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TEMPERI LOGISTICS LTD

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Chamber of Commerce and Industry Stara Zagora member

9000 България, гр. Варна, р-н Младост, бул. Сливница 166А, ет. 6 ап. офис 459000, Bulgaria, Varna, district Mladost, 166A, Slivnitsa blv, fl. 6, off 45

Company Registration № (ЕИК): 206032947
VAT Number: BG206032947

Web page: www.temperi-logistics.com
E-mail: temperilogistics.bg@gmail.com

Refineries in the Arab World:

Algeria, Bahrain, Djibouti, Egypt, Yemen, Jordan

2023

Content

Introduction

The Arab world consists of 23 countries with a combined population of about 373 million people and a total area of about 13 million square kilometers.

The countries commonly included in the "Arab World" are:

Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, State of Palestine, Yemen.

Of these, only Saudi Arabia, Algeria, Iraq, Kuwait, Libya, and the UAE are members of the organization of oil exporting countries OPEC.

The Arab world is more than important at the global level. It has large crude oil reserves of 989, 822 billion barrels according to OPEC's 2021 annual statistical report, and Arab oil reserves account for 64.03% of total world reserves, which were 1,545.871 billion barrels and this amount of reserves has made the Arabian region an attractive factor for foreign investment and international competition to gain a foothold in this geostrategically important region.

This article provides an overview of refineries in Algeria, Bahrain, Djibouti, Egypt, Jordan, and Yemen and includes their locations, crude oil processing capacity, products produced, and other parameters of production activities.

Algeria

Oil and gas are the backbones of Algeria's economy, accounting for 30% of GDP, 60% of state budget revenues, and 95% of export earnings. Algeria ranks 8th in the world in gas reserves and 4th in the world in gas exports. Algeria is the world's 15th largest oil exporter and the 11th largest oil exporter.

Its daily crude oil production in thousand barrels is 1,009 BBL/D/1K for December 2022. The maximum production was 1,427 BBL/D/1K and the minimum was 775 BBL/D/1K. Data from the Organization of Petroleum Exporting Countries.

Exports ($37.4 billion in 2017) - natural gas (42%), crude oil (34%), petroleum products (18%). Major buyers are Italy ($5.36 billion), Spain ($4.72 billion), France ($4.23 billion), the US ($3.7 billion), and Turkey ($2.27 billion).

The total length of pipelines for the transportation of natural gas, liquefied petroleum gas, gas condensate, and crude oil is 15.7 thousand km. The internal network of main gas pipelines has a total length of 8.4 thousand km. The Transmed gas pipeline (Algeria - Tunisia - Italy) is 2.6 thousand km long (including 550 km in Algeria) and Maghreb - Europe (Algeria, Morocco, Spain) is 1365 km. The total length of oil pipelines (5.9 thousand km) allows the pumping of 84 million tons of oil annually to the coast. Main oil pipelines: Haud el-Hamra-Arzew, Haud el-Hamra-Bejaia, In Amenas-Sehira (Tunisia), Haud el-Hamra-Mesdar-Skikda.

Pipelines: condensate - 2,600 km, gas - 16,415 km, LPG - 3,447 km, oil - 7,036 km, refined products - 144 km (2013).
Ports and terminals: Algiers, Annaba, Arzew, Bejaia, Oran, Mostaganem, Skikda.

Algeria is one of the largest oil refining centers in Africa, with probable oil reserves of 18.2 billion barrels and gas reserves of 125 trillion standard cubic feet. Algeria's oil fields produce high-quality light oil with very low sulfur content.

SONATRACH

The country has five refineries, all owned and operated by the Algerian national oil company SONATRACH, with a total processing capacity of 30,000 Mtpa: Skikda (RA1K: 16.5 Mtpa), Topping Condensat (RA2K: 5.5 Mtpa), Adrar (RA1D: 0.6 Mtpa), Algiers (RA1Z: 3.65 Mtpa) and Arzew (RA1Z: 3.75 Mtpa).

SONATRACH has five national refineries with a total processing capacity of 30 Mtpa: Skikda (RA1K: 16.5 Mtpa), Topping Condensat: (RA2K 5.5 Mtpa), Adrar (RA1D: 0.6 Mtpa), Algeria (RA1Z: 3.65 Mtpy) and Arzev (RA1Z: 3.75 Mtpy).

The sixth refinery, Hassi Messaoud, is due to be commissioned in 2024 and has a production capacity of 5.00 million tons per year.

Skikda Refinery

Skikda Refinery — is a refinery located in Skikda, abbreviated "RA1K", in northern Algeria, on the Mediterranean Sea near the port of Skikda.

Located by the sea, it benefits from maritime traffic from the port of Skikda and can thus receive heavy tankers. Its refining capacity is about 16.5 million tons per year, making it the largest refinery in Algeria. It was founded in 1979 by the Algerian public company SONATRACH, created to exploit resources, ranked 12th in the ranking of oil companies in the world, as well as the 4th largest exporter of LNG and 3rd LPG, and the 5th largest exporter of natural gas in the world.

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Production capacity

The Skikda Refinery processes 16.5 million tons of crude oil per year. The production complies with Euro V standard and the annual production capacity is 3 753800 tons of naphtha, 2 135400 tons of gasoline, 1 500000 tons of kerosene, 5913 800 tons of diesel, 4 270 800 tons of fuel oil, 644 200 tons of LPG, 197 300 tons of benzene, 16 900 tons of toluene, 220 100 tons of paraxylene.

Topping Condensat

Topping Condensat, abbreviated as "RA2K", is a refinery located in Skikda, Algeria, built in 2008 by China Petroleum Engineering and Construction (CPECC), a subsidiary of China National Petroleum Corporation (CNPC). It is currently operated by SONATRACH.

Production capacity

RA2K refinery processes 5 million tons per year.

Products produced: butane, naphtha, Jet A1, light diesel, and heavy diesel.

Arzew Refinery

Arzew Refinery is an oil refinery located in Arzew, Algeria.

Located near the sea, it benefits from the maritime traffic of the port of Arzew and can thus receive heavy tankers. Its refining capacity is about 54,000 barrels per day, making it the third-largest refinery in Algeria. This refinery is currently operated by Sonatrach. It was developed to refine crude oil from Hassi Messaoud to meet the needs of the national market for fuel, lubricants, and bitumen and to export surplus products (naphtha, kerosene, diesel fuel).

The refinery's crude oil refining capacity was increased from 2.5 million tons to 3.75 million tons per year as part of the 2008-2012 upgrade.

Production capacity

The refinery in Arzew refines 3.5 million tons of Saharan crude oil per year and 280,000 tons of imported oil. The production complies with the Euro V standard and the annual production capacity is:

15,000 tons propane, 70,000 tons butane, 70,000 tons premium gasoline, 490,000 tons normal gasoline, 160,000 tons naphtha, 120,000 tons kerosene, 980,000 tons diesel, 550,000 tons BTS fuel oil, 70,000 tons HTS fuel oil, 160,000 tons lubricants, 70,000 tons grease, 4,000 tons paraffin, 120,000 tons road bitumen, 20,000 tons oxidized bitumen.

The storage fleet at this refinery consists of 212 tanks with capacities ranging from 8,000 to 60,000 m3 and six storage spheres for liquefied petroleum gas (propane and butane), and products are transported by trucks, pipes, and ships.

Adrar Refinery

The Adrar Refinery is located near the village of Sbaa in the district of Tsabit in the province of Adrar in south-central Algeria. It is supplied by several small oil and gas fields in the Sbaa basin, with reserves of 600 million barrels of oil equivalent and 6 trillion cubic feet of gas.

Production capacity

The refinery was commissioned in July 2006 by Sonatrach and the China National Petroleum Corporation (CNPC) and has a capacity of 13,000 bpd.

The Adrar refinery produces butane gas, propane gas, normal gasoline, premium gasoline, unleaded gasoline, diesel fuel, and kerosene.

Algiers Refinery

Algiers refinery - is an oil refinery located in Sidi Archin (Baraki), about twenty kilometers east of the city of Algiers. It was built in 1964 and has an area of 182 hectares.

Production capacity

The Algiers refinery, called "RA1G" for short, processes approximately 3.645 million tons of Saharan oil per year, 59,000 barrels per day, making it the second largest refinery in Algeria. The refinery in Algeria processes crude oil from Hassi-Messaoud to meet the demand for fuel and gas (gasoline, kerosene, diesel, LPG, propane, butane) and to export other products such as naphtha and heating oil.

Production complies with the Euro-5 standard and covers 95% of the fuel demand of the Central region of Algeria.

Development outlook

SONATRACH continues its actions to modernize, update and adapt processes to the latest technological advances:

- The addition of refining capacity at the Algiers refinery of 1 million tons per year.

- Deep fuel conversion at the Skikda Refinery by hydrocracking with a capacity of 5 million tons per year.

- Processing of surplus naphtha at the Skikda Refinery with a capacity of 4.5 million tons per year.

- Construction of a new Hassi Messaoud refinery with an annual capacity of 5 million tons of oil and 120,900 tons of natural gas. The refinery aims to meet the demand for petroleum products that meet European environmental standards (Euro V). It will produce hydrocarbon derivatives such as gasoil and gasoline (regular and super) as well as butane and propane by international standards.

The £2.8 billion ($3.68 billion) refinery is scheduled to start up in the first half of 2024. Construction work on the project is being carried out by a joint venture between Korean Samsung Engineering (45%) and Spanish firm Técnicas Reunidas (55%). The Hassi-Messaoud refinery is located in the village of Haud el-Hamra in the Sahara desert in the district of Hassi-Messaoud in the province of Ouargla, some 600 kilometers southeast of the capital of Algeria. The refinery complex will include a primary crude distillation unit (PRU), a vacuum distillation unit (VDU), a continuous catalytic reforming unit, an isomerization unit, a naphtha hydrotreating unit, a hydrodesulfurization unit, a hydrocracking unit and a solvent deasphalting unit (SDA).

The refinery will also include an amine regeneration unit, a sulfur recovery unit, and a wastewater treatment plant.

- Along with Hassi Messaoud, two other large refineries that Sonatrach has proposed to build to increase domestic production of cleaner transportation fuels and European-quality energy products will be located in Tiaret and Biscre.

The total capacity of the three refineries will be 15 million tons per year (Mtn/yr).In 2021, Sonatrach's export revenues increased by 75% compared to 2020. In the same period, the company's turnover rose from $20 billion to $35 billion, and its production in tons of oil equivalent (mln) increased from 176 million to 185 million euros, bringing its export level to 95 million tons.

The company has more than 53,000 employees and more than 150,000 employees in its 154 subsidiaries and produces 30% of Algeria's GNP.

Contacts:

https://sonatrach.com/

Bahrain

Bahrain owns the Abu Safah offshore oil field in the Persian Gulf (jointly with Saudi Arabia) with a production capacity of 300,000 barrels per day divided equally between the two countries and acts as agent for the sale of Abu Safah crude oil on behalf of the Bahraini government through ***the Bahrain Petroleum Company*** *at a rate of 150,000 barrels per day.*

Abu Safah oil is a medium sulfur crude with an average density of 29 degrees API and a sulfur content of 2.85%. The oil is sold directly to the international market through the Ras Tanura terminal - in cooperation with Saudi Aramco, with a typical cargo volume of 500,000 barrels, mainly destined for markets east of Suez, especially to the Far East and Southeast Asia.

Sitra refinery

Raffinerie de Sitrah is an oil refinery located halfway between the workers' camp at Awali and Sitra in Bahrain.

Managed by **Bahrain Petroleum Company (BAPCO)**, Bahrain's national oil company.

Production capacity: 15 million tons per year.

Refined products exported from Sitra Marina:

Liquefied petroleum gas (LPG), naphtha, gasoline, jet fuel/kerosene (Jet A-1 for commercial aviation, for Bahrain International Airport), gasoil (maximum specification of 10 parts per million sulfur, low sulfur marine diesel), high sulfur fuel oil as bunker fuel for ships with exhaust gas cleaning systems and environmentally friendly power plants), asphalt (with a penetration rate of 60/70), sulfur, and Group III lubricating base oils.

The complex also includes storage facilities with a capacity of 14 million barrels and a marine terminal.

About one-sixth of the oil comes from Bahrain's oil fields, and the rest comes from Saudi Arabia

Saudi Aramco supplies about 235,000 barrels a day through the Abqaiq-Dahran pipeline from Said Arabia. It has been proposed to build a new pipeline, starting from Aramco's Abqaiq refinery to Quraiya, using the existing pipeline corridor, then along the Bahraini coast to finally reach the refinery.

Contacts:

Tel.: (+973) 17704040

https://www.bapco.net/

Djibouti

Industrial production is underdeveloped, there are no refineries, and the port of Djibouti concentrates small oil processing and storage facilities.

Since the end of 2020, the Moroccan construction firm SOMAGEC began construction work on a new oil pier for the liquid cargo port Damerjog in Djibouti Damerjog Industrial Park (DDIP).

The oil jetty will be 3 km long and accommodate vessels from 5,000 to 100,000 tons and from 2,000 to 30,000 tons. The jetty will serve the new port being developed by the Djibouti Ports and Free Zone Authority (DPFZA), which includes oil and petroleum product storage tanks, an oil refinery, an LNG terminal, a ship repair area, and power plants. The Damerjog liquid cargo port will be developed in three construction phases over five years.

Egypt

Egypt is Africa's second-largest refining country, accounting for 23% of the continent's domestic crude oil production.

Egypt has significant energy resources, both in the form of traditional fossil fuels and renewable energy sources. The country's proven hydrocarbon reserves at the end of 2020 were 3.6 billion barrels of oil and 75.5 trillion cubic feet of natural gas.

Crude oil production per day in thousands of barrels is 567 BBL/D/1K according to Egypt's Energy Information Administration as of September 2022. The maximum production was 930 BBL/D/1K and the minimum was 556 BBL/D/1K. Egypt hopes to be self-sufficient in petroleum products by 2023.

Egypt has three main crude blends. The Suez and Belayim blends come from aging offshore fields in the Gulf of Suez and are refined domestically, with only a small amount exported.

Egypt plays a vital role in international energy markets thanks to the Suez Canal and the Suez-Mediterranean Pipeline (SUMED). Expanded in 2015, the Suez Canal is an important transit route for oil and liquefied natural gas (LNG) shipped south from North Africa, Europe, and North America to Asia. The fees levied on these two transit points are a significant source of revenue for the Egyptian government

Egypt's petrochemical sector represents about 12 percent of industrial production and generates revenues of $7 billion, equivalent to nearly 3 percent of GDP. The use of LNG is expected to increase by 65 percent to 50 million tons by the fiscal year 2022/2023, while the use of petroleum products will increase by 35 percent.

There are three organizations representing state interests, namely the Egyptian General Petroleum Corporation (EGPC), the Egyptian Natural Gas Holding Company (EGAS), and the Ganup El Wadi Oil Holding Company (GANOPE). The Egyptian market consists of ten refineries operated by the Egyptian General Petroleum Corporation (EGPC).

Egyptian General Petroleum Corporation (EGPC)

Contacts:
+2(02)2706-6900
EGPC@egpc.com.eg
http:// www.egpc.com.eg/

EGPC includes 10 oil refining companies:

- Alexandria Petroleum Company
- Ameria Petroleum Refining Company
- Suez Oil Processing Company
- Nasr Petroleum Company
- Cairo Oil Refining Company-Mostord
- Cairo Oil Refining Company-Tanta
- Assuit Oil Refining Company
- Middle East Oil Refining Company (MIDOR)
- Alexandria Mineral Oils Co. (AMOC)
- Alexandria National Refining & Petrochemicals Co. (ANRPC)

Completed and ongoing production processes:

Completed projects: Establishment of a crude oil gathering and processing plant at Hana and West Hana in Petrodar to support the existing oil production of about 15 million barrels per day and transportation to the GPC facilities.

Construction of (1) gasoline storage tank (2.5 million m3) at MINI and construction of (1) spherical tank (4 million m3) at Alexandria in Petrogaz.

Replacement and renovation of (8) petroleum product storage tanks with a total capacity of about 31.5 million tons.

Ongoing: Modernization of Bapetco's NEAG-1 production facilities to increase daily crude oil production from 8.5 million barrels to approximately 12 million barrels.

Upgrades to the Kalabsha CVS at Hulda to improve the plant's efficiency and bring the number of fluids (oil-water) to 85 million barrels instead of 10 million barrels, in addition to increasing daily crude oil production capacity from 40 million barrels to 50 million barrels and from 3 million cubic feet to 30 million cubic feet per day of associated gas.

A new refinery in the Sukhna area of Suez of Sukhna Refining and Petrochemicals Co. for the production of high-quality petroleum products with an annual capacity of 12 million tons.

Hydrocracking complex at Mostord area in Cairo at ERC for production of 4.3 mln tons per year of high-quality petroleum products

The new expansion to increase refining capacity at Midor Refinery from 100 million bpd to 160 million bpd.

Sohn's Sonker terminal to increase storage capacity for strategic imported petroleum products (LPG/gasoil) by building (6) product tanks with a total capacity of 250 million m3, including three interconnecting pipelines.

Construction of 7 new gasoil/gasoline/crude oil storage tanks with a total capacity of 70 million m3.

Alexandria Petroleum Company

ALX-PC.COM
ALEXANDRIA PETROLEUM COMPANY

APC is one of the companies of the Egyptian General Petroleum Corporation. It is a refining company that produces 55% of the national consumption of base oils, 80% of the national consumption of odorless hexane, and 65% of the national consumption of bitumen products and heavy bitumen.

The El Mex refinery, operated by Alexandria Petroleum Company, has a capacity of 117,000 bpd and 22,500 bpd of vacuum distillation. It also has a lube oil plant and a bitumen plant.

APC was established with a small refinery of 250,000 tons/year capacity for satisfying Alexandria city and the west delta area with petroleum products.

Refining capacity has since increased to 4.7 million tons per year with the addition of three crude distillation units, #2, #3, and #4, in 1963, 1968, and 1982.

There are tanks for naphtha, solvents, water, asphalt tanks, pipelines, and oil pipelines.

Products

Direct naphtha for export, Jet A-1, fuel oil, gasoil, special gasoil (marine), kerosene, hydrotreated kerosene, JP5, LPG, LPG commercial propane, LPG commercial propane gas, the octane number of motor gasoline (95), bitumen products, hexane, solvent.

Production capacity

Export: about 47400 tons of solid oxidized bitumen, about 1011809 tons of naphtha, 1500 tons of waxes, 950000 tons of fuel oil, and 3106 tons of hexane per year.

Waste oil processing capacity of 30,000 tons per year, local market - about 2,500 tons per year.

The oil port is also managed by the Alexandria Oil Company, which is responsible for managing and supervising the oil basin through which petroleum products are exported and imported through pipelines from oil companies to the basin.

The Port of Alexandria's oil basin has berth No. 87 at the Port Authority, and there are five offshore berths beneath it:
- Berths No. 87/1 and 87/2 have a maximum draft of 32 feet.
- Berth #87/3 has a maximum draft of 33 feet.
- Berths #87/4 and 87/5 have a maximum draft of 34 feet.

Companies at the port: Co-petrol company - Misr Petroleum Company - Exxon Mobil - Gasco - Anarbec - Amoc - Amreya pet.com. - Petrogas - artivitial fibre co. - food oil company Alex. Pet. Co.

Contacts:
+203 440 2832
chairman@alx-pc.com
http://alx-pc.com/about.html#role

Ameria Petroleum Refining Company

The company produces and refines petroleum products such as gasoline, diesel fuel, oil, grease, and asphalt. It owns a refinery in Suez with a capacity of 4.5 million tons.

Amiriyah Petroleum Refining Company has a 78,000 bpd capacity and a 15,000 bpd vacuum distillation unit. It has an alkylation unit with 9,000 bpd and a base oil unit with 2,000 bpd.

Production complexes:1. Oil refining and petroleum products processing complex

The refining capacity of this complex is about four million tons per year, and the date of its commissioning was 1972, and the expansion took place in 1986, 1992.

Distillation products

Butane, gasoline, kerosene, diesel fuel, asphalt of various types, naphtha, kerosene required for alkylbenzene production, and paraffin distillates are required for the production of lubricating oil complex. Propane gas is used as a solvent in the lubricating complex, and butane gas is used as fuel, for light gasoline production.

2. Complex for naphtha improvement and production of aromatic compounds and isomers

Products: various types of high-octane and unleaded gasoline, in addition, produce about 20,000 tons per year of benzene required for the complex for alkyl benzene production, and about 10,000 tons per year of pure toluene required for lubricating oil production complexes in the oil and paint and varnish industry, etc.

The capacity of the naphtha improvement unit is 50,000 tons per year.

Sulfolan Plant (benzene and toluene production): 15,000 tons per year.

3. Lubricants production complex

Base Lubricants and Specialty Lubricating Oils: Production capacity of 110,000 tons/year

Petroleum Complex: Propane extraction unit: 125,000 tons/year. Extraction Block: 250,000 tons/year. Wax separation unit: 125,000 tons/year. Wax Treatment Unit is 7,000 tons/year. Hydrogen treatment unit 80,000 tons/year. Specialty Oils Production Unit: 20,000 tons/year. Medical Oils Production Unit: 7,000 tons/year.

4. Direct chain alkylbenzene production complex

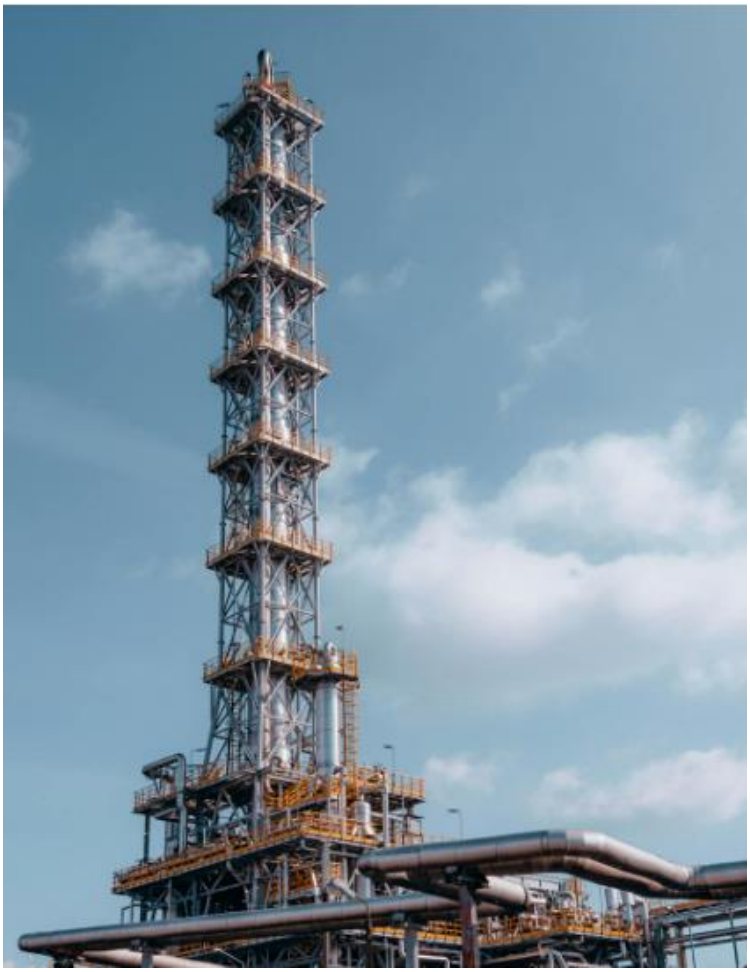
The design capacity is 40,000 tons/year, the actual capacity is 54,000 tons/year, and it is the only complex in Egypt since 1984 that produces alkyl benzene, which is used in the production of sulfonic acid, which is a raw material for industrial detergents that biodegrades in the sewage ways.

Contacts:
03 34 200 71 (71 – 75)
Chairman@aprco.com.eg
https://www.aprco.com.eg/aprco/en/about-us/
http://www.egpc.com.eg/Refinaries.aspx

Suez Oil Processing Company

Suez Oil Processing Co. (SOPC) The Suez refinery is operated and owned by SOPC, a wholly owned subsidiary of the Egyptian General Petroleum Corporation (EGPC), an economic state corporation under the Egyptian Ministry of Petroleum. It has a capacity of 3 million tons per year, or 68,000 barrels of oil per day, and is located at the entrance to the Suez Canal, near the city of Suez.

The refinery has a vacuum distillation unit with a capacity of 9,500 bpd, a delayed coking unit with a capacity of 16,400 bpd, and a base oil unit with a capacity of 1,000 bpd.



The typical crude oil supplied is heavy crude oil produced locally from the Ras Gharib and Belayim oil wells.

The main products produced consist of gasoline 80 and 92, LPG, kerosene, gasoline and fuel oil (mazut), diesel fuel, sulfur, asphalt, and coke.

Crude oil is supplied via three pipelines: one from the oil field, one from the port of Sadat (10 km from the site), and one from the port of Suez.

Development Prospects:

Refinery modernization with technical upgrades to improve overall performance and energy efficiency, increasing the flexibility of crude oil consumption at the refinery by producing higher quality fuel with lower sulfur content:

Modernization of the coke unit/modernization of the hydrotreatment unit;

New vapor recovery unit;
Energy efficiency investment program including high-pressure boiler, deaeration make-up water heating, energy management system, reconstruction of the heat-exchange network of the primary oil processing unit (#2), water reuse and condensate recovery, installation of variable speed drives.

The investment is expected to reduce annual greenhouse gas emissions of carbon dioxide equivalent by more than 295,000 tons per year and resulting in savings of 300,000 MWh of energy and reducing water demand by 385,000 m3 per year.

Contacts:

Hussain Awad Inspection General Manager

01221664736, 01066654587

e.monitoring@suezprocessing.com www.suezprocessing.com

Nasr Petroleum Company «NPC»

El-Nasr Petroleum Company, near Suez, has a 146,300 bpd refinery. It has a 35,000 bpd hydrocracking unit and a bitumen plant.
El-Nasr Refinery in Suez is operated by NPC and is a topping and reforming refinery . El-Nasr Petroleum also operates the small Wadi Faran refinery on the Red Sea in the Gulf of Suez. It has a capacity of 8,550 barrels per day and was developed to serve operations related to the Suez Canal.
Products: Butane, naphtha, jet fuel, diesel, fuel oil, asphalt.
Company results in 2020/21

Exported petroleum products totaling more than $1 billion, an increase of 23% over the previous year. Refined about 3.7 million tons of crude oil (mt), helping to meet some of the local market needs for butane, naphtha, jet fuel, diesel, fuel oil, and asphalt. In addition, the Al Nasr refinery's output value increased during the year to about 2.7 billion Egyptian pounds, an increase of 16% over the previous year.

The company invested 2.2 billion Egyptian pounds in several projects, the most important of which related to the creation of a condensate distillation unit with a capacity of 1.2 million tons per year, as well as the creation of a new asphalt acceptance line, 4 new storage warehouses, and 3 salt separator units.

Development prospects

Introduction of a new hydrocracking unit (about 4,600 tpd) with vacuum gas oil (VGO) from the vacuum distillation unit (VDU) and heavy coking gas oil (HGO) from the delayed coking unit (RCC). The main products will be liquefied petroleum gas, naphtha, diesel fuel, and unrefined oil, by EURO V specifications.

Contacts:
+20 62 3334386
www.nasroil.com

Cairo Oil Refining Company-Mostord- ERC

ERC was founded in 2007 under Law 8/1997 with the ultimate goal of meeting the growing demand of the Egyptian market for higher-quality end petroleum products. ERC is considered a major upgrade of the largest existing Egyptian refinery Cairo Oil Refinery Company (CORC) located in Mostorod.

ERC is a $4.8 billion, state-of-the-art refinery located in the Greater Cairo area, producing 4.7 million tons of petroleum products per year, including more than 2.2 million tons of EURO V diesel. The facility has been set up to produce environmentally friendly products; to meet the growing demand of the Egyptian market.

1- ERC is set to produce LPG, naphtha, reformate, jet fuel, Euro V-Diesel, and fuel oil besides coke and sulfur.
2- EGPC will sell to ERC 3.5 million tons per year of atmospheric residue derived from about 5.2 million tons per year of mainly domestic Egyptian oil as feedstock for the project

3- ERC will refine an additional 1.2 million tons per year of crude oil through Cairo Oil Refining Company (CORC), and CORC will supply fractionated products (atmospheric residue and first-stage products) derived from ERC crude oil for the project.

4- ERC will sell to EGPC all liquid refined products (LPG, naphtha, reformate, jet fuel, Euro V diesel, and fuel oil) produced by the project.

5- ERC will sell sulfur and petroleum coke directly to third parties.

6- ERC operating procedures have been designed to meet the strictest international safety requirements while complying with international product specifications and environmental regulations. ERC uses advanced technology to ensure the efficient production of its expected products without compromising any contractual, economic, or environmental obligations. ERC has several divisions within its borders as well as off-site engineering and facilities.

Products: LPG, light naphtha, Jet-A1, Euro V diesel, sulfur, coke, fuel oil, Reformate.

Contacts:

+ 202 3762 6428

info@ercegypt.com

https://www.ercegypt.com/

Cairo Oil Refining Company-Tanta

The Cairo Petroleum Refining Company was established in 1982 and is a subsidiary of Suez Petroleum Manufacturing Company, the oldest refinery in the Arab Republic of Egypt. The company accounts for about 25% of the refining capacity in the Arab Republic of Egypt.

The refinery was founded as the State Oil Refinery in 1921. It is a member of the Egyptian General Petroleum Corporation.

The Tanta refinery near Port Said is operated by the Cairo Petroleum Refining Company. Its capacity is 35,000 barrels per day. Except for a small hydrotreating unit, it has no upgrading facilities.

Cairo Oil Refining Company products meet the needs of the local market for petroleum products such as butane, all types of gasoline, kerosene, jet fuel, and diesel fuel, and are sold and distributed by General Petroleum Corporation of Egypt. The company also produces some special products such as odorless propane and butane, which are sold by the company.

CORC's 2021/22 operating results:

CORC refineries produced about 88,000 tons of butane, 935,000 tons of naphtha, 3.4 million tons of all benzene, 51,000 tons of kerosene, 456,000 tons of jet fuel, 1,862 million tons of diesel, in addition to many specialized products for many industries.

The company's refining volume increased to about 2.6 million tons during the year, up from about 2.1 million tons in the previous fiscal year. SOPC exported a large number of petroleum products, including vacuum distillates and light lubricants to provide foreign exchange.

During the year, the company implemented investment projects with an investment of about 650 million Egyptian pounds, and one of the most important projects that were implemented and operated during the year is the flare gas utilization project with a total value of about 150 million Egyptian pounds to reduce associated gas emissions and reuse flare gases as fuel for butane production.

Contacts:

040-3602-607

www.corc-egy.com

Assuit Oil Refining Company

Assiut Oil Refining (ASORC) is one of the national companies located in Upper Egypt, a subsidiary of Egypt General Petroleum Corporation (EGPC) The company has a 47,000 bpd refinery. This simple refinery has a small naphtha reforming unit and is designed to supply the product to the central and southern regions of Egypt.

The Asyut Refinery is located on a 1,037-acre site about 400 km south of Cairo, Asyut, Upper Egypt, and was established in 1984 to meet the demand of neighboring provinces for petroleum products by refining crude oil to meet the region's needs for such products as gasoline, kerosene, gasoil, fuel oil, and liquefied petroleum gas.

Company results in 2021/22

Assiut Oil Refining Company processed about 3.4 million tons of crude oil to supply petroleum products to the local market worth 47 billion Egyptian pounds during the fiscal year 2021/22.

Development outlook

The refinery, which currently produces 4.5 million tons of distillate oil per year, is undergoing modernization and expansion, which includes a £2 billion ($2.5 billion) investment in a new naphtha and hydrocracking complex. The modernization project aims to convert cheaper petroleum products to meet Euro-5 diesel and other high-value products. The expected capacity of the upgrade is 2.8 million tons per year.

The Asiyut Refinery modernization program provides for the construction of a new naphtha complex, including a naphtha hydrotreating unit, a reforming unit with continuous catalytic reforming, and an isomerization unit with an annual capacity of 660,000 tons (t/y).

The new naphtha complex will also include a naphtha splitter and auxiliary equipment. With a capacity of 660 kilotons of straight-run naphtha per year (thousand tons per year), the new naphtha complex is designed to produce various brands of high-octane gasoline to meet the demand for petroleum products and derivatives in neighboring provinces.

It will be powered by a new 3x75 MVA, 220/11/6.6 kV substation provided by GE.

The hydrocracking complex at the Asiut refinery will use the patented TechnipFMC steam reforming technology.

The hydrocracking complex will include new process units, including a vacuum distillation unit, diesel hydrocracking unit, delayed coking unit, distillate hydrotreatment unit, hydrogen production unit, sulfur production unit, and sulfur curing unit. It will also include interconnections, external sites, and utilities.

The complex will have a feed capacity of 2.5 fuel oil and will produce 1.61 million tons of crude oil per year, as well as 101,000 tons of LPG, 403,000 tons of naphtha per year, and 66,400 tons of sulfur per year.

It will convert cheaper petroleum products from the nearby ASORC refinery into cleaner products such as Euro-5 diesel.

Contacts:

+20 2 22616437

Middle East Oil Refining Company (MIDOR)

The Middle East Refinery (MIDOR) is owned by MIDOR, an Egyptian joint stock company in which Egyptian Petroleum Company (EGPC) has a 78% stake, Enppi a 10% stake, Petrojet a 10% stake, and Suez Canal Bank a 2% stake.

The design capacity of the refinery is 5 million tons per year, equivalent to 100,000 barrels per day.

The refinery was built in 2002 in the Amiria Free Zone, Alexandria. MIDOR is the most advanced refinery in Africa and ranks sixth in the Mediterranean in technological complexity; achieving a standard of 11.5 according to the Nelson Complexity Index. Originally an Egyptian-Israeli joint venture, Israeli shareholders sold it to the National Bank of Egypt in 2000.

Products

LPG, premium gasoline, gasoil, kerosene, jet fuel, coke, sulfur.

The Midor refinery currently has the following main facilities:

- Naphtha Hydrotreating, 32,400 bpd.
- - Naphtha separation, 32,400 bpd.
- Catalytic reforming, 21,700 barrels per day.
- Isomerization, 10,700 barrels per day.
- Kerosene (Merox), 10,150 barrels per day.
- Distillate Hydrotreating, 28,600 barrels/day.
- Hydrocracking, 33,500 bpd.
- Hydrogen production, 64,000 m3/hour.
- Slow coking, 25,650 bpd.
- Light fractions, LPG recovery, 1,150 tpd.
- Sulfur, tail gas treatment, 290 tonnes per day.
- LPG processing, 5,766 barrels per day.

First Quarter 2020 Results:

According to Middle East Oil Refinery (Midor), about 9.3 million barrels (million barrels) of domestic and imported crude oil were processed in the first quarter of 2020.

The company produced and delivered about 80% of all products to the local market. Among these products are about 43 thousand tons of butane, 325 thousand tons of high-octane gasoline, 646 thousand tons of diesel fuel, as well as 72 thousand tons of coal and 14 thousand tons of sulfur. The company also exported 265,000 tons of jet fuel to world markets.

Development Outlook:

The Midor expansion project, which will cost a total of $2.2 billion, will increase the site's crude oil processing capacity to 175,000 bpd/, as well as LNG by 145,000 tons per year of benzene-95 by about 600,000 tons per year and jet fuel by about 1.3 million tons per year.

During the expansion, four new crude and product storage facilities with a total capacity of 400,000 barrels of oil and 290,000 barrels of intermediate products, two crude oil storage facilities, and the same amount for petroleum products have already been put into operation. In addition, as part of the visit, a natural gas reduction unit with a capacity of 1.4 million cubic meters of gas per day was launched to supply Midor Electricity Company (Midelec) as part of the MIDOR refinery expansion project.

Contacts:

+20 3 2021700

www.midor.com.eg

Alexandria Mineral Oils Co. (AMOC)

Alexandria Mineral Oils Co (AMOC) is an Egyptian company operating in the oil industry. The company specializes in the production of fuels, essential mineral oils, paraffin and its derivatives, naphtha, butane, vacuum residue, and sulfur, as well as their distribution and sales in Egypt and abroad.

The refinery's production facilities are located on over 500,000 square meters in the Salina district of Alexandria and consist of two complexes: a lubricating and specialty oil complex, which produces neutral oils, solid paraffin, soft paraffin, and aromatic oils, and a gasoil facility. a complex producing gasoil, naphtha, and LPG for local

consumption, paraffin distillates, heavy residue, and fuel oil for blending with exported fuel oils, as well as biological sulfur. The company also operates four laboratories and performs the chemical analysis.

Products:

Base oils SN 150, SN 500, SN 600. Uninhibited transformer oil (IEC 296-2003). AMOC Power IID AMOC Power Plus IIIG automatic transmission fluids (approved by VOITH ZF, meets OEM quality level requirements). Fully refined solid/liquid paraffin (industrial and food grade). Gas oil with low sulfur content. Naphtha (suitable as feedstock for CCR). LPG for domestic use. Fuel mix.

Contacts:

+20 (3) 2205646

emarketing@amoceg.com

www.amoceg.com

Alexandria National Refining & Petrochemicals Co. (ANRPC)

ANRPC is one of Egypt's largest refining companies, operating under the umbrella of the Egyptian General Petroleum Corporation (EGPC). The production capacity of ANRPC Alexandria Refinery is 8,500 barrels per day.

Alexandria National Petroleum and Petrochemical Company establishes, manages, and operates refineries, production, and petrochemical plants for the production of high-octane gasoline, LPG, propane, hydrogen, heavy naphtha, and light reforming, among other products.

Products

Gasoline, benzene, LPG/LPG, hydrogen, low-sulfur heavy naphtha.
ANRPC receives approximately 1,545,000 tons of naphtha per year, which is processed by its divisions to produce various grades of unleaded gasoline (92-95) and other by-products.
The company produces about 1,340,000 tons of unleaded gasoline (92-95) annually, 35,000 tons of benzene exported to the world market, 41,000 tons of LNG, 12,000 tons of hydrogen, 70,000 tons of low-sulfur heavy naphtha for export.

The refinery has the following process equipment:

Hydrotreating and naphtha separation units;
Light naphtha catalytic isomerization unit;
Platforming unit for obtaining high-octane reformate from hydrocarbons with lower octane numbers;

Recovery plus unit for recovery of hydrocarbons from hydrogen product;
Block for recovery of liquefied petroleum gas.

Development outlook:

ANRPC will upgrade its existing naphtha complex using Honeywell UOP engineering services to increase gasoline production, which will help reduce Egypt's dependence on imported fuel.

The upgrades, which provide high-quality products and feedstock for petrochemical production, will be applied to two UOP naphtha pretreatment units for two CCR PlatformingTM process units and Penex TM/DIH process units at ANRPC's refinery in Alexandria, Egypt.

Contacts:

(+203) 4414580, 4414597, 4414599, 4449842
http://www.anrpc.com/

Yemen

Yemen is one of the poorest countries in the world and is not a major producer or exporter of energy compared to other Middle Eastern countries and is not part of OPEC. Nevertheless, the country's geographic location in the area makes Yemen important for international energy trade, as the strait is the route from Europe to East and South Asia. More than 4.7 million barrels of oil a day pass through Bab al-Mandeb.

Unlike many regional oil producers, Yemen relies heavily on foreign oil companies, which have production-sharing agreements with the government. Revenues from oil production account for 70 to 75 percent of government revenues and about 90 percent of exports. Yemen's proven crude oil reserves total more than 9 billion barrels (16.9 trillion cubic meters), although this number is declining due to the country's old fields, which have been destroyed by war and corruption because oil provides about 90 percent of the country's exports.

Oil refining generates about 40 percent of the state's total income. Yemen has two refineries.

Aden Refinery Company (ARC)

The Aden refinery, built by the British Petroleum Company and part of the Aden Refining Company, is the largest industrial facility in the country. Its design capacity is about 5 million tons per year. In 2014 the Aden refinery processed almost 150,000 barrels per day, in 2021 up to 80,000 barrels per day.

Areas of activity of the refinery:

- Refining crude oil to meet local market demand for petroleum products.

- Storage of crude oil and petroleum products for others.

- Transportation of petroleum products from refineries to local ports using the refinery's own or leased vessels.

- Trade in petroleum products.

Production capacity:

It was originally designed to process about 5 million tons of crude oil per year. Subsequently, the Aden refinery was connected to Aden harbor through pipelines 19 miles long to supply bunker fuel to ships. In the sixties, the refinery was upgraded to 8 million tons.

Aden Refinery products are produced by direct distillation.

Products:

LPG, naphtha, diesel, motor gasoline, jet, synthetic oils, asphalt.

Oil harbor АРК

Activities at the oil harbor focus on receiving oil tankers for loading and unloading cargoes of oil and petroleum products. Hydraulic loading arms are available in four berths. We also have one new tugboat and two mooring boats. To deliver petroleum products to various local ports to cover the domestic market, we have two tankers of our own and several additional vessels chartered to fulfill our obligation to provide continuity of transportation and logistics.

There are six berths of different lengths and depths:

Berth No. 1, 13.5m deep for tankers up to 85,000 tons deadweight and 260m long for loading oil products.

Berth No. 2, 11.5 m deep, T-shaped berth. For tankers of up to 65,000 tons deadweight, 180 m long - for loading of oil products.

Berth No. 3, 11.5 m deep, pier berth. For tankers of up to 65,000 tons deadweight, 235 m long - for loading oil products.

Berth No. 4, 15.8 m deep, pier berth. For tankers of up to 110,000 tons deadweight, 286 m long - for crude oil discharge and oil product loading.

Berths Nos. 5 and 6, 11 m deep, for LPG, dry cargo, heavy lift cargo, and import/export cargo (liquid and dry) in containers to or from refineries. The length of the LPG jetty is 120 m and the length of the dry cargo jetty is 220 m, for the mooring of vessels up to 150 m long. The width of the turning basin at the berths is 250 m, in 1993 it was deepened to 11.0 m. Tankers with a capacity of up to 25,000 t.

These berths are used by TDWs and dry bulk carriers for up to 15,000 gross tonnages.

Contacts:

arc-ye.com

Raffinerie de Marib

The Mariba refinery was built in 1986. Its capacity is 10,000 barrels per day.
It is operated by Hunt Oil Co., an independent oil and gas company headquartered in Dallas, Texas, USA. It is also involved in liquefied natural gas projects in Yemen (Yemen LNG plant located in Balkhaf).

Prospects for the development of refining in Yemen

The state plans to build additional refineries in Mukalla and Shahr and increase the capacity of the Mariba refinery.

Oil Transportation Ports in Yemen

Yemen uses three ports to transport crude oil from refineries to international markets: the Ras-Isa oil terminal, the port of Al-Shihr, and the port of Balkhaf.

After the oil produced in the city of Marib is refined at the refinery, the resulting motor oil is exported by a giant tanker called Safer by Hunter Oil.

Al-Shihr Port, based in the Al-Messila oil field, plays an active role in exporting crude oil and petroleum products from Shabwah and other regions.

The port is located 15 kilometers from Al-Muqalla and 426 kilometers from Aden and is 1,790,000 square meters, not including the floating part of the port. The port is operated by Nexen Petroleum, a Canadian company, which operates in section 14 of the Al-Masila oil field.

Al-Balkhaf Port came into existence after the discovery of oil in the city of Shabwah and was opened in 1990. The port is located in the center of the cities of Aden and Al Mukalla.

Jordan

The Hashemite Kingdom of Jordan is considered one of the Arab countries with limited hydrocarbon reserves in the Middle East region, which depends on imports to meet its needs for oil and natural gas to produce the necessary energy.

Jordan has two oil fields: the Risha, with natural gas reserves of about 9.911 billion cubic meters, with oil reserves of about 57 to 85 billion cubic meters, and small amounts of light oil are also found in the Sirhan Valley area in the Hamza well, which is located in the center of the northern country.

Jordan, in its current situation, is taking investments and implementing renewable energy projects to try to overcome its complete dependence on crude oil products imported from other countries. It should be noted that Jordan imports about 2.5 million barrels a month from the Kingdom of Saudi Arabia and about 15,000 barrels a day from the State of Iraq, in addition to about 30 tons of fuel oil per month.

Jordan Refinery, Zarqa, Az Zarqa

Raffinerie de Zarqa, Jordan's only refinery, is operated by Jordan Petroleum Refinery Company (JPRC), Jordan's national hydrocarbon company.

The company's refinery is located in Zarqa, about 35 km east of Amman.

Refined products

Liquefied petroleum gas, both types of gasoline (octane numbers 90 and 98), kerosene, jet fuel, diesel fuel, fuel oil, and asphalt products.

Jordan Petroleum Refinery Company has a mineral oil blending and bottling plant because the refinery does not produce base oils used in the production of lubricating oils, and these oils are imported, blended, and packaged in special packages of different sizes inside this plant.

The refinery produces electricity and also purifies water for service and industrial use.

Production capacity

The production capacity of the refinery is 90,000 barrels per day (14,000 m3 /day).
The refinery storage capacity is 1,628,884 tons.
Crude oil enters the refinery tanks from the city of Aqaba through three main air distillation units with a refining capacity of about 5 million tons of crude oil per year, to produce a wide range of products, from domestic liquefied gas to asphalt material for road paving or insulation, and crude oil passes through air towers to separate into main fractions, after which these fractions pass through processing units to obtain the required characteristics.

The heavy gathering passes through several transformational units, the most important of which are the catalyst crushing unit (FCCU) and the hydrocracking unit, where through these two units the heavy crude products are converted into lighter.

The refinery has the following processing equipment:

-Primary Refining Unit No.1; With a refining capacity of 1,000 tons per day, it was later increased to about 2,400 tons per day.

- Vacuum distillation unit No. 1; With a refining capacity of 350 tons per day, it was later increased to about 1200 tons per day due to the cube residue of primary distillation columns No. 1, 2, and 3.

- Catalyst grinding unit; With a production capacity of 200 tons per day, it was later increased to 600 tons of heavy materials per day.

- Asphalt production unit No. 1; With a production capacity of 100 tons per day, the unit was later increased to about 300 tons per day.

-Oil Processing Plant No.2; With a production capacity of about 1,100 tonnes per day, it was later increased to about 1,600 tonnes per day.

- Crude Unit 3; The refining capacity was about 6,200 tonnes per day, later increased to 10,000 tonnes per day.

- Vacuum distillation unit No.2; The daily production capacity was increased to approx. 2,400 tons from the residue of primary distillation columns No.1, 2, and 3.

- Naphtha Processing Unit; With a production capacity of about 1,350 tons per day, it was subsequently increased to about 2,100 tons per day from the upper light bale of primary distillation columns No. 1, 2, and 3.

- Gasoline Improvement Unit; With a production capacity of about 1,000 tons per day, it was later increased to about 1,400 tons per day. This unit produces high-octane gasoline.

- Hydrocracker; With a production capacity of about 635 tons per day, which was later increased to about 850 tons per day, this is one of the units that can completely extract sulfur from heavy materials and turn them into light, sulfur-free products.

- Production of asphalt-concrete materials No. 2; Production capacity of about 500 tons per day.

- Sulfur Recovery Unit: Production capacity of about 23 tons of sulfur per day.

Petroleum products are supplied to the local market through three main companies, one of which is the Jordan Petroleum Products Marketing Company, part of the Jordan Petroleum Refinery, which transports petroleum products to the local market by tankers.

The net profit of the refinery in 2021 is one million dinars.

Prospects for the development of the refinery

Expansion of the refinery to increase its capacity from the existing 90,000 barrels per day (bpd) to 120,000 bpd, improving fuel quality to Euro-5 emission standards.

It is planned to add crude oil distillation and vacuum distillation units to facilitate the distillation of crude oil into different fractions.

Unicracking and hydrotreaters will also be installed at the facility to help produce clean distillate.

In addition, CCR Platforming, Penex, MinAlk, Merox, and Selectfining units will be added to produce environmentally friendly high-octane motor fuels.

A Polybed PSA unit will also be added to purify hydrogen.

The residue hydrotreating unit will be equipped with Veba combined cracking technology (VCC TM) and will produce low-sulfur naphtha, ultra-low-sulfur diesel, and feedstock for the low-sulfur catalytic cracking unit.

Contacts:

https://www.jopetrol.com.jo/Default/Ar