QATAR GAS: With the United States getting set to export shale gas, is Qatar losing its edge as the world’s largest exporter of liquid gas or is it shrewdly changing its strategy?

ANDREW DENNANT, EMERSON
“QATAR GAS IS AN EXAMPLE OF A FLAGSHIP LNG PLANT - NOT JUST IN SIZE, BUT ALSO TECHNOLOGY.”

GAS PROCESSING
PETROFAC, EMERSON, DOW CHEMICAL ON THE TRENDS IN THE INDUSTRY P34

INTERVIEW
Making more with less

Pierre Leretz, president of ABB Process Automation, says refiners can more efficiently squeeze the last drop of oil with automation

ALSO INSIDE: JUDGES REVEALED - THE BIGGEST INDUSTRY AWARDS
APPOINTS AN ELITE PANEL OF JUDGES TO SELECT THE WINNERS
Oil accounts for a significant portion of the world’s energy consumption, ranging from a low of 32 percent for Europe and Asia, up to a high of 53 percent for the Middle East, South and Central America (44%), Africa (41%), and North America (40%).

The world at large consumes 30 billion barrels of oil per year, and the top oil consumers largely consist of developed nations.

The production, distribution, refining and retailing of petroleum represent one of the world’s largest industries. The exacting requirements of the industry include productivity, efficient utilisation of resources, quality work environment and minimal adverse effects on the environment.

The refining business is constantly plagued by crude-oil market fluctuations, high cost of energy, environmental regulations, and consumer needs. These factors all contribute to very tight margins. During such times, the need for innovative applications tends to increase. Refiners globally seek to squeeze as much product out of a barrel of crude oil as possible; whilst optimising energy costs, meeting environmental regulations and supplying the market with products to the required specification.

“Sophisticated automation system is the means of satisfying all these requirements,” believes Pierre Leretz, president, ABB process automation division. Automation systems are of crucial importance in the technical performance and operating economics of a plant, he says. ABB founded in 1883, is today one of the world’s leading players in power and automation technologies.

In the oil and gas market, specifically, it provides number of solutions for applications to help increase output in upstream, midstream and downstream oil and gas processes.

As the large refining complexes get built today, Leretz argues, one of the most important considerations should be the provision made for larger automation systems to be built up stage by stage, modified and added over a period of years.

**SADARA WIN**

Last year, ABB bagged the Sadara project as the project’s Main Automation Contractor (MAC). Sadara is a $20 billion investment by Saudi Aramco & Dow Chemical, comprises 26 plants, involving a construction workforce at peak time of 60,000.

ABB’s scope in this mammoth project includes process automation systems, safety systems, project engineering, commissioning assistance, post-commissioning site support; as well as engineering, operator and maintenance technician training.

Sadara as an integrated chemical complex in Jubail Industrial City will be the largest plastics and chemicals production complex ever built in a single phase. It is the largest conversion park for downstream process and fabrication industries.

“We will have to run the Sadara facility as one project and in the process, have to follow both Dow and
Aramco standards. But in reality, we are will be running 17 different projects and each of them will have their own complex operations. However, to prevent a data deluge, we are not going to have all the information floating across all of the operators. Each plant will have its own critical set of information,” he explains.

Leretz reveals that in the Sadara project, the task though challenging has been made easier by both JV partners as the project definition is very clearly laid out.

**TOTALLY EFFICIENT**

Efficiency of large-plants is what most automation players like ABB play on. Mammoth facilities with huge power and water requirements need to optimise the usage of utilities and increase output effectively. ABB has been a supplier of products and services to the global oil industry for more than 100 years; within the Middle East region, the company has been present for over three decades now.

“We are providing about 20 control systems to around 10 different EPCs in the region and have been involved in a number of other projects recently, including a Sulphur handling project where we will supply telecommunication systems for a sour gas processing plant in the Gulf. Our solution will ensure a reliable and effective communications infrastructure at the plant and along the pipeline, as well as an expansion of the existing control system,” notes Leretz.

**TECHNOLOGY & PLANT SAFETY**

Leretz says the Middle East uptake of new technology for both the refineries and petrochemical plants is admirable. The region, he says, is ahead in the technology curve and is hungry for the implementation of the latest technology. “Projects like Sadara will be a marvel in the petrochemical industry, when completed, both because of the engineering and the technology usage,” he says. Security for automation and control systems has also gained a lot of attention in the last few years along with operator effectiveness. This is another crucial area because of its significant contribution to overall plant safety and reliability. Leretz observes that the market has significantly moved into ICSS (Integrated Control and Safety Systems).

Safety systems are often perceived as costly technology that requires complex engineering. Because existing systems have been in place for so many years, it’s often difficult for some companies to justify budgets for new systems, sometimes ignoring or minimising their value to the plant operations.

But safety standards and certification requirements have changed over the years. So
have approaches to the design and implementation of safety systems – a fact that affects not only the replacement of aging systems, but also the selection of safety and control systems in new facilities.

It’s harder for operators to do their job when they must be trained on multiple interfaces. In addition, when process states are changing quickly and operators most need instant access to information, it may be difficult to identify the relevant data in a timely manner, much less respond to it effectively, explains Leretz.

One of the approaches that the industry now looks for is integrated safety and process control. “In such a design, the safety system works independently of the process control system, but has been designed specifically to allow high levels of visibility and understanding to be delivered to operators through the control system interface,” says Leretz.

But the concept of integrated safety is still often misunderstood, he cautions. “There can be confusion about what this really means,” he adds, “It doesn’t necessarily mean you’re mixing process control and safety. You’re maintaining the independence of each system. There are still two independent layers of protection. But it’s a functional independence.”

One of the other areas, where ABB sees a lot of interest is green or environmentally-friendly solutions. One example is a solution which ABB has developed that cleans oily wastewater – by far the largest waste product in oil and gas production - quickly, cost-effectively and energy-efficiently, ready for discharge with zero environmental impact.

AGEING ASSETS
Automation players across the globe are being now brought into the brown fields that are looking to optimize production. ABB has also been awarded a slew of projects that are looking either at increasing oil production or enhancing refining capability.

“A lot of EPC projects focusing on gas production and refining capabilities that were awarded three to four years ago are now coming to an end, now there are a new wave of projects focused on increasing oil production, such as ZADCO or the ADMA/OPCO fields – Sarb, Umm Lulu and Nasr,” says Leretz.

But with ageing assets, the most important issues that automation players focus on, is integration and a shift from reactive to preventive maintenance, he says.

By implementing a predictive maintenance system, maintenance costs can be reduced by up to 4% to 4MUSD, he adds. ABB’s approach, Pierre says, to plant maintenance is to provide an environment, where information is transparently accessible to users in both the process control system and the maintenance system environments, regardless of where the information has originated.

WIRELESS FUTURE
Wireless technology is another important element in assisting productivity.

“Such technologies can be applied across a wide range of oil and gas processes including design, engineering, construction and final commissioning.

“Wireless means less cables and less installation, which leads to a tremendous amount of savings. It also holds exciting prospects, including immediate and significant progress in performance and data throughput as a result of wireless connectivity ,” says Leretz.

For the future, Leretz is counting on increasing MAC competencies which allow for more seamless integration across the various operating platforms. The automation veteran is also lobbying for engineering companies offering better quality data to automation providers, so that the hydrocarbon industry truly can take the technological leap.

Keeping it safe in sour fields
Shah natural gas field project is an important project for ABB. The plant is located in the Shah natural gas field 180 kilometers southwest of Abu Dhabi city, and has a daily production target of one billion cubic feet of sour gas. Abu Dhabi is developing its sour, or high sulphur gas reserves as domestic power consumption soars. The hydrogen sulhide content of the gas must be reduced to acceptable levels before it can be used.

For this project, ABB is supplying low voltage switchgear, intelligent motor control units and variable frequency drives. The safety of personnel and equipment reliability are key issues for this plant and played a significant role in this contract. ABB’s MNS low-voltage switchgear uses remote control systems and multifunction protection relays that make it the benchmark for operational safety, reliability and quality. ABB technology for remote control systems is crucial in order to ensure the functionality and the integration of low-voltage switchgear in modern production plants.