Project Profile
Kuwait GasPort

CLIENT: **Excelerate Energy**

LOCATION: **Mina Al-Ahmadi, Kuwait**

VALUE: **£ 1.43M**

DURATION: **24 Months**

PROJECT: **Mina Al-Ahmadi GasPort (MAAGP)**

The Mina Al-Ahmadi GasPort (MAAGP) is Kuwait's first liquefied natural gas (LNG) import terminal. Intended as an interim solution to bridge the gap between Kuwait's current natural gas needs and the future development of domestic gas reserves, the MAAGP delivers much needed natural gas to meet industrial and commercial demands.

Using Excelerate Energy's GasPort technology, an Energy Bridge Regasification Vessel (EBRV™) is stationed at the existing Mina Al-Ahmadi South Jetty facility and delivers regasified LNG at a baseload rate of up to 500 million cubic feet per day (mmcf/d). In addition, the MAAGP incorporates an innovative shuttle tanker berth that provides for ship-to-ship LNG transfer and boil off gas management capabilities between a conventional LNG carrier and the EBRV™. This allows Excelerate Energy to keep the EBRV™ on station while receiving cargo deliveries of LNG from conventional carriers dockside, resulting in a flexible terminal that can provide seasonal baseload service to Kuwait.

Key Information

- ü Kuwait's first LNG receiving facility
- ü GasPort dockside configuration
- ü Base load throughput capacity 500 mmcf/d with peak capacity of 600 mmcf/d
- ü Seasonal facility planned for operations in April through October
- ü Direct access to processing facilities and other industrial consumers
- ü Direct access to the Kuwait gas grid

Technica provided Kuwait & UK based Electrical & Instrumentation design services for the Kuwait Gasport facility from the initial stages of the project in 2007.

Construction of the facility commenced in January of 2008 from which point Technica provided a constant site presence of highly experienced and skilled electrical and instrumentation site supervisors based at the Mina Al Ahmadi Oil Refinery.

This team was strengthened further during the final key stages of construction and throughout commissioning including:

- ü Project engineering, management and supervision of E&I Site installation.
- ü Project engineering, management and supervision of specialist sub-Contractors (Including ESD Systems, DCS, Metering, Instrument Air, Nitrogen Generation, LNG/HP loading Arms and Marine Berthing Systems).
- ü Day to day interface with local E&I sub-contractor including issue of permits.
- ü Site based procurement of consumables and equipment to provide quick response to construction and commissioning procurement needs.
- ü Site Acceptance Tests.
- ü Site Test & Commissioning.

Technica Senior Project Engineers and Supervisors remained on site to offer continued technical support to Excelerate Energy and KNPC Operations during the crucial first season of regasification.

See Technica Ltd in Business Excellence Online magazine (page 52) at:
www.bus-ex.com/magazines/october2009.html
Proud to be associated with the successful completion of Mina Al-Ahmadi Gasport project.

Experience and expertise

Excelerate Energy has developed a reputation for having the technological expertise to bring **liquefied natural gas (LNG) projects** to fruition. The company's COO tells Keith Regan how that knowledge is being leveraged around the globe to **help provide more energy flexibility** to economies worldwide

When Excelerate Energy got its start in July 2003, the company's sponsor George Kaiser, and his co-founders, recognized a need for new ways of importing natural gas into the North American marketplace. At the time, demand was outstripping the domestic supply, and the marketplace was not well equipped to import large quantities of the fuel, which is used to heat and cool homes and businesses as well as to power electric generation plants and industrial facilities. With several key co-founders on board from the former liquefied natural gas (LNG) unit at El Paso Energy, Excelerate began to address the gaps in the market with technology that enables LNG to be regasified at offshore facilities.

Co-founder and chief operating officer Jonathan Cook says Excelerate, which is headquartered in The Woodlands, Texas, began securing access to the handful of LNG terminals in the United States and by the end of 2003 had struck a deal to acquire the energy bridge assets of El Paso Energy, which was eager to divest itself of the assets in the wake of the Enron fallout and other hard times for energy companies. "When we were with El Paso we had pioneered the technology of onboard regasification, and we saw that technology as an opportunity that was better positioned than traditional land-based facilities," says Cook. Around the same time, Excelerate acquired the rights to ships owned by Belgium-based Exmar that had onboard facilities that could transform LNG back into gas form and discharge it to receiving terminals.

In 2005 Excelerate completed the Gulf Gateway project, an offshore terminal located some 116 miles out

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in the Gulf of Mexico. Despite the distance from land, Excelerate had to install just eight miles of new pipeline to tap into existing gas infrastructure. Two years later, Excelerate commissioned and built a land-based receiving terminal in the United Kingdom. That facility, known as the Teesside GasPort, is the world's first dockside LNG vaporization and natural gas receiving facility and uses the company's Energy Bridge technology. That project was brought into service just 12 months after the site was chosen and cost just a fraction of a traditional land-based terminal.

A year later, Excelerate was again building offshore assets, this time constructing the Northeast Gateway some 13 miles off the coast of Boston, which enabled the company to tap into the seasonally driven demand for natural gas. Building that facility helped Excelerate drive efficiencies in its shipping fleet, significantly reducing the amount of emissions from those vessels and reducing their water usage while also implementing technology designed to reduce the number of collisions between ships and marine wildlife such as the endangered North Atlantic right whale.

Since that time, most of Excelerate's investments

EMCO WHEATON

For the unloading of natural gas under high pressure, EMCO WHEATON has developed a marine loading arm that is capable of meeting the specific requirements that are imposed to equipments that handle hazardous materials at elevated pressure ranges.

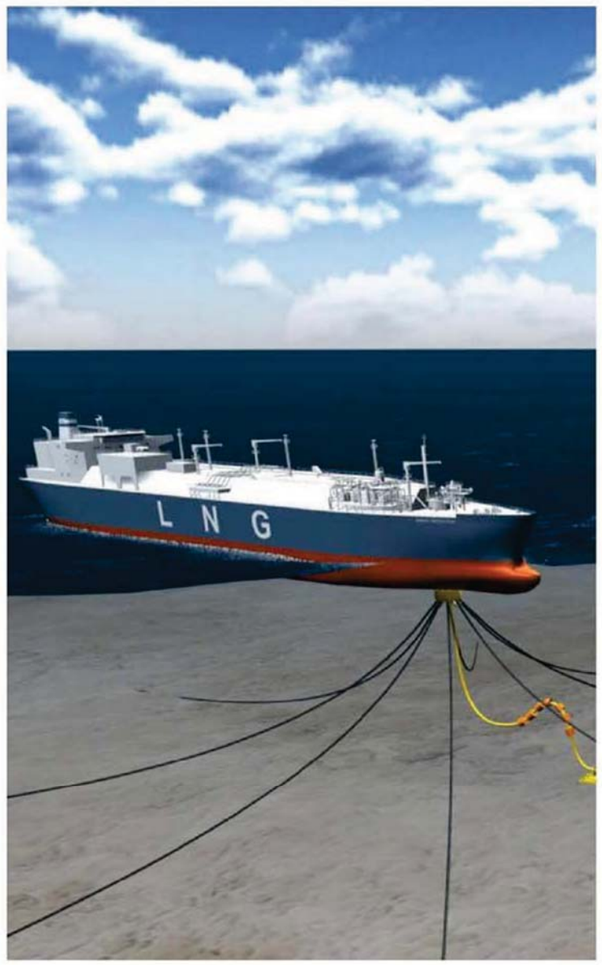
Compressed natural gas will be discharged from a re-gasification vessel at pressures between 50 and 150 bar. The loading arm is featured with latest technology safety systems, and in addition to that carries a safe shutdown and disconnecting system that safeguards a release of the loading arm from the vessel in case of any emergency.

With the development of the high pressure marine loading arm, EMCO WHEATON has proven once again to be a reliable partner when highly customer specific solutions in the loading arm business are needed.

and opportunities have been overseas. In 2008 it commissioned a facility in Argentina that actually uses a regas-capable ship as a portable terminal to provide services to that country when demand is high for natural gas used for heating, in the May to September period. The rest of the year the ship can be deployed to other parts of the world where demand is higher.

The Middle East is proving to be another key growth market for Excelerate. This year it built a gas port in Kuwait to help address peak demand for natural-gas-powered air conditioning. Excelerate also served as the engineering and construction contractor for the shoreside facility in Kuwait.

"Our focus is now very much on an international basis," Cook says. "We're seeing opportunities in various parts of the world: in and around Europe, in the UK, in the Mediterranean region and in South America, as well as Asia. There is a lot of demand for LNG receiving



In addition to buying and selling LNG on the spot market and through longer-term supply contracts, Excelerate also provides storage and regas services and also charters its own vessels to third parties. Doing so enables the company to keep its assets in use as much as possible, which in turn allows it to keep its costs lower.

Excelerate is also one of several companies close to bringing to market technology that will equip ships with the ability to liquefy natural gas into liquid form for transportation, which could create new markets for stranded gas reserves that could be sold to markets where demand is running higher. Excelerate continues to work with Exmar on such ship-based advances, with Exmar serving as technical managers and owners of the vessels and Excelerate operating them and owning an equity stake in partnership with Exmar.

Even with the global economy in slowdown mode, the demand for LNG is continuing to grow, Cook argues. Many newer power-generation facilities are capable of running on multiple fuels, and natural gas is considered cleaner and more environmentally friendly than some other alternative fuel sources, such as coal.

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capabilities, and our technology allows us to come in and—with a very minimal footprint compared to more traditional land-based facilities—do things more cost-effectively and often more rapidly." Excelerate gained additional access to markets in Europe and elsewhere in February 2008, when Kaiser sold part of his stake in the operation to Germany-based utility RWE.

Although LNG is not particularly hazardous or dangerous cargo, siting onshore facilities can be a challenge because of safety concerns. "It tends to be a lightning rod for public concern, and being able to locate offshore facilities on a permanent or semi-permanent basis is a palatable alternative for a lot of people."

"There are significant supplies that are dislocated from the markets where the demand exists," says Cook, "and irrelevant of price, there is a need to move the gas from the supply source to the market. What we've been seeing is that even with gas prices in the US at historic lows, the market is so large that it can absorb more supply. Even with new liquefaction coming on line and new suppliers in the market, you're going to continue to see LNG flowing to those places where the demand exists. The marketplace knows we have the technology and the experience with bringing projects from idea to reality in a way that makes more projects feasible and economical."