قصة نجاح مشروع استرجاع الغاز المتبخر أثناء الشحن

استعادة 90% من كميات الغاز المشتعل في مراسي الغاز الطبيعي المسال

قصة نجاح مشروع المحافظة على مستوى الإنتاج:
نموذج في التميز التشغيلي
Qatargas leads the way.

CORPORATE SOCIAL RESPONSIBILITY

21 Sustaining our environment for future generations. Qatargas’ wastewater management initiatives.


23 New season for the Qatargas Football League.

Qatargas provides financial contribution to support Ashtekhdy Centre’s programmes.

24 Qatargas participation at the 7th SPE Middle East Health, Safety, Environment and Sustainable Development Exhibition and Conference.

PEOPLE

18 Diversity at Qatargas is a source of strength.

19 Supervising the Qatargas Way. Workshops drive premier performance and coaching.


INNOVATION

20 Innovation and technology.

21 In pursuit of excellence.

OPERATING EXCELLENCE

2 Introducing Exp. Saed Shafea Al Kashi, Chairman, Qatargas Board of Directors.

4 Jetty Boll-Off Gas Recovery Project – recovering 60% of total flared gas.

8 Plateau Maintenance Project – an exemplary success story.

11 China’s Hainan Terminal receives first LNG delivery.

12 Qatargas launches new office in Thailand.

13 The journey to 5000. Qatargas celebrates its 5000th loading by Ras Laffan Terminal Operations.

15 Over 20 million hours worked without a lost time incident.

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15 Over 20 million hours worked without a lost time incident.
QATARGAS CORPORATE SCORECARD
YEAR TO DATE SEPTEMBER 2014

**SHE PERFORMANCE**

- **TRIF** (Total Recordable Injury Frequency):
  - Industry Average: 0.98
  - Actual: 0.87
  - Target: 0

- **Flaring** (% of Sweet Gas):
  - Industry Average: 0.91
  - Actual: 0.85
  - Target: 0.96

- **Greenhouse Gas Emissions Intensity** (Tonnes GHG/Tonne LNG):
  - Industry Average: 0.441
  - Actual: 0.429

**QATARIZATION**
A High Calibre and Diverse Work Force
(Total Headcount)

- Actual: 600
- Target: 644

**EFFICIENT AND RELIABLE OPERATIONS**

<table>
<thead>
<tr>
<th></th>
<th>Industry Average</th>
<th>Actual</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG Reliability</td>
<td>96.5%</td>
<td>98.4%</td>
<td>97.2%</td>
</tr>
<tr>
<td>LR Reliability</td>
<td>98.5%</td>
<td>99%</td>
<td>98.6%</td>
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<tr>
<td>Expenditure VS Target</td>
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<td>89%</td>
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**CUSTOMER SATISFACTION**

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Target</th>
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<tbody>
<tr>
<td>Reliable Deliveries</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Positive Responses to Customer Change Requests</td>
<td>85%</td>
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</table>

**FINANCIAL PERFORMANCE**

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Target</th>
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</thead>
<tbody>
<tr>
<td>Sales Volume VS Target</td>
<td>99%</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Our Qatargas vision is to be “the world’s premier LNG company,” known throughout the LNG industry for its high quality, diverse workforce and setting the industry standard with respect to operational excellence, and corporate, social and environmental responsibility. It means being the best in terms of global reach, technical expertise, reliability of supply, customer service, and consistent growth.

We are constantly reaching new heights and achieving milestones in operational excellence. We have launched many long-term projects that all help in delivering our clean-burning LNG fuel safely and reliably around the world. While we must continue to challenge ourselves to reach new inspirational horizons in order to fuel our company’s drive to achieve long-term sustainable success, it is also important to celebrate our momentous achievements along that journey to being premier.

The successful launch of the Jetty Boil-Off Gas Recovery (JBOG) Project was yet another defining moment on this journey. We have succeeded in delivering one of the world’s largest environmental projects, converting challenges to opportunities and developing new technological innovations, all the while maintaining safety and sustainability as a top priority. The USD 1 billion project will save a cumulative windfall of one trillion cubic feet of gas over 30 years, underscoring our unwavering commitment to environmental sustainability and to delivering on Qatar’s National Vision to produce and supply clean energy to the world.

Simultaneously, we have witnessed the successful start-up of the Plateau Maintenance Project (PMP), which was achieved through the sustained efforts of many departments and third party contractors working seamlessly together to deliver a common compelling purpose - ensuring the production capacity of Qatargas 1 is maintained at 10 million tonnes per annum (MTA) of LNG and therefore maintaining our reliability of supply.

Delivering high levels of service to all our customers and stakeholders is a driving force behind our mission. It is following that guiding principle that we recently delivered our 5000th loading through Ras Laffan Terminal Operations (RLTO), another momentous celebration for the Qatargas team. The achievement also marked the first cargo of ultra-low sulphur diesel produced by Laffan Refinery’s Diesel Hydrotreater.

It is our underlying teamwork philosophy that means these major milestones are being celebrated with exemplary health and safety records. To reach more than 20 million hours worked without a lost time incident is an achievement to be proud of. This milestone could not have been achieved alone. It is inherent in the hard work, dedication and constant focus of our entire workforce, operating across all Qatargas assets and projects.

At Qatargas, each and every task completed is intertwined. Working as a unit, our talented and engaged workforce and world-class partners perform at an exceptional level of proficiency, driving us towards our goal of becoming the world’s premier LNG Company.

Khalid Bin Khalifa Al Thani
Chief Executive Officer
Eng. Saad Sherida Al Kaabi was appointed as Qatar Petroleum’s (QP) new Managing Director in September 2014. At the same time, he was also appointed as Chairman of the Qatargas Board of Directors.

Eng. Al Kaabi joined Qatar Petroleum in 1986 as a student of Petroleum and Natural Gas Engineering at Pennsylvania State University in the USA and graduated with a Bachelor of Science (BSc) degree in 1991. Immediately after graduation he joined QP as a full-time employee where he held various petroleum engineer, technical, commercial and supervisory positions as he progressed through his career.

Al Kaabi has been an instrumental figure in Qatar’s rapid rise to becoming the LNG and GTL capital of the world. Since 2006 he has overseen all of Qatar’s oil and gas fields’ developments as well as all the exploration activities in Qatar.

Qatargas is a true Qatari success story defined by all the men and women whose commitment and dedication shape its accomplishments. This is why Qatargas values its human capital, and spares no effort for its development on the road to more successes.” — Eng. Saad Sherida Al Kaabi, Chairman, Qatargas Board of Directors.

I am honoured and privileged to chair the Qatargas Board of Directors, and to be associated with the world’s number one liquefied natural gas (LNG) supplier, and its board that includes distinguished international partners.

Qatargas is the world’s largest supplier of LNG with an annual production capacity of 42 million tonnes, delivering cleaner energy to more than twenty countries around the world. With its environmental qualities and economic benefits, LNG is increasingly becoming the fuel of choice in the energy mix of more and more countries, particularly in Asia, which has the world’s fastest-growing economies and burgeoning populations.

As global energy consumption rises, the demand for gas is also on the rise. In fact, gas is the fastest growing energy source among all fossil fuels, and is the only source that grows more rapidly than the total energy growth. This gives a producer like Qatargas long lasting prospects for the future.

Through the tireless efforts of its diverse and talented workforce, the company has demonstrated a long history of consistent growth. It has cemented its reputation on the international stage as a technologically capable, secure, and reliable provider with the flexibility to respond quickly and effectively to changing market conditions; thus enabling it to meet the needs of its global customers for many years to come.

It is gratifying to see how Qatargas has developed to become a strategic component within a much grander endeavour enshrined in the Vision of His Highness the Emir, Sheikh Tamim bin Hamad Al Thani, for the State of Qatar to become a knowledge-based economy, on the cutting edge of global technological and social progress.

Qatargas is a true Qatar success story defined by all the men and women whose commitment and dedication shape its accomplishments. This is why Qatargas values its human capital, and spares no effort for its development on the road to more successes.

Eng. Saad Sherida Al Kaabi
Chairman, Qatargas Board of Directors
In its successful launch of the new Jetty Boil-Off Gas Recovery (JBOG) project, the State of Qatar has reaffirmed its commitment to the safest, most sustainable and technologically innovative production of liquefied natural gas (LNG) in the world.

Producing 77 million tonnes per year, Qatar is the largest provider of LNG in the world. During the loading of LNG, a portion of the -160°C liquid boils off as it comes in contact with the warmer ship tank. Previously, this boiled-off gas would be flared at the berth because there was no outlet for the low-pressure gas. However, in line with Qatar’s National Vision to produce and supply clean energy to the world, Qatar Petroleum (QP) and the Ministry of Environment introduced the Jetty Boil-off Gas Recovery Project (JBOG) to recover the flared gas at the country’s LNG berths.

Initiated by Qatar Petroleum in 2004 and under the auspices of H.H. the Emir Sheikh Tamim bin Hamad Al Thani, as well as H.E. Dr. Mohamed bin Saleh Al Sada, Minister of Energy and Industry, the JBOG project’s Front-End Engineering Design (FEED) was awarded to the US-based company Fluor in October 2007. Thereafter, Qatargas was permitted to lead the project on behalf of the project’s stakeholders - Qatar Petroleum, Ministry of Environment, RasGas and Qatargas itself - playing a pivotal role in its successful delivery, thanks to the leadership of Qatargas Chief Executive Officer, Khalid Bin Khalifa Al Thani.

The project was led by Qatargas’ Operations Development department, while the ‘care, custody and control’ was transferred to the Onshore Operations department with the ‘Ready For Start-Up’ (RFSU) certificate signed on 17th September 2014. With Qatargas’ vision to be a ‘Premier LNG Company’ and its ‘Incident and Injury-Free’ culture, the project was completed with an excellent safety record of 22 million man-hours without any lost time incidents (LTI). That record continued during red-blinds removal, the critical ‘gas-in’ phase and the most important milestones, the first ship recovery, with Central Compression Area (CCA) compressor trains in operation and distribution of compressed gas to ventures.

The project officially began recovery of jetty boil-off gases on 6th October 2014 from Q-Max ship Zarga at Berth-6.
Project milestones

1. Early 2012 foundations for buildings, compressors and old breakwaters to carry the pipes and cables. This work was completed and handed over to the JBOG Project management.

2. The CCA site needed approximately one thousand piles for the pre-EPC detailed design phase. This work was initiated to build a causeway linking the new and existing berths. The preparations made during the pre-EPC stage contributed to the successful and timely completion of the project.

3. Safety and sustainability were of the highest priority of the Qatargas JBOG Project Team to change the design of the plant, and relocate all the compressors to a central location. The conceptual design undertaken at the FEED stage by RasGas showed that the volumes of nitrogen required to liquefy the boil-off gas generated from six berths would be too great, while the nitrogen gas vented into the atmosphere could prove harmful to the environment and the power consumption required to liquefy air to produce liquid nitrogen, too prohibitive.

4. Key to the design of the Ultra Low Differential Pressure Check Valves, the design and use of the largest Boil-off Gas Compressor in the world (designed by GE Nuovo Pignone), and the use of Ultra Low Temperature Buckling Pins, designed with special seals and mechanisms to ensure reliability during operation. This new concept relied heavily on the experience and knowledge gained during the FEED phase. The superstructure of the compressors at the berths might lead to safety, constructability, cost and scheduling issues. The subsequent awarding of the FEED contract to the US-based Fluor included a “Location Study”, which led to an eventual change of design for the plant, and a relocation of all compressors to a central location. Located in Qatar’s Ras Laffan port area, the JBOG Project is part of the Common LNG Storage and Loading (CLNG S&L) Asset, and consists of a Central Compression Area (CCA) which is connected to all six LNG berths in the area through a 60-inch collection header.

5. The conceptual design undertaken at the FEED stage by RasGas showed that the volumes of nitrogen required to liquefy the boil-off gas generated from six berths would be too great, while the nitrogen gas vented into the atmosphere could prove harmful to the environment and the power consumption required to liquefy air to produce liquid nitrogen, too prohibitive.

As one of the greatest environment projects in the world, JBOG’s largest environmental benefit is the reduction of 1.6 MTA of carbon dioxide emissions.

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ISSUE 145

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The project required wide-ranging alignment and communication across several Qatargas departments, EPC and third party contractors. The entire team worked over 42 million man-hours while achieving a world-class safety performance.

The successful start-up of the enhanced facility ensures that the production capacity of Qatargas 1 (QG1) is maintained at 10 million tonnes per annum (MTA) of liquefied natural gas (LNG) until 2021 and beyond.

“The Plateau Maintenance Project will help deliver that capability and enable Qatargas to continue to supply LNG safely and reliably to its customers,” Qatargas CEO, Khalid Bin Khalifa Al Thani said. “I would also like to congratulate the project team and the contractors on the safe and successful start-up of the project and thank all those involved for their hard work and commitment over the years.”

Project details
All QG1 facilities were re-evaluated for their suitability to produce and process reservoir feedgas, and to determine any required modifications for its ongoing production. The project involved drilling and recompleting offshore wells, adding new onshore facilities for sulphur handling and modifying existing LNG production trains 1, 2 and 3. The project began initial operations in April 2011. The offshore drilling component involved the introduction of two new well locations in 2012: NFB-5 and NFB-22. Two further wells, NFB-24 and NFB-16, were also recompleted this year, with two additional ‘PMP’ wells being drilled: NFB-21 and NFB-14.

New acid gas removal and sulphur recovery unit facilities, with a new capacity of 1.7 billion cubic feet per day (BCFD) of feedgas with two percent Hydrogen Sulphide (H2S), were implemented as part of the onshore facilities component. New storage tanks for liquid sulphur and AGRU processes were also installed, along with additional instrument air compression, as well as water softening and desalination utilities. The project also saw the inclusion of a new sulphur export line tying into the CSP header 1.5 kilometres away, and the installation of new end flash gas compressors in the three QG1 LNG trains.

The onshore project had a major brownfield component, meaning virtually all of the work scope was conducted within existing operating facilities and equipment. The materials utilised in facilitating the development of the PMP project include 35,000 m³ of concrete works and 9300 tonnes of structural steel, with 8200 tonnes of equipment being erected. A sum total of 51,000 A/G piping spools were also erected with 5600 piping pressure tests performed. Also included were 351,000 metres of electrical cable, 652,000 metres of instrument cables, 6000 instrument loops and 134,000 m² of insulation. The nature of the work presented a special challenge to the teams, which required tremendous communication and alignment between several departments across Qatargas.

The number of man-hours worked to achieve start-up of the Plateau Maintenance Project at Qatargas 1.

42 million

The Qatargas 1 project was effectively executed within existing operating facilities and equipment with no impacts to Qatargas assets.

The project is yet another important milestone in Qatargas’ journey towards its Vision 2015, namely to be the World’s Premier LNG Company.”

- Khalid Bin Khalifa Al Thani, Chief Executive Officer, Qatargas.

Qatargas Project Team worked
42 million man hours with a
total recordable incident rate of
0.23
for every 200,000 hours worked
and a peak workforce of
6500
individuals.

Materials required to complete the project

351,000m
of electrical cables laid

35,000m³
of concrete works

134,000m³
of insulation

9300
tonnes
of structural steel

The Qatargas 1 project was effectively executed within existing operating facilities and equipment with no impacts to Qatargas assets.
Safety finishing strong
Workforce safety was the highest priority objective on the PMP project. The project team, along with contractors, worked over 42 million man-hours, operating in a challenging plant work environment and achieving world class safety performance which included an exceptional Total Recordable Incident Rate (TRIR) of 0.23 for every 200,000 worked hours. The project is a shining example of Qatargas’ ‘Incident and Injury Free’ culture, particularly as regards the application of the STOP safety observation programme, where a peak workforce of 6500 individuals completed over 665,000 safety observation (STOP) cards, which helped identify and mitigate safety risks. In the 2014 Year To Date (YTD), there have been zero Lost Time Incidents (LTI) and 92,000 STOP Cards filed. In total, measures taken in prevention through design (PFD) have yielded 8.5 million safe Man-Hours since a walking related LTI.

According to the PMP project’s Safety, Health & Environment (SHE) report, figures indicate the significant steps taken via PTD. The ‘Safety Finishing Strong’ campaign was initiated by PMP to raise awareness about systems completion and pre-mechanical completion activities, helping to mitigate or avoid entirely numerous potential incidents. The Shareholders in Qatargas 1 are Qatar Petroleum, ExxonMobil, Total, Mitsui and Marunishi. Technip-Chiyoda Joint Venture (TCJV) was the Engineering Procurement and Construction (EPC) contractor for the onshore work. Their major subcontractors included Keltan, Sepam, Descon and CCC. The project team, TCJV and sub-contractors will maintain a start-up support organisation to assist Qatargas in achieving stable operations.

The Qatargas 1 Alwathba Maintenance Project recently celebrated its successful start-up.

In the 2014 year-to-date, there have been zero Lost Time Incidents (LTI) and 92,000 STOP Cards filed.
A DEMONSTRATION OF OPERATIONAL EXCELLENCE, QATARGAS CELEBRATES 5000TH LOADING BY RAS LAFFAN TERMINAL OPERATIONS (RLTO)

The 5000th landmark also marks the first cargo of ultra-low sulphur diesel, an environmentally friendlier fuel produced by the recently commissioned Laffan Refinery’s Diesel Hydrotreater, from Ras Laffan Port.

This is a celebration of the synergy between companies operating from Ras Laffan Industrial City,” said Khalid Bin Khalifa Al Thani, Chief Executive Officer of Qatargas.

"This achievement would not have been possible without their cooperation and support. For Qatargas, this is a significant achievement, demonstrating our operational excellence and commitment to providing a high level of service to all our customers and stakeholders."

Sharing the load
Conceptually developed as an RLC-led taskforce, RLTO was launched in 2006 and set up as a Single Operator (SO) in Ras Laffan for all liquid petroleum products’ storage and loading. It was established around a concept of shared storage, to reduce the overall investment in tanks as well as shared access to berth and to reduce the overall investment required for port expansion.

RLTO is responsible for the storage and loading of all non-LNG liquid hydrocarbon products and bulk sulphur in Ras Laffan Industrial City produced by various end-users including Qatargas, Qatar Petroleum, RasGas, Laffan Refinery, Al Khaleej Gas, Dolphin Energy Limited, Qatar Shell GTL, Oryx GTL, Ras Laffan Olefins Company and Barzan.

To date, the equivalent of more than two billion barrels of product have been loaded by Qatargas through its Ras Laffan Terminal Operations (RLTO) since it was set up in 2006.

“Celebration of the 5000th cargo is, in fact, a celebration of the synergy between companies operating from Ras Laffan Industrial City. Ras Laffan Terminal Operations is a vital part of the supply chain for every producer in Ras Laffan Industrial City,” said Khalid Bin Khalifa Al Thani, Chief Executive Officer of Qatargas.

"This achievement would not have been possible without their cooperation and support. For Qatargas, this is a significant achievement, demonstrating our operational excellence and commitment to providing a high level of service to all our customers and stakeholders."

RLTO was formed around a concept of shared storage, to reduce the overall investment in tanks as well as shared access to berth and to reduce the overall investment required for port expansion.

The rapid growth in the variety of products and number of cargoes leaving Ras Laffan port provided a strong case to create this integrated operating group, thereby providing the necessary level of coordination and the ability to capture synergies from economies of scale. Qatargas was appointed as the SO and RLTO, a division within Qatargas, loaded its first cargo in January 2007.

RLTO currently handles a wide range of products, including condensate and Liquefied Petroleum Gas (LPG) from offshore production; refinery products such as naphtha, jet fuel and diesel; and GTL production of naphtha, gasoil and base oils. In addition, molten sulphur is delivered to the RLTO-operated common sulphur plant where it is turned to sulphur granules and loaded onto ships.

The other facilities currently operated by RLTO include Common Condensate Storage and Loading, Common Liquefied Petroleum Gas, Common Low Sulphur Condensate, Oryx GTL Loading, Qatar Shell GTL Storage & Loading, Port Expansion Project (Fresh Water Fighting System), Volatile Organic Compound, Liquid Products Berths and Laffan Refinery Tank Farm. More facilities will be added to the scope of the RLTO in the near future, with several others still in conceptual stage.

Having one single terminal operations group enables optimisation of cargo storage and exporting performance. Vessel and berth scheduling is coordinated in order to provide buyers fast and efficient access to Ras Laffan. Sharing of personnel and resources creates operating expense synergies, benefiting all producers. Safety risks are also considerably reduced due to a fully integrated, centrally coordinated operation.

Celebrating excellence
To commemorate the occasion, a ceremony was held aboard the vessel, Torm Helvig, which carried the 5000th cargo to the United Arab Emirates. In attendance were Mats Gjers, Chief Operating Officer of Operations; Ahmad Helal Al Mohannadi, Deputy Chief Operating Officer of Operations; Abdullah Khalid Idris, RLTO Manager; and other senior Qatargas officials.

Commenting on the occasion, Mats Gjers said, “The 5000th loading is a significant milestone considering the diverse range of products and the scale of operations at Ras Laffan. This achievement demonstrates the excellent teamwork and coordination between companies operating from Ras Laffan Industrial City.”

The 5000th loading, marking the 5000th cargo of ultra-low sulphur diesel, was loaded aboard the vessel, Torm Helvig, which carried the cargo to the United Arab Emirates. The ceremony was held aboard the vessel, with senior Qatargas officials in attendance. The achievement demonstrates the excellent teamwork and coordination between companies operating from Ras Laffan Industrial City.
RLTO and the various stakeholders involved.

**Loading for the future**

Projections show that the success of RLTO, in its loading facilities and storing capacity, will continue to grow throughout the next decade. With a cumulative growth in storage capacity from 2007 to 2019 of 4.7 Mrm³, the increase from 2014 to 2019 alone shows a growth of 1.3 Mrm³, with the production of some 45 new tanks in the same period.

Meanwhile, the number of cargo liftings is projected to rise from around 1080 in 2014 to approximately 1240 in 2019, whilst maintaining a steady annual unit operating cost. As such, RLTO’s already considerable client base will continue to expand significantly in the coming years, with a potential of 20 or more stakeholders by 2018, a significant increase in just four years.

**This is a significant achievement, demonstrating our operational excellence and commitment to providing a high level of service to all our customers and stakeholders.”**

- Khalid Bin Khalifa Al Thani, Chief Executive Officer of Qatargas.

On 1st September, Qatargas surpassed 20 million hours worked across all its assets and projects, without a lost time incident (LTI), marking an important milestone in the company’s journey to being premier.

Plateau Maintenance Project (PMP) also celebrated the milestone of 500,000 STOP cards earlier this year, another great example of how an IIF Culture can become a reality.

Qatargas’ safety processes and programmes have been continually improved in recent years. This includes the introduction of Life Saving Rules, continuous improvement in Process Safety, refreshing IF in Action, enhancing Risk Management and strengthening the company’s Permit to Work System.

“Safety is a Qatargas core value that we have embedded in all our processes and programmes,” Khalid Bin Khalifa Al Thani added. “This milestone, however, was not achieved by these programmes alone, but more importantly by the hard work, dedication and constant focus on completing each task safely, by everyone working in a Qatargas asset or for one of our projects.”

Randy Stadler, Qatargas Chief S&O Officer, added, “The strong commitment of Qatargas and our people to IIF is a passion embraced by every employee and is reflected in all our processes. Ensuring each worker returns home safely, at the end of the workday, to their family and friends is the key objective of our Incident and Injury Free in Action programme.”

Qatargas will continue to set ever higher safety standards and strive to reach new milestones in its continuing journey to premier.

**OVER 20 MILLION HOURS WORKED WITHOUT A LOST TIME INCIDENT**

The Pioneer

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Average number of people working at Qatargas everyday.
RAISING THE BAR ON WELL INTEGRITY ASSURANCE

In the oil and gas industry, wellhead and tree systems stand at the vanguard of pressure containment on production equipment. The Qatargas Well Engineering and Intervention team has led the way in identifying viable solutions to safeguard QG asset integrity.

A gas well can be described as a series of concentric pipelines extending from ground surface to the gas-producing formation, which for Qatargas is the Khuff reservoir. It is through the inner conduit (i.e. the tubing) that gas flows to the surface. At surface, the concentric pipelines are terminated by installing the wellhead and tree system.

The wellhead and tree system constitute the equipment used to maintain surface pressure control of the wellbore and tree system. The combined wellhead and tubing and tree assembly (i.e. barrier) and prevent unplanned release of hydrocarbons or other wellbore fluids to the environment. The integrity of all well barriers’ components requires great vigilance to ensure that any risk of unplanned release of hydrocarbons or other wellbore fluids to the environment, the subsurface, or to closed void spaces within the well are kept to ALARP (as low as reasonably practical) levels for the entire well life cycle. When well barriers are compromised, the reliability of the LNG supply chain gets disrupted from the very beginning. The standing, unbroken quality of the well is therefore of the utmost importance for Qatargas production operations, and as such demands close and careful observation to ensure existing barriers are capable of containing the reservoir energy at all times.

Operational well integrity and containment of well fluids is thus mandatory. Maintaining the effectiveness of well barriers involves a complex process, which includes casing annulus pressure monitoring, surface maintenance, reservoir fluid monitoring, downhole corrosion inspection and monitoring, reliability studies, well performance analysis and operator/service company competency. Proper management of well integrity is essential to the sustainable development of gas resources.

Background and challenges

Qatargas 1 (QG1) started production in 1996. Its first wellhead seal integrity issue was identified after five years of production, in 2002. At that time, the issue was deemed low risk and well operations continued under monitoring. In late 2011, the Reservoir and Production (R&P) Department made the decision to reassess the risk posed by the wellhead seal integrity condition. In June 2012, the Well Engineering and Intervention (WE&I) Division hosted a technical workshop with QG1 Shareholders, the original equipment manufacturer, and technical experts and manufacturer, to understand the root cause of the situation, leveraging on Shareholders’ technical strength and integrating the intimate knowledge of the manufacturer.

After gathering data from a detailed fit-for-purpose integrity test performed in the initial 20 QG1 wells and evaluating the results with Shareholders’ technical experts and manufacturers, it was determined that the integrity of the wellhead seals in 17 wells was compromised and such wells must be fixed as soon as practical. Fixing wells implies performing work-overs, which is a major project undertaking that requires expert knowledge, planning, time to order equipment, and most importantly budgeting with the appropriate level of contingencies to address the uncertainties inherent in opening and working on a well after 18 to 20 years of production.

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After gathering data from a detailed fit-for-purpose integrity test performed in the initial 20 QG1 wells and evaluating the results with Shareholders’ technical experts and manufacturers, it was determined that the integrity of the wellhead seals in 17 wells was compromised and such wells must be fixed as soon as practical. Fixing wells implies performing work-overs, which is a major project undertaking that requires expert knowledge, planning, time to order equipment, and most importantly budgeting with the appropriate level of contingencies to address the uncertainties inherent in opening and working on a well after 18 to 20 years of production.

Conclusions

Thanks to the steps taken, such as access to technical expertise through the Shareholders, detailed engineering with scenario planning, and proper wellhead seal testing before field deployment, Qatargas reaffirmed its commitment to operational excellence by implementing the pilot work-over campaign in the QG1 venture.
DIVERSITY: A SOURCE OF STRENGTH

Qatargas currently has employees from 68 different nationalities – expatriate employees that have worked all over the world and bring an enormous amount of experience and knowledge of the industry’s best business practices to the company.

Leveraging diverse backgrounds and experience

The number of women at Qatargas has increased from 4% in 1996 to 10% in 2014. The Supervising the Qatargas Way (SQW) modules ensure that supervisors share their lessons and learn from their peers to improve performance across the company. This diversity promotes continuous improvement and underpins the organisation’s current and future success, and contributes to the success of Qatar National Vision 2030.

Connecting with the global community

Qatargas sends employees on assignments, secondments and training exercises all over the world, such as the USA, UK, Australia, Malaysia, Japan, Italy, UAE and Turkey. Development opportunities for the Qatari National workforce provides increased international experience and enables understanding of operational best practices. Some examples of these opportunities are: secondments to top London law firms for nationals in Malaysia, Qatar, and work assignments in partnership with RasGas in Italy. Qatargas employees participating in the Learning Olympics: Gold Edition.

Valuing women in the workplace

There is an increase in the number of national females in engineering at Qatargas who are chartering new territory, such as Hessa Al Nest, Corporate Planning Analyst in the Planning Division. She has become the first National in Qatar to be awarded as an Incorporated Engineer (IEng) with the Institute of Chemical Engineers (IChemE). Qatargas’ participation in the IGU-UNESCO workshop on ‘Women in Engineering’ in Paris is another example of the company’s commitment to women in the workplace.

<table>
<thead>
<tr>
<th>Nationalities at Qatargas</th>
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</thead>
<tbody>
<tr>
<td>1996: 25</td>
</tr>
<tr>
<td>2014: 68</td>
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</table>

Female employees at Qatargas

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>4%</td>
</tr>
<tr>
<td>2014</td>
<td>10%</td>
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Supervising the Qatargas Way (SQW) concentrates on how business is conducted at Qatargas, the way employees behave and interact with one another, the manner in which esteem, dignity and care is shown for one another, and how the work environment should be in order for talent to best flourish.

SOQ provides the opportunity to create a path to premier on cognitive, emotional and behavioural levels. SQW was refreshed last year with a pioneering combination of:

- Positive psychology constructs, appreciative learning language, high quality connections and flow
- Accelerated learning techniques
- Learning through our ‘Adult’ ego state conversations – Transactional Analysis.
- The importance of truly listening through challenging dynamics, differing cultures and diversity issues (e.g., Killman’s Conflict Model, Hofstede’s Cultural Dimensions), and
- Creativity through play.

The SQW workshops are designed to emphasise key areas of business expertise and operational excellence in the company, empowering employees to realise their potential and add to the daily Qatargas leadership conversations – ‘Conversation 365’. They are aligned with the Qatargas Direction Statement in that they encourage:

- A high calibre, diverse workforce – “This course gives support to get the best out of us and our teams”.
- Efficient and reliable operations – “I will encourage more face to face conversations with my colleagues, analyse behaviour and work more to gain an adult working relationship”.
- Financial performance – “The course was excellent”, I now commit to “better focus on budgeting and forecasting”.
- Safety, health and environmental performance – “Inform my colleagues that behaviour is as important as technical competencies”.
- Customer satisfaction – “I will apply SQW not only in my workplace, but in my life.”

Honest, open conversations and enhanced learning SQW empowers people to have honest, open conversations and deliver Stop, Start, Continue (S.S.C.) feedback, which leads to effective results. Optional enhanced learning sessions took place, covering:

- Genuine duty of care for colleagues.
- An increase in business-critical conversations with senior leaders.
- Taking on extra mid-year and year-end reviews to support the business.

The workshops were designed to further advance the SQW legacy that puts learning at the heart of the business, encourages business critical conversations and reminds people of choosing how to work and live the Qatargas way.
SUSTAINING THE ENVIRONMENT
FOR OUR FUTURE GENERATIONS

One of the highlights of Qatargas’ 2013 Sustainability Report was the use of advanced treatment technologies to recycle and re-use wastewater currently discharged to the sea.

The Qatar National Vision 2030 includes sustainable water use as an important objective under the National Development Strategy (NDS) 2011 - 2016. As a key stakeholder in this process, Qatargas acknowledges the crucial role industry has in advancing this objective and has accordingly developed a sustainable wastewater management approach centred on three pillars:

• Re-use suitable streams for irrigation.
• Recycle suitable streams to produce desalinated water with advanced wastewater treatment technologies.
• Reduce disposal of wastewater to deep well injection through increased water recycling and reuse.

Current wastewater treatment

The wastewater generated from Qatargas facilities includes produced water, which is separated from wet gas brought onshore from the gas reservoir in the North Field and other process wastewater streams generated from the onshore production facilities. Qatargas employs a suite of wastewater treatment and disposal systems ranging from physico-chemical processes, biological treatment systems and deep injection wells.

The produced water streams separated onshore for the QG2 and QG3&4 LNG mega-trains are treated and disposed of via deep injection wells into subsurface formations along with Low Pressure (LP) sour water and oily and chemical wastewater.

The QG1 LNG facility is not equipped with deep injection wells and hence its process wastewater is currently treated and partly utilised for onsite irrigation with the remainder discharged to sea.

Future wastewater recycling and reuse facilities

Based on the success of the QG1 Membrane Bioreactor (MBR) project, the advanced wastewater treatment approach adopted by Qatargas is based on upgrading existing treatment facilities to MBRs coupled with tertiary Reverse Osmosis (RO) units. Multiple wastewater recycling and reuse projects are currently underway at the QG1, QG2 and QG3&4 LNG facilities, and the Laffan Refinery targeted for completion by the close of 2016.

These facilities will treat process wastewater from the LNG trains and Laffan Refinery. The treated water will meet desalinated water specifications and will be reused as utility feed and service water within plant sites.

Qatargas employs a suite of wastewater treatment and disposal systems ranging from physico-chemical processes, biological treatment systems and deep injection wells.

60,180 m³
Treated waste water used for irrigation in 2013.

Qatargas has developed a sustainable wastewater management approach.
The State of Qatar has recognised waste management and reduction as one of its key national objectives in the Qatar National Vision (QNV) 2030. This recognition stems from the challenge that Qatar faces in managing waste in a sustainable manner as the country and its population grow.

According to figures released by Qatar Development Bank last year, Qatar generates approximately 28,000 tonnes of solid waste per day. The National Development Strategy (NDS, 2011-2016) outlines the national target to enhance waste recycling to 38 percent, from eight percent in 2011.

As the world’s premier LNG Company, Qatargas’ vision of corporate responsibility includes waste management as a key objective. In keeping with this vision, a recycling programme was launched in 2010, which includes the recycling of plastic bottles, metal cans and paper. From production operations, wood, concrete and oil are also recycled.

Qatargas is also implementing a comprehensive Waste Management System (WMS) to minimise and improve management of its facility wastes. The 3R philosophy, Reduce, Reuse and Recycle, is the single most important tool to tackle the generation of products we so readily call trash.

The 3R is implemented by Qatargas through the recycling of paper, steel, plastic and metal. In addition to reducing and reusing, we choose to recycle our waste products.

**Waste Reduction, Reuse and Recycling Tips - How can I make a difference?**

**In the workplace:**
- Thru before you print. Do you really need to print? Print and copy double-sided. Put waste used paper in recycling bins.
- Go for reusable cups and bottles instead of disposable ones.
- Recycle plastic bottles and metal cans (recycle bins provided in Doha and RLC HQ buildings).
- Reuse office stationery such as paper clips, folders and company envelopes.

**At home:**
- Buy recyclable products. Use recyclable shopping and grocery bags.
- Do not throw away old clothes. There are many charities in Qatar that will collect and deliver them to those in need.
- Use rechargeable batteries. Spent batteries can release harmful chemicals which may leak and damage the environment when disposed in landfill.

**Quick Facts - Global Waste**
- Packaging materials account for five percent of landfill deposits.
- One tonne of office paper from recycled pulp saves 17 trees, three cubic yards of landfill space, 7000 gallons of water, 4200 kWh (enough to heat a home for half a year), 390 gallons of oil, and prevents 60 pounds of air pollutants.
- Printing and photocopying on both sides saves paper and energy and can save up to 75 percent on the cost of purchasing and printing on new paper.
- Recycling one aluminium can will save enough electricity to run a television for three hours.

**New season of the Qatargas League Tournament kicks off**

The 2014-2015 season of the Qatargas League, organised by the Qatari football governing body, Qatar Football Association (QFA), and supported by Qatargas, began on 20th September.

This season’s Qatargas League has 18 reserve and second division teams participating, six more teams than when the league first launched last year.

Announcing league details recently were Khalid Al Kuwari, Chief Operations Officer, QFA and Mansour Rashid Al Naimi, Public Relations Manager, Qatargas. Representatives of QFA and Qatargas as well as the local media were also present at the announcement. Eighteen first and reserve team coaches attended pre-season press conferences to discuss with the media their preparation for the season.

Commenting the Qatargas and QFA partnership, Khalid Al Kuwari, Chief Operations Officer, QFA, said: “We thank Qatargas for their continued support and look forward to continuing working with them for years to come. We are happy to be partners with a leading company such as Qatargas and are eager to organise a successful league again this year. Qatargas League is one of the most important leagues in Qatar, as two teams from the second division will ascend to Qatar Stars League (QSL) based on their ranking, whilst the 13th and 14th place teams in QSL will be relegated directly from QSL to Qatargas League.”

Mansour Rashid Al Naimi, Qatargas Public Relations Manager said: “We are delighted to continue our partnership with the Qatar Football Association. We would like to thank and congratulate the Association for organising an excellent tournament last season and look forward to an exciting new season. We are very optimistic that our support for the league will contribute in raising the standard of the game in Qatar and identifying new talents.”

“As one of the leading energy companies of the world, our support to the game of football forms part of Qatargas’ corporate social responsibility programme aimed at supporting the human development pillar of Qatar’s National Vision 2030,” he added.

The new season of the Qatargas League, which kicked off on 20th September, will run until mid-April 2015 with a short break in December. Matches will be played in seven different stadia including Al Sadd, Al Gharrafa, Lekhwiya, Al Arabi, Al Wakra, Al Khor, and Al Sailiya. The Qatargas League will be played according to a standard league format where two teams from the second division will ascend to Qatar Stars League (QSL) based on their ranking, whilst the 13th and 14th place teams in QSL will be relegated directly from QSL to Qatargas League.

The number of teams participating in the Qatargas League.

28,000 tonnes
The amount of solid waste generated in Qatar on a daily basis.

32%
Qatargas overall recycling rate in 2013.

2013, Qatargas recycled almost 85 percent of non-hazardous waste (paper, screen steel, plastic and wood). Our overall recycling rate based on all types of waste (including process and plant wastes) was 32 percent.

18
The number of teams participating in the Qatargas League.

As the world’s premier LNG Company, Qatargas is implementing a comprehensive Waste Management System (WMS), to minimise and improve management of its facility wastes.
HELPING ARSHEDNY BENEFIT SOCIETY

Qatargas has extended financial support to the Arshedny Centre, enabling it to continue delivering its key programmes to benefit society.

Mansour Rashid Al Naimi, Qatargas Public Relations Manager, handed over the financial contribution to Sultan Bin Abdulla Al Otaibi, Director, Arshedny Centre.

“We commend the initiative taken by the Sheikh Eid Charitable Association and Arshedny Center to address the issue of drug abuse and rehabilitation, and we are very pleased to support their efforts in this regard,” said Al Naimi. “Supporting initiatives aimed at enhancing the health and wellbeing of society are key elements of Qatargas’ Corporate Social Responsibility (CSR), aligned with the Human Development Pillar of the Qatar National Vision 2030,” he added.

The Arshedny Center is a specialised, non-profit organisation providing scientific programmes in counselling, rehabilitation, training and drug abuse prevention. The center works to establish effective partnerships with local, regional and global institutions and organisations competent in addressing the problems of addiction in accordance with international best practices and global standards.

Al Otaibi highlighted some of the global problems relating to drug abuse, saying, “We must do everything we can to prevent people from becoming addicted to drugs, as well as to rehabilitate those who have undergone de-addiction programmes, so that they can once again become productive members of society. We hope this initiative will help in highlighting this issue and encourage other organisations in the country to follow.”

In appreciation of Qatargas’ support, Al Otaibi added: “Qatargas has always been keen to support the Arshedny Center and its projects that serve the community through counselling and rehabilitation and spreading awareness among young people and society as a whole.”

SAFETY AND PERFORMANCE

Qatargas supported and participated in the seventh SPE Middle East Health, Safety, Environment and Sustainable Development Conference and Exhibition.

The conference addressed topics such as social responsibility, sustainable development, risk management, environmental issues, health hazard management, behaviour-based and land transportation safety, workforce welfare, and security issues.

Jassim Abdulla Al Mohannadi, Qatargas Chief Planning and Risk Officer, delivered a speech titled “Protecting People, Environment, Assets, and Reputation—Are We Prepared?” He explained the numerous steps taken by Qatargas to improve environmental safety and performance.

Other Qatargas representatives that also presented at the conference included Bashir Mirza, Project Manager, Jetty Boil-off Gas Project, who presented a paper on “Industry Leading Safety Performance While Building One of the World’s Largest Environmental Projects,” Khalifa Ahmed Al Sulaiti, Environmental Affairs Division Manager and Farhan Khan, Senior Environmental Analyst delivered a paper on the Qatargas Pulse Chlorination System and Tawfeeq Hamad, Head of Safety - Shutdowns and Projects presented a paper titled “The Case for a Case” which covered how Qatargas develops SHE cases for its assets.