The power behind the power

Partners in Providing Gas to the Nation

AKG 2 INAUGURATION
10 May - 2010
The power behind the power
The power to development
His Highness
Sheikh Hamad Bin Khalifa Al Thani
Emir of the State of Qatar

His Highness
Sheikh Tamim Bin Hamad Al Thani
The Heir Apparent
We consider the Al Khaleej Gas (AKG) project as one of the strategic development projects of the North Field as it supplies gas to various power and desalination plants, as well as Petrochemical and other energy intensive industries in Qatar. It represents a new milestone to achieve the vision of His Highness Sheikh Hamad Bin Khalifa Al Thani The Emir, to ensure the optimal use of Qatar’s hydrocarbon resources. This project is another example of our long-term relationship with ExxonMobil that is based upon mutual benefits.

And for us in Qatar the AKG 2 project, will also be a remarkable addition and expansion taking advantage of synergies with our existing energy projects. This project will further consolidate Qatar’s leading position in the fast-growing gas market.
Qatar Petroleum (QP), formerly Qatar General Petroleum Corporation, is a state-owned corporation, responsible for all phases of the oil and gas industry in Qatar, covering exploration, drilling and production operations, transport, storage, marketing and sale of crude oil, natural gas liquids, liquefied natural gas, gas-to-liquids, refined products, petrochemicals and fertilizers, and providing helicopter and other services.

QP’s operating philosophy is focused on full-chain integration, where we seek to achieve significant involvement in all segments of the oil and gas chain.

QP generates the major source of revenue for the State and it is the prime producer of energy products for the community and for local industries. It has a role in developing and training nationals so that their share in their national oil corporation work force continues to grow.

With approximately 80 billion dollars worth of investments in energy projects during the next five years, Qatar is planning to further expand and diversify the production capacity of gas, oil, and petrochemicals. Most of the projects under construction are world scale and in some cases bigger than anything yet built in the world.

Today our LNG production capacity stands at 42 million tons per annum making Qatar the largest producer of LNG in the world, as the North Gas Field is considered to be the largest single non-associated gas reservoir in the world with total proven reserves of 900 trillion standard cubic feet (TSCF).

By 2010, Qatar will be reaching all the important markets around the globe with an export capacity of 77 million tons per annum delivering gas at competitive prices to the most distant markets in the USA, Asia and Europe. By then, it is expected that the share of Qatar in the world’s LNG trade will be around 30%.

In the oil sector, we are now pursuing a multibillion dollar development that will increase our oil production from current 800,000 barrels per day to 1.1 million barrels per day in 2010.

Thriving on a spirit of enterprise, each of our joint ventures is underpinned by transparency, innovation and determination to achieve unparalleled standards of both quality and service.

At Qatar Petroleum we are committed to one thing above all: Excellence.
The Al Khaleej Gas (AKG) Project represents a unique and historic partnership between the State of Qatar, Qatar Petroleum and ExxonMobil to meet the country’s growing energy domestic needs required to power its growing economy.

ExxonMobil believes that one of the most valuable contributions it can make to the State of Qatar and its citizens is to help support its economic growth and well-being.

I’m particularly honored by the State of Qatar, Qatar Petroleum and ExxonMobil having partnered together to deliver energy to the people of the State of Qatar. By combining the unique strengths of Qatar Petroleum and ExxonMobil, we were afforded the opportunity to work together and seek innovative solutions neither of us could have accomplished alone. And that successful working model continues today.

Phase 2 of the Al Khaleej Gas Project will further play a vital role in helping to fuel the growth of human and industrial development in the State of Qatar, meeting the objectives of the Qatar National Vision 2030, and is one of the many projects ExxonMobil is involved in throughout Qatar to implement the Vision. Working through our RasGas and Qatargas ventures a number of major capital projects have been implemented for Liquefied Natural Gas (LNG) development. In addition, we are progressing other projects, including a petrochemical plant.

Our partnership is based on a common belief that the State of Qatar’s natural resources can be developed in an environmentally safe manner and delivered to local and global markets. This partnership has grown stronger with each project undertaken as our people work together as a team to address technical and business challenges.

On behalf of ExxonMobil, I would like to thank His Highness the Emir and the people of the State of Qatar for the opportunity to continue our partnerships in the State of Qatar.
ExxonMobil Corporation - An Overview

ExxonMobil Corporation is the world’s largest publicly traded integrated petroleum and natural gas company. We operate facilities and market products around the world, and explore for oil and natural gas on six continents. Meeting the world’s growing energy needs requires an integrated set of solutions, and ExxonMobil is committed to accelerating gains in energy efficiency in our own operations, expanding all commercially viable energy sources, and developing technology to help mitigate the growth of emissions associated with energy use.

The Corporation has enjoyed a strategic partnership with the State of Qatar dating back to 1935. ExxonMobil Qatar Inc. (EMQI) is a subsidiary of ExxonMobil Corporation and is the interface point within Qatar for all ExxonMobil affiliated activities.

ExxonMobil affiliates participate in numerous gas related projects in Qatar, including Ras Laffan Liquefied Natural Gas Company Limited (RL I, RL II, RL III), Qatar Liquefied Gas Company Limited (QG I and QG 2). Additionally, ExxonMobil affiliates participate in Al Khaleej Gas (AKG), which is currently producing. ExxonMobil affiliates’ participation in Qatar’s LNG ventures ranges from 10% to 30% and are the only foreign shareholder in AKG. ExxonMobil is also a participant in the Laffan Refinery through its affiliate, ExxonMobil Qatar Refinery Limited.

Qatar Petroleum and ExxonMobil Chemical Qatar Limited have signed a Heads of Agreement to progress studies for a world-scale petrochemical complex in Ras Laffan Industrial City. In addition, ExxonMobil Research Qatar is an anchor tenant at the Qatar Science & Technology Park, conducting research in areas of common interest to the State of Qatar and ExxonMobil.

ExxonMobil embraces the Four Pillars of Qatar’s National Vision 2030 of Human, Social, Economic and Environmental Development and strives to support the Pillars in our various partnerships within the State of Qatar. Towards these goals, ExxonMobil affiliates provide a wealth of resources, including technology, operational best practices, financial strength and human resources, while working under the highest safety, health, environmental and ethical standards. ExxonMobil affiliate operations in Qatar also support local communities and participate in a multitude of educational, social, cultural, sporting and economic activities.

EMQI recruits graduates from Qatar University and other local universities and colleges. Simultaneously, an ExxonMobil team identifies and hires potential Qatari national employees from universities around the world. Recruited employees are provided on-the-job training and formal training both at the local and international levels.

ExxonMobil’s partnerships with Qatar Petroleum will continue to play a key role in Qatar’s rapid transformation into the world’s largest supplier of reliable LNG.
The power behind the power
The power to industry
Al Khaleej Gas (AKG) is an important project to help build the future of the State of Qatar and fulfill His Highness the Emir’s vision as set out in the Qatar National Vision 2030. AKG 2 is a great achievement that demonstrates what can happen when ExxonMobil’s skills and capabilities are matched with Qatar’s excellent, dedicated people and natural resources working towards the common goal of supplying energy to the people and industries in the State of Qatar.

AKG has enough capacity to meet more than half the State of Qatar’s demand for gas in the next ten years, which is more than enough gas to support all electrical demands required to power daily activities in the State of Qatar.

AKG is an integrated project between Qatar Petroleum and ExxonMobil under a unique agreement that allows the companies to work with RasGas, as the project’s contract operator, to ensure the project is run safely and reliably. Year after year, RasGas’ safety and operational performance of AKG has been an exemplary pace-setter in the industry.

As the General Manager for AKG, I work to ensure all AKG stakeholders, including our customers, business partners and shareholders are always aligned to safely deliver energy to support the growth of the State of Qatar.

I present my sincere gratitude to His Excellency Abdullah bin Hamad Al Attiyah for his continued support of the Al Khaleej Gas Project. I also convey my deepest thanks and appreciation to Qatar Petroleum, the Al Khaleej Gas Management, Technical, and Marketing Committees, the RasGas Project Management and Operations Teams, and to the entire Al Khaleej Gas support team for their dedication and commitment. Your skills and capabilities have allowed Al Khaleej Gas to successfully deliver ‘The ‘Power Behind the Power’ to the State of Qatar.
The power behind the power

The power to business
It gives me great pleasure in welcoming you to the Al Khaleej Gas Project Phase 2 Inauguration Ceremony. Al Khaleej Gas is the first plant built at Ras Laffan to produce and market pipeline gas for domestic customers either as fuel or feedstock; hence it is building the infrastructure necessary for the establishment of new projects including petrochemicals, power plants and refineries.

Al Khaleej Gas also acts as a link between Ras Laffan and Mesaieed industrial cities by supplying Mesaieed with the gas needed to meet the gas demand in the south through pipeline. Al Khaleej Gas represents the result of a unique partnership between Qatar Petroleum and ExxonMobil as project shareholders and RasGas, as project operator.

Today we are celebrating the success of the teamwork of Qatar Petroleum, ExxonMobil and RasGas. On behalf of the Al Khaleej Gas Team, I would like to thank His Excellency Abdullah Bin Hamad Al Attiyah, and Qatar Petroleum for all the support and assistance we have received during the implementation of Phase 1 and Phase 2.
Al Khaleej Gas (AKG) is the world’s largest single gas plant, based on processing capacity.

Al Khaleej Gas History

Al Khaleej Gas (AKG) is the result of an historic partnership linking the State of Qatar, Qatar Petroleum, and ExxonMobil, with the latter working as the sole contractor under the terms of a Development and Production Sharing Agreement. To fulfill the agreement, RasGas Company Limited (RasGas) has led project development and operates the AKG facilities on behalf of the partners to deliver energy to help power continued domestic growth.

Al Khaleej Gas will reach its target production capacity of 2 billion standard cubic feet of gas per day in 2010, making it the largest domestic gas supplier in the State of Qatar. This ambitious project was executed in two phases. The first phase, AKG 1, started in November 2005, with production capacity of about 750 million standard cubic feet of sales gas per day. The second phase, AKG 2, was completed in December 2009, expanding production capacity by 1.25 billion standard cubic feet of sales gas per day to reach the project’s goal.

AKG is the only gas plant in Ras Laffan Industrial City (RLC) supplying fuel and feedstock to other companies.
Project Objectives

AKG supplies natural gas to domestic markets, while recovering condensate and natural gas liquids. AKG’s goal is to provide natural gas to the domestic market of the State of Qatar and continue to help meet the growing demand for clean natural gas as the State continues to grow. The project was designed in phases to match domestic market growth.

The first phase AKG 1 was developed to provide gas exclusively to Ras Laffan and Mesaieed Industrial Cities which in turn meet the country’s need for electric power. In addition, AKG 1 provides feedstock to the world’s largest operating gas-to-liquid (GTL) plant, which is owned by Oryx and located at Ras Laffan Industrial City. This plant processes the AKG 1 feedstock gas to create consumable liquid fuels, for both domestic and foreign customers. The second phase AKG 2 was built to meet the long term goal of satisfying domestic requirements for natural gas feedstock to support Qatar’s flourishing economy, with the majority of AKG 2’s production supplying demands for electricity.

In addition to supplying natural gas, AKG also produces substantial quantities of condensate and natural gas liquids, such as ethane, propane and butane, for foreign and domestic customers, such as the Ras Laffan Olefins Complex and other domestic petrochemical projects under development.

AKG provides the fuel for the State of Qatar’s electrical power plants to generate enough electricity for the entire country, hence the phrase “The power behind the power”.

As many as 10,000 people worked on a daily basis both onshore and offshore to deliver AKG 2 on time.
Project Description

Offshore Facilities

The AKG project processes gas produced from several wellhead platforms that develop the Khuff Reservoir of Qatar’s giant North Field (see Fig.1). A key element of AKG’s success was the use of ExxonMobil’s revolutionary ‘Fast Drill’ which greatly reduced the time needed to drill the offshore wells and reduced the cost.

AKG 1 is supplied by Wellhead Platform 4, with nine wells that can source up to 850 million standard cubic feet of gas per day. AKG 2 is supplied by Wellhead Platforms 10 and 11, with eight and seven wells respectively, that can produce up to 1.6 billion standard cubic feet of gas per day.

The gas extracted from these Wellhead Platforms is collected, combined and transported to the AKG processing plant onshore through two 38 inch multiphase subsea pipelines that are also shared with RasGas LNG Trains 6 and 7. Each of these pipelines has a capacity of approximately 2 billion cubic feet per day of unprocessed gas, which also contains hydrocarbon and non-hydrocarbon liquids that are processed in the onshore facilities.

The heaviest single piece of equipment installed in the project is Amine Absorber, weighing more than 1,275 tons, equivalent to the curb weight of approximately 492 Toyota Land Cruiser vehicles.

AKG 2 has the tallest separation column in Ras Laffan: the AKG 2 de-methanizer column overlooks RLC at a soaring height of 63 m.
**Onshore facilities**

AKG’s onshore processing facilities are located on the RasGas site at Ras Laffan Industrial City. When the unprocessed gas is transported from the offshore wellheads to the plant, the hydrocarbon condensate and water are separated from the rich sour gas, which still contains naturally occurring impurities, such as hydrogen sulfide. Condensate is then treated and stored, while the rich sour gas is sent to special gas processing units.

The first processing step is to remove the impurities from the rich sour gas in an acid gas removal unit. The impurities that are removed are either safely disposed in an environmentally responsible and approved manner or in the case of sulfur from AKG 2, it is recovered and processed for sale to international customers that use the sulfur to create other products.

Following initial processing, the gas is sent to a dehydration phase and polishing unit to remove any remaining liquids and impurities, such as water and trace elements such as mercury. Following the polishing unit, the gas is called ‘dry’ to recognize all water has been removed and ‘sweet’, to recognize impurities such as hydrogen sulfide have been removed. The ‘dry sweet’ gas is then processed in the natural gas liquids recovery unit where valuable heavy hydrocarbon molecules are removed. The final product is clean burning natural gas (primarily the light hydrocarbon molecule ‘methane’) which is sold to electrical power plants and other customers to help the State of Qatar grow.

**Plant Capacities - A Summary**

<table>
<thead>
<tr>
<th></th>
<th>Ethane (T&amp;D)</th>
<th>Propane &amp; Butane (T&amp;D)</th>
<th>Condensate (Barrels/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKG 1</td>
<td>1,350</td>
<td>1,180</td>
<td>29,000</td>
</tr>
<tr>
<td>AKG 2</td>
<td>2,500</td>
<td>2,400</td>
<td>61,000</td>
</tr>
<tr>
<td>Total</td>
<td>3,850</td>
<td>3,580</td>
<td>90,000</td>
</tr>
</tbody>
</table>

Once the natural gas is ready for sale, the AKG facility will continue to process the liquids recovered from the natural gas for sale to different customers. These hydrocarbon liquids include ethane, propane and butane which are transported from the liquids recovery unit to fractionation towers where they are separated based on their weight. The products are separated so they can be sold to different customers who use the liquids for various purposes. These customers include petrochemical plants, other Qatari industries, and international companies.

A schematic of the offshore and onshore facilities is shown in Figure 2, and a more detailed layout of the onshore facility is shown in Figure 3 while a summary of plant capacities follows:
AKG produces a variety of products that play a vital role in the economic development of the State of Qatar. AKG natural gas fuels a growing slate of consumers in Ras Laffan including:

- Ras Laffan Power Company
- Qatar Power Company
- Oryx GTL
- Ras Laffan Olefins Company
- Laffan Refinery Company

Additionally, AKG gas is transported by Qatar Petroleum to fuel industrial and power customers in the Mesaieed industrial area.

The liquefied petroleum products and plant condensate from AKG are marketed by Qatar International Petroleum Marketing Company (Tasweeq) to customers in the Middle East and the Far East. The field condensate from AKG is an important feedstock for the new condensate refinery owned by Laffan Refinery Company and additional supplies of AKG field condensate are marketed by Tasweeq to international consumers.

AKG also provides another important feedstock to support diversification of Qatar’s hydrocarbon industry. Ethane from AKG 1 will feed the Ras Laffan Olefins Company ethane cracker while ethane from AKG 2 will provide feedstock for a future ethane cracker to be built in Ras Laffan.

The AKG 2 project is integrated with several other ventures and requires more than 240 contractual agreements for governance.
Preserving the Environment

According to recent studies, the demand for natural gas is expected to increase by more than fifty percent by the year 2030. Burning natural gas to generate electricity is cleaner as it reduces CO₂ emissions by 60 percent compared to other fuels used.

The AKG project follows strict environmental guidelines and limits impact on the environment by providing clean natural gas for domestic consumption. In addition, the AKG stakeholders are proud to announce that the entire project was completed in full compliance with the highest standards defined by Qatar’s Supreme Council for Environment and Natural Reserve.

Finally, AKG directly contributes to environmental education and improvement projects such as the Al-Thakira Reserve project, to help Qatar’s economy grow while preserving the environment we all share.

There is more than 280 kilometers of piping greater than 0.5 inches in diameter used in the plant, weighing more than 23,550 tons. In addition, more than 290 kilometers of electrical cable was installed. The combined length of piping and electrical cabling is equivalent to the length of the entire coastline of the State of Qatar (563 km). In addition, the weight of piping is equivalent to the curb weight of approximately 9,093 Toyota Land Cruiser vehicles.
The power behind the power
The power to the nation
RasGas Company Limited (RasGas) is one of the world’s premier integrated liquefied natural gas (LNG) enterprises and has an enviable reputation for being a safe and reliable supplier of LNG that has transformed a regional resource into a key component of the global energy mix.

Since its creation in 1993, RasGas has developed world-class facilities for the extraction, storage, processing and export of LNG, and has entered into long-term agreements to supply LNG to customers in Korea, India, Italy, Spain, Belgium, Taiwan, and the United States of America.

In a relatively short period of time, RasGas has emerged as a leading player in the global natural gas industry, supplying and delivering LNG to an international portfolio of customers, with a fleet of long-term chartered LNG tankers and initiating technology-led projects such as the production and sale of helium.

The significance of Qatar’s energy resources and of the part played by RasGas in extracting and distributing those resources continues to grow. In 2010 RasGas’ seventh LNG train came online, boosting the overall LNG production capacity of RasGas to approximately 36.3 million tonnes of LNG per annum (Mta).

Industry experts estimate that by around the end of the decade Qatar will supply around 30 percent of the world’s LNG, of which RasGas will ship around half.
The power behind the power
The power to people
Ras Laffan Industrial City

Ras Laffan Industrial City (RLC), a directorate of Qatar Petroleum (QP), is a multi purpose, multidimensional industrial city which operates an industrial port and provides integrated services as well as several industrial facilities to existing industries and prospective investors. The facilities include modern infrastructure, common seawater, waste management, fire stations, environmental protection and conservation projects and support services such as healthcare, security, emergency response, transportation, accommodation, and telecommunication.

RLC is situated along the north east coast of Qatar and is one of the fastest growing industrial cities in the world. It is located about 80 kilometers from Qatar’s North Field, which is the world’s largest single non associated gas field with approximately 900 trillion cubic feet of proven reserves. RLC spans 294 square kilometers, which includes the southern reserve zone - reserved for possible future projects and RLC Port.

RLC is responsible for managing and administering the city on behalf of QP. RLC Directorate is committed to establish services and facilities which create economies of scale and identify synergy opportunities. This commitment is reiterated by the growing presence of multinational oil and gas conglomerates such as Qatargas, RasGas, Al Khaleej Gas, Dolphin Energy, Oryx GTL, Pearl GTL and various other support industries.
People behind the Power

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