processing capacity of 146,000 barrels per stream day to the existing Laffan Refinery 1, doubling the Qatar's total condensate oil refining capacity to 292,000 bpsd. Laffan Refinery 2 produces low sulfur Euro-V specifications products like kerojet (A-1), naphtha, ultra-low sulfur diesel, butane and propane for both domestic and international markets (Qatargas, 2017c).

Petroleum refining process-Diesel

First, it is important to understand what crude oil is and how diesel fuel is manufactured. Diesel fuel is one of the common product that is made from crude oil. Crude oil is a natural liquid that can be refined into numerous fuels as well as other petroleum products (Ken Drick Oil Company, 2015). At the time of the refining process the sticky and viscous dark thick crude oil is transformed into a much lighter diesel fuel. It is through the processes of distillation that makes the crude oil change into different fuels and other products. Thus, the following are the three steps of creating petroleum diesel oil from crude oil:

The initial process known as the distillation. In this first process, crude oil is fed and heated through a distillation column to over 400 degree Celsius. This process helps to turn the liquid into vapor. The heated vapor then enters through a fractional distillation column. As the vapor rises, it begins to cool down, and as it reaches a particular temperature, the crude oil starts to separate itself into different layers referred as fractions (Planete Energies, 2015). These fractions are then captured separately through a distillation plates as they emerge. Each fraction matches to a different type of petroleum product, in relation to the temperature at which that fraction boils off the mixture of crude oil.

The second stage is referred as cracking and reforming (Pennstate, 2017). In this process, as soon as the liquid chain enters the distillation column, they then start to change into liquid again. Afterward, this emerges as bitumen or asphalt and exist at the top of the column. As the vapor rises, tinier hydrocarbon chains start to liquefy. Fuel product then starts to emerge when the vapor cools down below 370 degrees Celsius. The process continues up the column where some distillate emerges as the vapor continues to cool further.

The diesel fuel with a start to emerge when the vapor reaches between 200 and 350 degree Celsius and the vapor is collected in the distillation plates where it is stored in a diesel holding tank.

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