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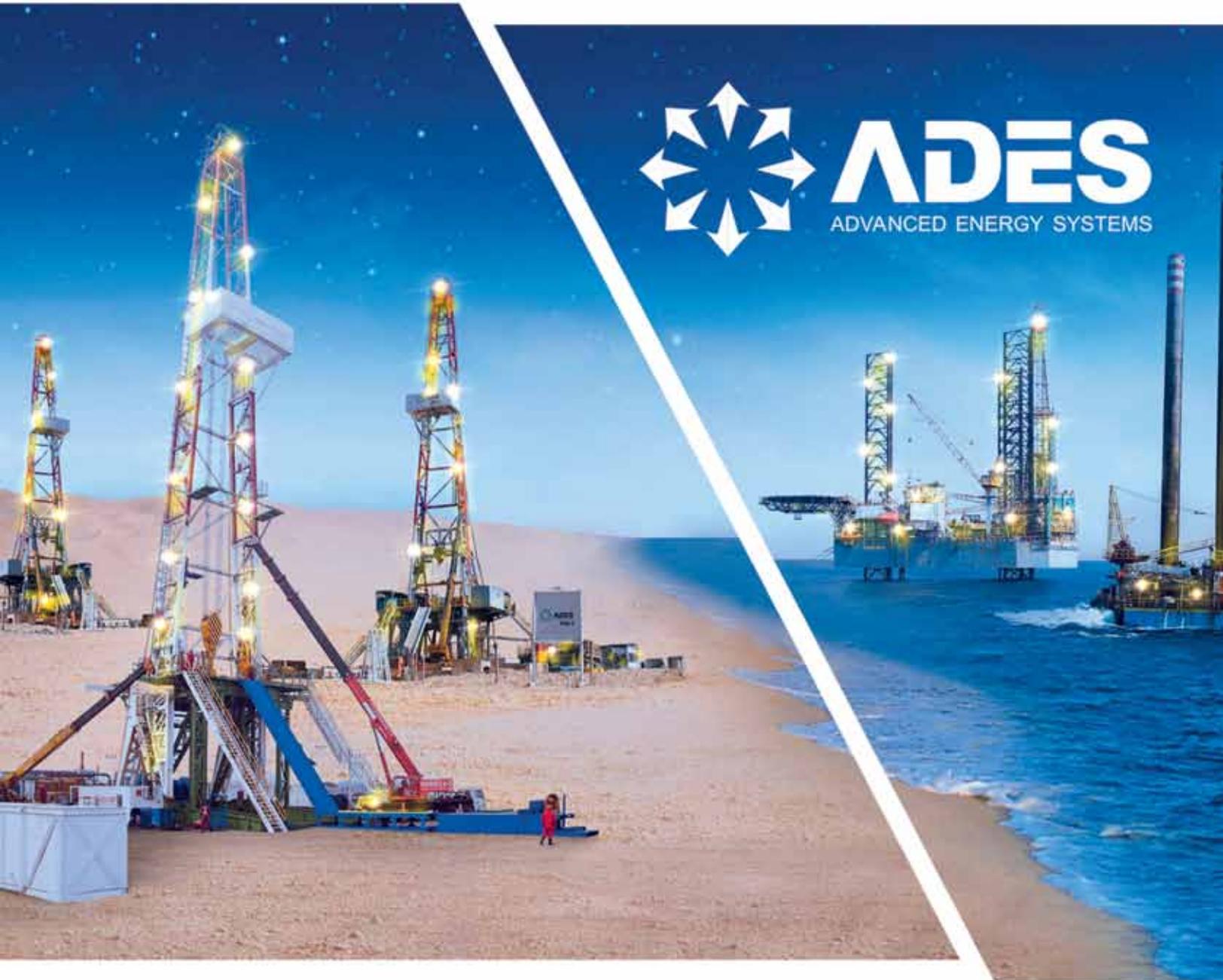
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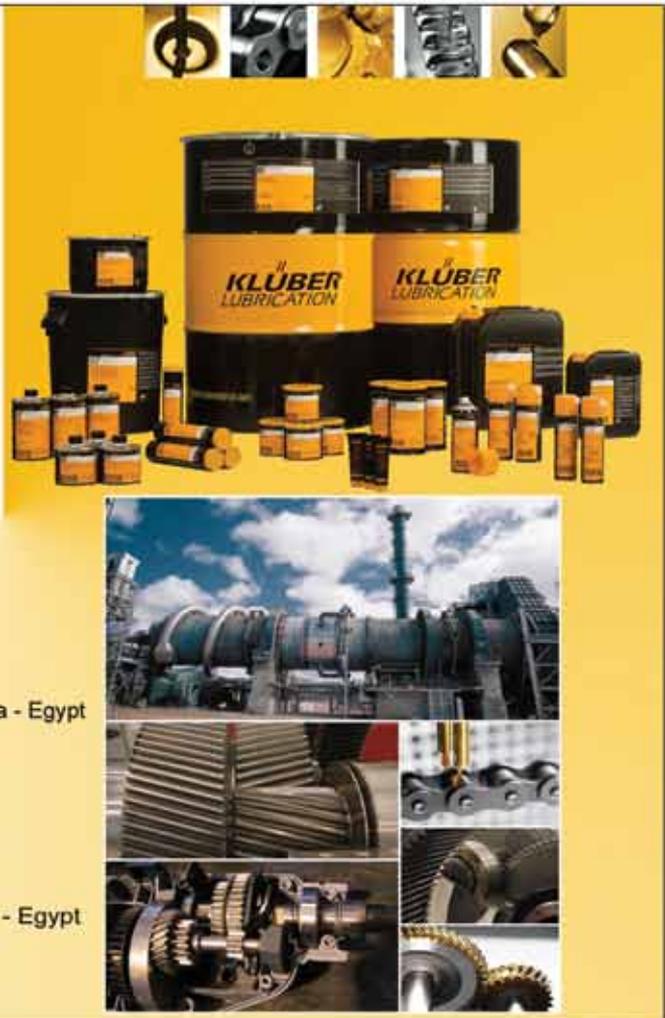
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# Petroleum Today

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٧ ملف خاص شنابير الكتريك

١٠ «انترو انيرجي» تشترك مع «شنابير إلكتريك» و«جيلا التوكل إلكتريك» لإفتتاح أول محطة للطاقة الشمسية في شرم الشيخ

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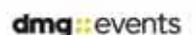
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## Our Social Responsibility towards the Petroleum Sector

**B**ased on the social responsibility of Petroleum Today magazine, the magazine will adopt many issues of interest to the oil sector in Egypt and the world. The most important of these are the occupational health and safety of the workers in the sector, which has a great deal of importance and impact on the economy and on human health which is so important.

In the next issues, we will devote many headlines related to occupational health and safety, in which we will discuss unrivalled topics and news in direct relation with this iconic theme starting from this issue you find an interesting article on the term getting to Zero and beyond and the role of leadership in Sustainable HSE culture.

We will also discuss special topics on the role of the women in the petroleum sector and the capabilities that must be exploited and role models for the women who are able to bear the hard work in the sector and reached positions of excellence.

We will focus on the role of the big oil companies in social responsibility by publishing the most important projects in which they participated in this regard and we will also take a serious initiative that will contribute in a vital and effective way to develop this spirit and taking the opportunity to invite everyone to participate with their initiatives.

We will also discuss issues such as the role of the middle management leaders in developing the sector. How did these leaders play a major role in activating their companies, and the contribution and role of the Petroleum Ministry as a default support in the development program and rehabilitation of these leaders? We will discuss the importance of the role of digitalization of the sector, in the interests of government according to the vision of Egypt 2030.

All of this through the media tools we produce from the printed magazine, electronic reachability and social networking communications, and we will soon issue many new tools

**And In the end, we salute you all and wish for Egypt pride and dignity.**

*Petroleum Today*

## Petroleum Today

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### Cypriot Parliament Bolsters Cooperation with Egypt in Gas Domain

**H**.E Eng. Tarek El Molla, Minister of Petroleum and Mineral Resources, discussed with Mr. Demetris Syllouris, President of the Cypriot Parliament, during his visit to Cairo, and the accompanying delegation, methods of enhancing the economic cooperation between both countries, especially in the domains of energy and exploitation of natural gas resources in the East Mediterranean.

El Molla asserted the distinguished relations between both countries at all levels, pointing that signing the government agreement, for establishing the pipeline for transporting Cyprus gas to Egypt, in order to be re-exported to foreign markets, represents the strong relations between both countries, praising the Cypriot Parliament approval of the agreement.

During his meeting with the President of the Cypriot parliament, the Minister reviewed the mechanisms of enhancing cooperation between the Eastern Mediterranean countries, in natural gas domain after launching the first regional gas gathering, consisting of 7 Mediterranean countries under the name of the “East Mediterranean Gas Forum” (EMGF), and held its first meetings in Cairo in January-2019.

The Minister affirmed that this forum is one of the positive results of the tripartite cooperation mechanism, including; Egypt, Cyprus and Greece. The forum was launched, based on the initiative of President Abdelfattah Al-Sisi, H.E Nicos Anastasiades, President of Cyprus and Mr. Alexis Tsipras, Prime Minister of Greece during the Summit Meeting, in Crete last year.

For his part, President of the Cypriot Parliament asserted that the Egyptian-Cypriot relations witnessed significant developments over the past few years. The strategic cooperation with Egypt in the domains of energy and natural gas represents high priority for Cyprus and is based on a solid base and great understanding between both sides.

### Cairo Hosts the Mediterranean Gas Infrastructure Operators (MedGio) Meeting



**T**he occasion of the Mediterranean Gas Infrastructure Operator (MedGio), organized by the Egyptian Natural Gas Company (Gasco), Eng. Tarek El Molla, Minister of Petroleum and Mineral Resources, delivered a speech, in which he affirmed that the Mediterranean region holds a significance importance in the world order politically, economically and geographically, and that it is gaining vast significance over the coming years, in the light of the existence of abundant gas resources, due to the great discoveries especially in the Eastern Mediterranean Region. El Molla asserted that cooperation among the Mediterranean countries, members of MedGio, will enhance the available

infrastructure, in the light of the growing strategic importance, for the security of energy supply, in which the gas plays a fundamental role towards cleaner energy system. The Minister mentioned that, Egypt believes in cooperation between gas producing, consuming and transit countries towards achieving the efficient utilization of existing and new infrastructure, which is a corner stone in building a sustainable gas market for the Eastern Mediterranean reserves, highlighting that Egypt introduced the initiative to create the “East Med Gas Forum” EMGF, based in Cairo. The first Ministerial meeting of EMGF was held in Cairo, in January 2019, with the participation of Cyprus, Greece, Israel, Palestine, Italy, Jordan and EU. He added that EMGF main objective is to ensure sustainable dialogue on commercial, financial and technical cooperation, to deal with regional challenges and to utilize the available infrastructure for quick monetization of existing and future gas reserves. El Molla added that Egypt realizes the significant role gas can play in satisfying energy needs, that currently natural gas represents more than 75% of Egypt’s hydrocarbon proven reserves. Moreover, this increase of natural gas share in the Egyptian energy mix has made it a cornerstone in its energy strategy.

## U.S. joins Egypt, EU to warn Turkey against drilling for oil, gas off Cyprus



The United States expressed its concern regarding Turkey's announcement to begin offshore drilling operations in an area claimed by Cyprus as its exclusive economic zone, according to Reuters.

"The United States is deeply concerned by Turkey's announced intentions to begin offshore drilling operations in an area claimed by the Republic of Cyprus as its exclusive economic zone," said State Department spokesperson Morgan Ortagus.

"This step is highly provocative and risks raising tensions in the region. We urge Turkish authorities to halt these operations and encourage all parties to act with restraint," the statement said.

Egypt's Foreign Ministry issued a statement which urged Turkey not to start drilling for oil and gas off Cyprus as the move is "deemed illegal by all International laws".

Egypt, which signed a gas deal with Cyprus last year, said it was following the situation «with interest and concern».

In the statement, it warned of «the repercussions of any unilateral measures on the security and stability of the Eastern Mediterranean» and urged states in the region to abide by international law.

Egypt and Cyprus agreed in September-2018 to build a pipeline to compress Cypriot gas to Egypt for processing and exporting to Europe.

## Egypt to attract \$10bln of petroleum investments in FY 2019 / 20

Egypt achieved self-sufficiency for gas last year, says Federation of Egyptian Industries' oil chamber chief. Egypt's petroleum sector is set to attract \$10 billion of investment in its coming financial year, adding to the \$30 billion that has been invested over the past three years, according to an industry head.

Mohamed Saad, head of the oil chamber at the Federation of Egyptian Industries stated that "investments in current and past financial years have helped Egypt to achieve self-sufficiency in natural gas production".

Saad said that the natural gas sector had represented "an overload" on the state in the past as a result of weak production, but said the situation had now transformed, with the country transitioning from self-sufficiency towards becoming a natural gas exporter.



# ARAB & INTERNATIONAL NEWS

## BAPCO reaches financial close on modernization program

The Bahrain Petroleum Company (Bapco) has announced that it has reached financial close on its multi-billion-dollar (BAPCO Modernization Program) “BMP”.

The financial package is a key milestone in the BMP’s progress and its successful closure means Bapco can proceed to the next stage of the project, said senior officials at a ceremony held (May 19) to mark the occasion.

The modernization program is a major undertaking for the company that will help boost Bapco’s refining capacity to 380,000 barrels per day (bpd) from 267,000 bpd, besides enhancing the product slate, energy efficiency and transforming the company into one of the most competitive and environmentally-compliant refineries.

Lauding the Bapco team for the financial close, Oil Minister Shaikh Mohammed Khalifa Al Khalifa said: «We achieved this by assembling a strong team that worked tirelessly to secure a positive result.»

“Given the size and scale of the BMP, this is a mutually beneficial conclusion for a wide variety of partners from across the globe because it means we can provide a

wider product offering and meet higher demand from our customers,» he stated.

The Bahrain oil major assembled five export credit agencies (ECAs) and a syndicate of 21 commercial banks to finance the project. This included a combination of commercial and Islamic bank financing with both regional and international banks.

BMP is projected to be completed by 2022 and will contribute significantly to the sustainable development in the kingdom.



## Enoc signs deal to drive digitalization with Moro

UAE-based Enoc Group signed an agreement with Moro, the Dubai government owned digital data hub, focused on providing digital transformation and operational innovation, to lead the digitalization journey of Enoc’s operations.

The digital transformation will be driven through an organization-wide SAP system implementation and infrastructure hosting services by Moro and powered by Virtustream Cloud Technology over the next five years. The program will be delivered by a dedicated team of professionals from Enoc, Moro and specialized partners.

The partnership agreement was signed between Saif Al Falasi, Group CEO of Enoc, and Marwan Bin Haidar, vice chairman of Moro, at Enoc’s headquarters in Dubai, in the presence of senior officials from both organizations.

The agreement builds on Enoc’s vision to generate new value, unlock new opportunities, drive growth and deliver enhanced efficiencies across the Group’s portfolio. This in turn will strengthen corporate governance standards and build autonomous systems that are completely integrated with the business ecosystem.

## Iraq has contingency plans in case Iran gas imports halted: minister

Iraq has contingency plans for any stoppage of Iranian gas imports for its power grid but hopes no such disruption will take place, Oil Minister Thamer Ghadhban said.

He also said a meeting of OPEC’s ministerial monitoring committee in Saudi Arabia would assess member states’ commitment to a deal reducing oil production and that oil prices and markets were now stable.

“It’s still too early to predict what



will be decided,» Ghadhban told a news conference when asked whether the Organization of the Petroleum Exporting Countries and its oil-producer allies could extend the output

cut or boost supplies.

Turkey has asked to buy more Iraqi crude, Ghadhban added, speaking in Baghdad a day after Iraqi Prime Minister Adel Abdul Mahdi traveled to Turkey to meet President Tayyip Erdogan.

The United States is ramping up sanctions pressure on Iraq’s neighbor and ally Iran, especially over oil exports.

## OPEC, allies back on track with oil cuts, US output at new high



The Organization of Petroleum Exporting Countries (OPEC) and its partners are once again cutting production as promised in their effort to steady the market, said a report.

Non-OPEC compliance soared to 151% in April-2019, compared with 61% in March, International Energy Agency data showed.

OPEC adherence remained strong—

also at 151%—versus 158% previously, according to Bloomberg calculations. The last time OPEC and its partners jointly complied with their agreement was December 2017.

In April both sides of the so-called OPEC+ alliance complied with their supply pact for the first time 16 months, reported Bloomberg.

Field maintenance in Kazakhstan made a huge contribution to non-OPEC

producers' collective conformity, while the OPEC continued its commitment to the curbs, it stated.

OPEC members Libya, Iran and Venezuela have also been exempt since the beginning of the year.

Saudi Arabia has shouldered OPEC's cuts. In April that effort was supported by strong adherence from the UAE and Kuwait, among the organization's largest producers.

Non-OPEC's mid-sized producers carried that group's conformity, as Russia failed to fully comply, stated the report.

According to Bloomberg report, OPEC is trying to cut output by 812,000 barrels a day below baseline levels. Saudi Arabia alone curbed by 891,000 daily barrels last month.

That buttressed the organization's compliance even as Nigeria and Iraq, OPEC's second-largest producer, raised output from March. The non-OPEC group is seeking to cut 383,000 barrels .

## Bank Of America: \$90 Brent May Be Around Corner

Bank of America Merrill Lynch (BofAML) warns that Brent crude oil could reach \$90 per barrel stemming the new IMO rules regarding shipping fuels and a weaker dollar courtesy of a de-escalation in the US/China trade war, Reuters reported .

BofAML claims that the IMO rules regarding the allowable sulphur content, to take effect in 2020, could cause a spike in middle distillate demand, pressuring prices upward. Also pushing up prices could be the weakening dollar should the trade war between China and the United States simmer down.

In February-2019, BofAML estimated that Brent crude would be trading within the \$50 to \$70 per barrel band through 2024, with prices "anchored" around \$60 per barrel, citing rising US shale supplies and slowing oil demand growth. Shorter term, BofAML saw Brent rising to \$70 per barrel citing tighter supply as Venezuela, Iran, Mexico, and OPEC produce less oil—some on purpose and some not.



## EIA rises forecast for 2019, 2020 U.S crude output growth

NEW YORK (Reuters) - U.S. crude oil production is expected to rise by 1.49 million barrels per day (bpd) in 2019 to average 12.45 million bpd, the U.S. Energy Information Administration (EIA) announced, up from its previous forecast for a rise of 1.43 million bpd.

The EIA forecast output in 2020 will rise by 930,000 bpd to 13.38 million bpd, a bigger increase than it previously estimated.

The latest forecast puts the United States on track to reach the 13-million-bpd milestone in the fourth quarter of 2019.

The United States has overtaken Saudi Arabia and Russia to become the world's biggest oil producer, thanks to a shale revolution.

## CORPORATE NEWS

**SAPESCO** has successfully completed its role in BAPETCO's Gas Facility Maintenance



As one of the leading companies in Pre-Commissioning services **SAPESCO Industrial Services** has successfully completed its Pre-Commissioning role in BAPETCO's - Badr Petroleum Company - maintenance Gas process, this is considered BAPETCO's biggest maintenance operation in its history to BED-3 gas process.

**SAPESCO Industrial Services** has participated in this big process with its experts and state of the art equipment. SAPESCO has performed - in a safe and professional manner- the Nitrogen purging operations for the 24" pipeline and several activities including Valves replacement, Flange Management, Replacing and installing smart gaskets as well as the Leak tests for the 24" pipeline.

It's worth mentioning that SAPESCO is currently providing Pre-Commissioning and Commissioning services to various power and petrochemical projects in Egypt. SAPESCO is always committed to providing the most competent manpower along with the necessary equipment to complete each project according to its schedule and regardless of the encountered obstacles.

## Greenpeace activists block BP London HQ demanding end to oil exploration



Greenpeace activists blocked the entrance to BP's London headquarters on Monday, demanding one of the world's biggest energy companies ends all new oil and gas exploration or goes out of business.

Greenpeace activists arrived at the building in St James' Square in central London at 0200 GMT and encased themselves in specially designed containers to block all of the main entrances.

A team of activists' abseiled from the top of the building and placed huge letters over the windows reading 'CLIMATE

EMERGENCY'.

"BP is fuelling a climate emergency that threatens millions of lives and the future of the living world," said Paul Morozzo, a Greenpeace activist.

"The science is clear - we must stop searching for new oil and gas if we want a livable planet. BP must clean up or clear out," Morozzo said.

BP said that impeding safe entry and exit from the building was dangerous and "clearly a matter for the police to resolve as swiftly as possible."

"We welcome discussion, debate, even peaceful protest on the important matter of how we must all work together to address the climate challenge," the BP statement added.

London's Met Police later said four people had been arrested for aggravated trespass and that police remained on the scene. BP is due to hold its annual general meeting (AGM) of shareholders in the Scottish oil city of Aberdeen. Greenpeace said it would keep the London HQ closed for at least a week. "At their AGM tomorrow BP's [CEO] Bob Dudley has a choice - he can immediately end oil exploration and start switching to 100% renewables or wind down the company," Morozzo said.

## Apache profit misses on lower crude, natural gas prices



U.S. oil and gas producer Apache Corp missed analysts' estimates for quarterly profit as lower crude and natural gas prices offset higher output from the Permian basin in the United States and the UK North Sea.

Average price per barrel of oil fell 10 percent, while gas prices dropped 17 percent per cubic feet in the first quarter-2019 ended March 31, the company said.

Apache temporarily halted production at its Alpine High assets in the Permian basin late in March, curtailing output of about 250 million cubic feet of natural gas per day, responding to extremely low prices. The lower prices offset a 19 percent jump in adjusted production to 436,713 barrels of oil equivalent per day (BOEPD).

Apache, which also operates in Egypt, reiterated its 2019 forecast of production growth of 6 percent to 10 percent and capital expenditure target of \$2.4 billion.

The Houston-based company said adjusted earnings fell to \$38 million, or 10 cents per share, in the first quarter ended March 31, from \$124 million, or 32 cents per share, a year earlier.

Analysts had on average expected a profit of 12 cents per share while revenue fell 6.4 percent to \$1.64 billion and shares fell 2.2 percent to \$30.21 in after-hours trading.

## Exxon's Mozambique LNG project plan gets approval

Exxon Mobil Corp said that its development plan for Rovuma liquefied natural gas (LNG) project in Mozambique was approved by the country's government, with the company's final investment decision

expected later this year.

The U.S. oil giant took charge of the East African LNG project's onshore operations following a \$2.8 billion deal with Italy's Eni in 2017, adding to its slate of planned gas projects in

Qatar, Papua New Guinea, Russia and the United States.

The Rovuma LNG project is expected to produce, liquefy and market natural gas from three reservoirs located in the Area 4 block offshore Mozambique.

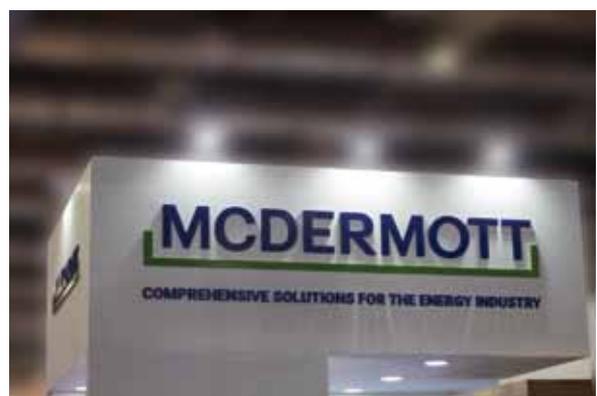
## McDermott awarded offshore contract by ADNOC

U.S.-based McDermott International has been awarded a contract by ADNOC to provide front end engineering design (FEED) services on a design-competition basis for Phase One of the Umm Shaif Gas Cap Condensate Development Project.

The scope of work also includes the preparation and submission of an EPCI proposal reflecting the design of the offshore facilities developed by McDermott through this FEED work.

«This award reflects the market's recognition that McDermott is well qualified to provide execution-focused engineering design services to clients,» said Linh Austin, McDermott's senior vice president, Mena. «Our extensive EPCI experience allows us to deliver technically robust engineering design to clients as a «one-stop-shop» on a global scale.»

The FEED project is scheduled to be executed from McDermott's London office with support from its Dubai and Chennai locations. Work on the project will begin immediately and the contract



award was reflected in McDermott's first quarter 2019 backlog, a company statement said.

McDermott defines a sizeable contract as between \$1 million and \$50 million, it added

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# STI - SAHARA Technical Institute

With a focus on addressing the “Great Crew Change” dilemma; STI’s goal is to close the sector’s skill gap. STI utilizes hands on training, theory & practice on actual equipment along with latest simulators by merging the theory with the “On Job Training”. STI provides unique training programs, competent instructors and training facilities aiming at promoting technological development and operational excellence in the Oil & Gas industry.

STI is an accredited training institute by the International Well Control Forum (IWCF) for both drilling well control and well intervention courses, with a commitment to deliver a permanent step change in process safety and operations throughout the life-cycle of the well.

STI is a member of the International Association of Drilling Contractors (IADC) through which STI can provide a variety of upstream industry programs. STI with aims at improving safety, advancing drilling technology, striving for reasonable regulation and legislation, and enhancing the training and education of technical and management personnel.

During the past two years STI has performed many advanced programs within the African market (Libya & Chad) in the aspects of Well Planning and Design, Well Testing Design and Analysis, Advanced Completion Engineering, Production Logging, Advanced Drilling Operation, Sand Control Technology, .etc. all performed courses have exceeded clients’ expectations, and in order to continue providing our clients with training programs, capabilities & introducing the latest advanced training to the Egyptian

market, STI acquired EGPC registration on 31-Oct-2018 with number “73”.

STI offers within its annual training calendar more than 60 courses that cover all segments in the oil & gas industry aiming at serving all segments’ levels starting from the fresh graduates, junior engineers, senior positions up to the managerial levels with the most advanced teaching techniques. Also special competency assurance programs were set for operators and technicians through our experienced and dedicated instructors delivering class-based training with follow-up site visits to ensure that the classroom knowledge is transferred to practical implementation.

STI has already performed many accredited (IWCF) programs for our Egyptian clients that have been provided in the highest standard and professional manner with a very competitive prices - another successful story to SAHARA Integrated Group of companies.

STI has all the facilities, capabilities and resources, through its smart class rooms, standard/accredited materials, state of the art teaching methods, advanced simulators, training well that’s drilled and already completed with casing and tubing that helps our students to have an actual simulation for the work environment...etc.

STI is the training arm for SAHARA Integrated, with a vision to become a world class Oil & Gas Professional Education & Practical Training Excellence Institute in the Middle East and Africa regions providing strategic solutions to the industry dilemma “Hands on practice”.



# Drilling Well Control Well Intervention Pressure Control

IWCF Levels 2, 3 & 4

IADC Levels: Introduction, Fundamental & Supervisory

STI - SAHARA Technical Institute Zahraa El-Maadi, Industrial Area, Cairo, 11742, Egypt  
Tel.: +202 2519 4800 Fax.: +202 2519 4900

[www.sahara-sti.com](http://www.sahara-sti.com)

### Centralizers/Paraffin Scrapers

Centralizers from Oilfield Improvements are ideal for full-circle wiping of paraffins in the inner diameter tubing. They are field-installed from a two-piece, snap-together guide made from Amodel, a glass-reinforced PPA resin. The centralizers have higher gripping force on sucker rods and more fluid flow-by volume compared to other commercially available centralizers.

- For additional information, visit [www.rodguides.com](http://www.rodguides.com).



[ Centralizers have higher gripping force ]

### Construction Modeling Software

Bentley Systems announced the acquisition of Synchro Software, which links three-dimensional building information modeling (BIM) deliverables with the time dimension to synchronize, through digital workflows, the construction strategy, work breakdown structure, schedule, costs, resources, supply chain logistics, and progress of a construction project. The software's four-dimensional construction model incorporates other construction variables like materials, equipment, falseworks, and space, for project delivery performance. Its change synchronization assures that BIM deliverables are updated for changes that occur during construction, aligning the as-designed, as-constructed, and as-operated digital engineering models.

- For additional information, visit [www.bentley.com](http://www.bentley.com).

### Pig Valve

Chaoda's pig valve has patent pending technology that improves the accessibility to the central components for maintenance and repair. It does not require scaffolding, as the hatch provides access to the torso. The valve requires full cavity pressure relief before the latch can be freed. Its reversible catcher plate allows for retrofitting of the valves from a receiver to a launcher or vice versa. Multiple seating options and catcher plate flow patterns allow for flexibility in application-specific designs.

- For additional information, visit [www.chaodausa.com](http://www.chaodausa.com).



[ Chaoda's pig valve ]

# Multivariable Gas Transmitter

The JT400 MVG is a multivariable gas transmitter from Siemens and Newgate Instruments tailored for upstream and midstream natural gas production. It has a power consumption of less than 4 mW and static pressure reference accuracy of 0.035% of URL. Even when over-pressured, the sensor remains accurate to 0.1% up to 133% of URL. The device comes standard with Class I Division I, Group C, D, Explosion-proof UL/CUL as well as intuitive menu operation with live trending in real time. It offers drop-in compatibility via BSAP, Enron Modbus and ROC compatible protocols.

■ For additional information, visit [www.usa.siemens.com/pressure](http://www.usa.siemens.com/pressure).



[ Multivariable Gas Transmitter ]

# API-16C-Compliant Sealing Materials



[ Trelleborg Sealing materials ]

Trelleborg Sealing Solutions received approval for 25 materials to American Petroleum Institute API-16C specification relative to oil and gas choke and kill valve requirements. This represents the largest number of materials compliant to the standard available from any seal manufacturer, according to Trelleborg. The certification dictates a brine/diesel chemical composition that can be aggressive to seal materials. The company has engineered polymers and elastomers to withstand these chemicals with particular attention on minimizing effects of chemical attack. The materials are particularly suited for applications including rotating disc-type, adjustable, barrel-type, and orifice choke valve types and include polytetrafluoroethylene (PTFE) based, PEEK and elastomeric compounds, such as hydrogenated nitrile butadiene rubber (HNBR), fluoroelastomer (FKM), and perfluoroelastomer (FFKM).

■ For additional information, visit [www.trelleborg.com](http://www.trelleborg.com).

# Thermal Gas Mass Flowmeter

The Model FT4X from Fox Thermal is a thermal gas mass flowmeter that measures process gas flow rates, totals, and temperatures. It is equipped with a second-generation direct digitally controlled (DDC) sensor, as well as an advanced data logger with a real-time clock that can calculate up to 40 totals in a 24-hour period. A USB connection comes standard with the flowmeter; HART and RS485 Modbus communication protocols are optional.

■ For additional information, visit [www.foxthermal.com](http://www.foxthermal.com).



[ Fox Thermal Gas Mass Flowmeter ]

## Subsea Network Integrity Monitor

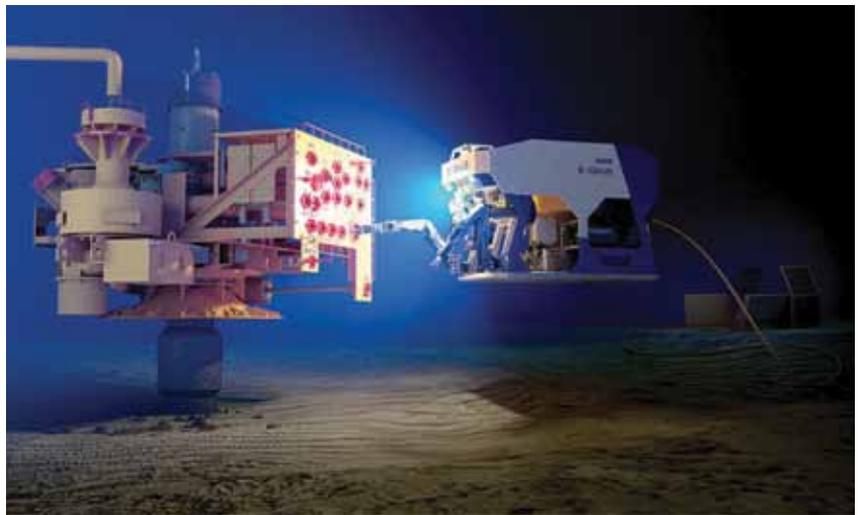
The V-IR Network Integrity Monitoring System from Viper Innovations helps minimize maintenance and repair costs of subsea electrical networks. The system improves the visibility of electrical insulation resistance (IR) by dividing the subsea network into monitor sections. It uses V-SLIM (subsea line integrity monitoring) nodes at strategic points in the network, and those nodes communicate with a topside V-LIM device by applying a communication signal onto the IR measurement. The V-SLIM design allows it to tell whether an IR reading is upstream or downstream of their installation point.

■ For additional information, visit [www.viperinnovations.com](http://www.viperinnovations.com).

## Battery-Powered ROV

Oceaneering's self-contained, battery-powered (cage-mounted 100-kW battery pack) remotely operated vehicle (E-ROV) system performs common ROV tasks including inspection, valve operation, torque tool operation, and manipulator-related activities. The system interfaces with the company's onshore Mission Support Center via a 4G mobile broadband signal transmitted from a buoy on the water's surface and eliminates the requirement for a surface vessel onsite. Piloting from onshore is made possible with Oceaneering's proprietary remote piloting and automated control technology. The ROV was named a winner of the 2018 OTC Spotlight on New Technology Awards.

■ For additional information, visit [www.trelleborg.com](http://www.trelleborg.com).



[ Oceaneering's self-contained, battery-powered ROV ]

## Active Caisson Management

Pipetech has launched a new active caisson management service following a number of recent projects with North Sea operators. The service aims to drive cost efficiencies while maintaining asset integrity throughout the life cycle of the caisson. It involves a single-sourced, full range of services including inspection, cleaning, coating, and planned and programmed maintenance and repair scheduling. The company has already delivered a number of caisson projects with Repsol Sinopec Resources UK, Statoil, Aker, and Nexen Petroleum.

■ For additional information, visit [www.pipetech.no](http://www.pipetech.no).



[ PipetechActive Caisson Management ]



# AES FLOW CONTROLS

(A member of Mann Flow Controls, Inc (MFC) Group of Companies)

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## HIPPS HIGH INTEGRITY PRESSURE PROTECTIONS SYSTEMS

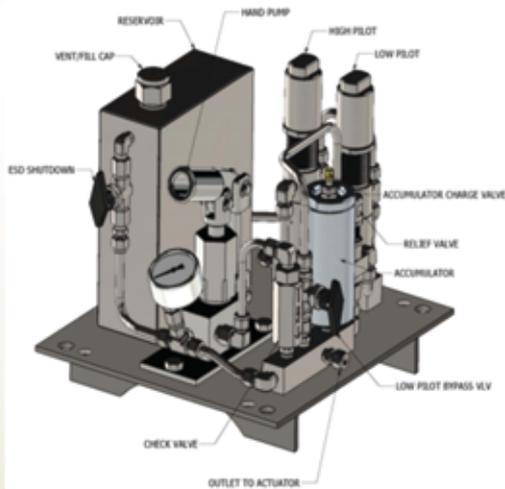
### WHAT IS HIPPS

High Integrity Pressure Protection Systems (HIPPS) is designed to reduce the risk if the pressure of a system exceeds its design pressure. With today's requirements for higher flow rates and pressures, the ability to lock-in pressure using a performance-based, non-descriptive framework and life-cycle data is required. These systems include emergency shutdown valves, pressure sensors, fail safe actuation, partial-stroke testing and a logic solver—all with built-in redundancy in a skid-mounted package. HIPPS systems are used in the oil and gas industry, LNG facilities and transport and storage systems to ensure the safety of pipelines, piping, vessels and process packages. Regardless of what application, any containment loss due to over-pressurization is a critical issue.

HIPPS is an instrumented safety system that is designed and built in accordance with the International Electro-technical Commission ("IEC"), IEC 61508 and IEC 61511 standards. These international standards refer to safety functions (SF) and Safety Instrumented Systems (SIS) when discussing a solution to protect equipment, personnel and environment. A system that closes the source of over-pressure within 2 seconds, with at least the same reliability as a safety relief valve, is usually identified as a HIPPS.



### TYPICAL COMPONENTS OF AES HIPPS



- ◆ Hydraulic Power Unit (self contained)
- ◆ Single stage Hand Pump (5000 psi)
- ◆ High & Low Pressure Sensors
- ◆ All 316 SS components
- ◆ Redundant Check Valve
- ◆ Relief Valve
- ◆ Hydraulic Accumulator
- ◆ ESD ¼ turn ball valve
- ◆ Low pilot override valve
- ◆ Ideal for use in remote locations
  - ◆ Simple design with fewer components
  - ◆ Easily repaired with component replacement
- ◆ Compact footprint (35-40% smaller)
- ◆ Manual Shut-down
- ◆ Single tech installation capable

### AES HIPPS

AES HIPPS is applied to prevent over-pressurization of a plant or pipeline by shutting off the source of the high pressure. The AES HIPPS totals over 35 000 (with over 2500 valves) operational years and are therefore proven-in-use for high reliability safety applications.

AES HIPPS is a type of SIS designed to prevent over-pressurization of a plant, such as a chemical plant or oil refinery. AES HIPPS will shut off the source of the high pressure before the design pressure of the system is exceeded, thus preventing loss of containment through rupture (explosion) of a line or vessel. AES HIPPS is considered as a barrier between a high-pressure and a low-pressure section of an installation.

### AES HIPPS BENEFITS

- ◆ High reliability - 3rd parties have validated the failure data of the final element (valve and actuator) on applications with less than 2 seconds stroking time.
- ◆ Fast acting - Fast acting axial on-off valve with integrated actuator, specifically designed for fast reliable stroking.
- ◆ High capacity - The capacity of the axial on-off valve is extremely high, as a result of which the pressure drop is negligible.
- ◆ Accuracy better than 1% - AES mechanical initiators have an accuracy better than 1 percent of the set point. Failure data have been validated by third parties.
- ◆ No partial stroke testing required - The AES HIPPS final elements do not require additional electronic systems, like partial stroke testing devices, to meet SIL 3 with a 1 year test interval.

### AUTHORIZED AGENT IN EGYPT

INFINITE STEEL SOLUTIONS (ISS) Attn: Eng. Nevine Tawfik

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API 6D, API 6A, API QI Valves Manufacture of Ball, Gate, Globe, Butterfly, Check and Pigable Valves



### NOV Process & Flow Technologies US, Inc.

Choke Valves  
**NOV-MD Totco**  
Rig Instrumentation, Gauges, Recorders & Mud Monitoring Systems



### Hoffer Flow Controls, Inc.

Turbine Flow Meter for Fluid, Gas, Water and Steam



### AXON Energy Products

Single, Double, Spherical BOP API, Gate, Valves, Choke Kill Manifold



### CHELPIPE GROUP

SAWL Pipes & Accessories from 20 in. up to 56 in.



### JVS Flow Control

Chock Manifold- Chokes & Gate Valves  
Drilling equipment repair and recertification.



### Maitech International, Inc. - USA

Line Pipes, Casing Pipes & Pipe Fittings – Stockiest



### TripleFast Middle East Ltd.

Manufacturer of a Bolting Gaskets, Seals and Machined Components



## Work Shop

### Admasco Work Shop

ISO / IEC 17025 & 4126 - 1 Accreditation for Pressure Gauges, Transducer, Safety Relief Valves and Hydrostatic Test for Hoses, Pipes, Valves, BOPs & Vessels according to ASME B31.3 - ISO 1402 - API 570 - API 598 - API 7K & 16C – API RP 53 and API 510





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# Getting to **Zero** and Beyond

## Introduction

The oil and gas industry was started by visionaries and wildcatters who foresaw a brighter future and were willing to scrap the status quo and take steps to achieve their vision. For the industry to reposition itself for the future today, it needs an injection of the same willingness to cast aside some strongly held legacy beliefs and practices and take the next leap forward—achieving zero harm.

The concept of zero harm is not a new one in the oil and gas industry, which has for more than two decades set HSE goals that are focused on the reduction of incidents with the ultimate intended outcome that no one be hurt and no releases occur. However, the challenge for decades has been the alignment of industry on an effective pathway to

achieve these goals. To attain zero harm, a step change in thinking, performance, and alignment around HSE is required across the industry.

It is acknowledged that some believe directing attention toward achieving zero harm can lead to a detrimental focus on incidents and injuries that may lead to underreporting of incidents, gaming of statistics, manipulation of incident definitions, and overly aggressive injury case management.

A zero vision is a commitment. It is a modernist commitment, inspired by Enlightenment thinking, that is driven by the moral appeal of not wanting to do harm and making the world a better place. It is also driven by the modernist belief that progress is always possible, that we can continually improve, always make things better.

Between 2009 and 2016, SPE facilitated a series of global sessions to develop ideas for the continued improvement of HSE in the industry. These sessions brought together leaders representing diverse disciplines from across the industry, government, and academia to discuss a simple question: How can the oil and gas industry achieve zero harm?

The participants of the SPE sessions identified that achieving and sustaining zero harm relies on the industry's people and the factors that influence the interaction of people with each other, with the facilities and equipment, and with the management systems and working practices used to organize and manage the way work is carried out within the industry. These criteria are described as human factors; identified by the SPE session participants as the priority component for the industry's success in meeting an expectation of zero harm.

In addition, ensuring an industrywide commitment to the expectation of zero harm and integrating elements of human

factors to improve human performance were recognized as important steps for the evolution of oil and gas companies to becoming high-reliability organizations (HROs). An evaluation of the characteristics of HROs and how they can be applied to oil and gas drilling organizations found that numerous HRO attributes, including human factors, readily align with the challenges that exist in drilling operations and that impact performance.

### **Achieving a Culture of Perfection Led From the Top**

Many in the oil and gas industry today recognize HSE as adding business and shareholder value. Likewise, leaders in HROs recognize HSE as essential and fundamental to short-term and long-term sustainable success. In fact, the impact of poor HSE practices can drive companies out of business. HSE performance becomes an integral part of our ethical, legal, and social responsibility to our employees, customers, contractors, the communities in which we work, and to the future of our planet.

Zero harm as an expectation will require a cultural adjustment for the industry. Patrick Hudson's Safety Culture

Maturity Model (Hudson 2001) is a recognized framework used by organizations to assess and understand their culture. Getting to Zero sessions, the Hudson model was adapted to evaluate HSE culture and risk tolerance (Fig. 1).

Participants at the SPE Getting to Zero sessions identified that a evolution to a generative mindset is emerging within their companies, for both HSE culture and risk tolerance (Fig 2). Specifically,

- Two-thirds (69%) identified their

organizations as having a proactive/generative HSE cultural mindset 50% proactive/19% generative.

- Three-quarters (78%) identified their organizations as having a risk-tolerance mindset of being naturally proactive/generative: 72% proactive/6% generative.

An indicative of the culture across the industry of the ability to achieve an expectation of zero harm are the present attention and action that are being given to incidents. As a frame of reference, incidents are categorized as fatalities, lost-time injuries, medical cases, first-aid, high-potential, and near-miss. When asked what level of safety incidents trigger their company's incident analysis and attention, the participants reported the following (Fig. 3).

More than one-third of the session participants identified that in their organizations all incidents receive analysis and attention regardless of outcome severity.

- For nearly one-half of the participants, high-potential incidents initiate action in their organizations.
- The small remainder of participants limit their analysis and attention to traditional incident metrics (that is, fatalities, lost time, medical cases, and first aids).

Organizational and personal accountability mindsets are now more prevalent, causing pre-emptive challenge of conditions and behaviors, because the recognition and perception of risk have increased and tolerance for risk has decreased. This supports Patrick Hudson's research that organizations shift their tolerance/perception of risk as they evolve upward on his culture ladder (Hudson 2001).

To continue this cultural evolution across the entire industry, the critical component to instilling and ensuring the necessary change rests with leadership

behaviors. Andrew Hopkins states, “a company may expend huge resources trying to change the way operators, foremen, and supervisory staff think and feel about safety, but a far more effective approach is to instill a culture of This is the way we do things around here.

Organizational culture reflects the shared, tacit assumptions that have come to be taken for granted and that determine members’ daily behavior. The subset of assumptions about safety in an organization can be loosely labeled safety culture, encompassing the organization’s values, beliefs, attitudes, social norms, rules, practices, competencies, and behaviors regarding safety (National Academy of Sciences 2016).

Finding ways to translate learnings from other industries into action in the oil and gas industry has not been easy. An oil and gas service provider enlisted leaders as HSE owners by developing an HSE leadership program for senior managers. The program used findings from previous psychological research on the role of managerial leadership in determining workplace safety outcomes, and applied the antecedent-behavior-consequence (ABC) model (The aim of the program was to increase HSE leadership by senior and middle managers and thereby accelerate the development of a strong HSE culture.

The scope of the HSE leadership program was to increase managers’ and senior managers’ operational ownership of HSE and provide “line of sight” as to what effective HSE leadership is and how to apply it to daily activities. The first phase of success was commitment from senior management outside the HSE function to endorse the HSE leadership program. If this commitment was not present and the training was not perceived to be integral to the business, the participants in the course would not recognize the importance of the training.

Further, the goal of achieving a strong culture through operational ownership of HSE would be undermined.

To ensure this critical aspect of success, a series of executive sessions was conducted for the executive leadership teams of the organization to ensure their commitment and involvement in the program. Members of the executive leadership team were active participants in the sessions and defined their expectations for participants following their completion of the program.

The program’s effectiveness was realized at various levels of the company. The executive leadership awareness and commitment drove an increase in their level of accountability and ownership. The direct reports of those attending the leadership sessions reported an increased awareness and improved HSE behaviors. The participants themselves were the instigators of the cultural change of their supervisors and their subordinates.

In summary, the results demonstrated that the HSE leadership program had a positive impact on the operational ownership of HSE.

Programs like the one described in the preceding have been implemented with varying levels of success in several oil and gas companies. In each case, the impact/success of the program was directly related to the level of senior-operational-management involvement in the process. In short, effective and engaged leadership matters.

## What Do We Do as an Industry?

### 1. Shift from “zero as a goal” to “zero as an expectation.”

In the 1990s, leading companies in our industry defined a goal of zero harm (for example, Exxon’s “Nobody Gets Hurt,” Shell’s “Goal Zero,” and BP’s “No accidents, no injuries, and no harm to the environment”); the ultimate outcome of these efforts would be that

no one is hurt and no releases occur. These goal-driven visions forced a step change in the reduction of injuries and spills, but despite these improvements, catastrophic incidents—fatal injuries and major releases—occur in our industry at a persistent frequency today.

If we can agree as an industry that zero harm is an attainable expectation, then we will commit to undertake the necessary step change to ensure that it is attained and sustained. Individual companies and organizations should review their safety visions and workforce safety messaging to clarify that zero harm is not an ultimate goal, but is an immediate expectation.

### 2. Continue to progress the application of human factors.

The cultural shift to being proactive, and ultimately to being generative, is causing healthy questioning of how the industry has managed HSE.

The industry should standardize on a set of leading indicators that measure the degree to which human factors are being used in our industry. This would necessitate a common view of human factors.

During the peer review of this report, it was evident that the views of human factors and their successful application in the oil and gas industry vary considerably across the field of human-factors technical experts. Continuing the discussion and sharing how human factors can be and have been successfully applied across the industry’s operations will benefit the entire industry and improve the likelihood that the industry, not just individual companies, will achieve the expectation of zero harm.

Once we have a common understanding concerning human factors, we can develop a common vocabulary and we can begin to drive a consistent industry culture that will help all companies with

considerations such as resource planning and competencies. We will be able to regularly include human-factors assessments in such things as hazard and operability studies/hazard-identification studies and equivalent tools/processes so we can identify shortcomings in the understanding of the engineered process. Incident investigations and root-cause analysis can include a common set of human-factors attributes that would allow companies to better understand contributing factors in events that go well beyond the often-cited and yet narrow assessment that someone did not follow process or that the event was caused by operator error

### 3. De-emphasize lagging performance indicators and use leading indicators.

As an industry, we have become adept at gathering performance on lagging indicators (events that have occurred) vs. leading indicators (risk-control measures). It is easy to measure safety by counting injuries, but much more complicated to measure (and set targets for) effective controls to reduce or eliminate risk. While the emphasis on lagging indicators has brought significant improvement in recordable injury rates, the pressure exerted by focusing on incidents as a performance measure is yielding diminishing returns, to the point that incident rates are no longer a reliable indicator of a company's safety program (OSHA 2012).

Lagging indicators, such as total recordable incident rates, should not be the primary basis to assess safety performance. Instead, to promote a more accurate measure of HSE performance, and to focus the industry's efforts on safeguard effectiveness and risk reduction, we should use a balance of lagging and leading indicators to measure the effectiveness of our programs.



### 4. Optimize collaboration across companies and crews.

The oil and gas industry is made up of numerous operating companies, service companies, vendors, contractors, and subcontractors—all interrelated and all needing to interface seamlessly to operate safely. With a workforce guided by a myriad of safety management systems and processes and procedures unique to each organization, working in alignment—and working safely—is a challenge. We need to improve how our individual companies collaborate with each other.

#### *Efforts to standardize HSE requirements are already happening in various ways.*

- Standardization of requirements within a single enterprise streamlines implementation of safety programs between major projects.
- Standardization of requirements between operators within a single region (such as in the Gulf of Mexico) can simplify training and assurance for vendors working for various

operators—including individual workers who may continuously move from platform to platform and operator to operator.

- Standardization of requirements between projects within a single fabrication yard has potential to streamline differences between adjacent projects that share workers, and improve effectiveness of training and assurance efforts.

### 5. Remove barriers to open sharing of lessons learned.

There is no use sanitizing the message to the point of uselessness, and being vague dilutes the personal touch. As every soldier knows, war stories are more effective. The industry should be telling the stories, repeatedly, of the iconic incidents relevant to the industry. Likewise, sharing the success stories from jobs and projects successfully operated will enable learning opportunities from well-executed work. Story telling is a powerful way of educating and reinforcing attitudes.

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## 6. Collaborate with regulatory authorities.

Andrew Hopkins summarizes the need to get regulators onboard if continued and sustained improvement is to occur across the industry.

We recognize that certain legal systems can create an underlying adversarial relationship between industry and its regulators, but within this regulatory environment there is room to improve the collaboration and trust, which will lead to greater partnership

## 7. What do we do as individual companies?

The real power to break down silos and barriers to get to zero ultimately resides with the operating companies because they drive contractor behavior in most of the world. This being said, some great risk-management and organizational-development improvements have been driven by individual drilling contractors and service providers.

This expectation [is] sometimes easier said than done when variables outside of the servicecontractor's control are taken into consideration, such as numerous third parties and their equipment, variances in processes across different companies, and the integrity of well-barriers owned and/or maintained by the operator or other contractors.

A collaborative environment and consistent safety culture is one in which all workers, regardless of the logo on their coveralls, look out for one another and confront each other as needed to address hazards. Ideally, a low-level laborer at any worksite can exercise "stop work" authority to a supervisor, regardless of company, and be assured of support from the facility owner (operating company representative). Of course, the ideal state is not the real state at many oil and gas worksites.

### a. Interdependent HSE culture.

If a company has a mature interdependent HSE culture, its employees are more likely to recognize and act on hazardous conditions. The DuPont Bradley HSE culture model (Fig. 4) describes the journey to an HSE culture in three phases, moving from a dependent phase, through independence, to an interdependent culture.

In the dependent phase, HSE is mainly driven through use of control, discipline, rules, and regulations. As the culture matures, it moves through the independent phase, in which employees begin to take personal responsibility for HSE rather than simply relying on rules and regulations to create a safe work environment. The final—interdependent phase is characterized by a "peer's keeper" approach that is adopted by all. In this phase, employees do not just look out for their own safety; everyone looks out for each other's safety, and management works collaboratively with employees on HSE matters, feeling comfortable leading or allowing others to lead. People do this because they genuinely care about the safety and well-being of their colleagues. They do it because they want to, not because they have to.

### b. Operational ownership of HSE.

Interdependence is established by achieving operational ownership of HSE—that is, by employees assuming accountability for HSE performance and maintaining a safe work environment. Operational HSE ownership is characterized by employees looking out for each other, intervening in unsafe acts and conditions, and engaging with HSE to identify and implement risk-mitigating controls and processes. This leads to a collaborative engagement rather than HSE directing and acting as a police force in the organization. Operational ownership, however, must exist at every level of the organization to be successful.

### c. Sustainable HSE leadership.

While operational ownership of HSE leads to all employees assuming accountability for HSE performance, it is essential that senior leaders and managers be a continual driving force in embedding this concept throughout the organization. Senior leadership and managers have a direct effect on establishing the "culture" of the organization and on employee HSE behaviors in the workplace. The behavior of managers, through their influence on employees, can strongly influence the HSE performance and HSE culture of an organization. Only when senior leadership and managers adopt operational ownership of HSE will the rest of the organization follow.

The oil and gas industry has made great strides in the way we manage HSE. We must continue to evolve our culture so everyone across the industry is empowered and responsible to make the right decisions every time and is supported by the organization and systems to be error free. We must do this in the face of ever-changing market conditions that can form a barrier to HSE commitment and inhibit making the best decisions.

Changing how we manage HSE is the next frontier for our industry. How we go about that change will shape the industry and the world it serves far into the future (Hinton 2016).

Zero harm is the expectation and the industry has the bench strength, the fortitude, the commitment, and the resources to make it happen. Let's get going.

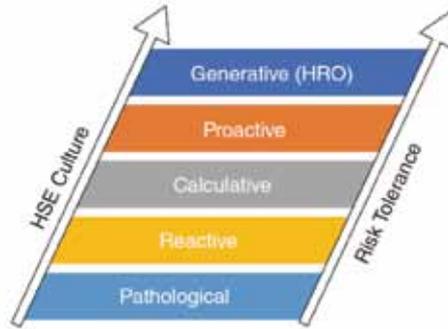


Fig. 1—Culture/risk tolerance adaptation of Hudson's Safety Culture Maturity Model.

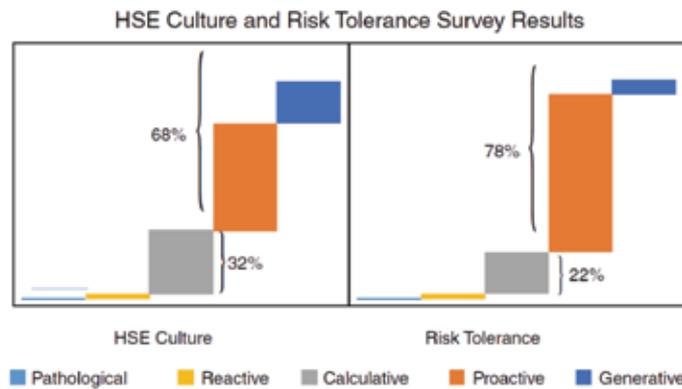


Fig. 2—HSE culture and risk tolerance survey results from SPE Getting to Zero sessions

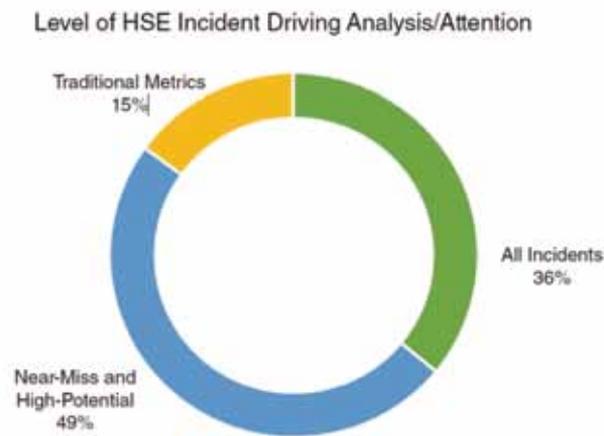


Fig. 3—Management of HSE incidents—survey results from SPE Getting to Zero sessions

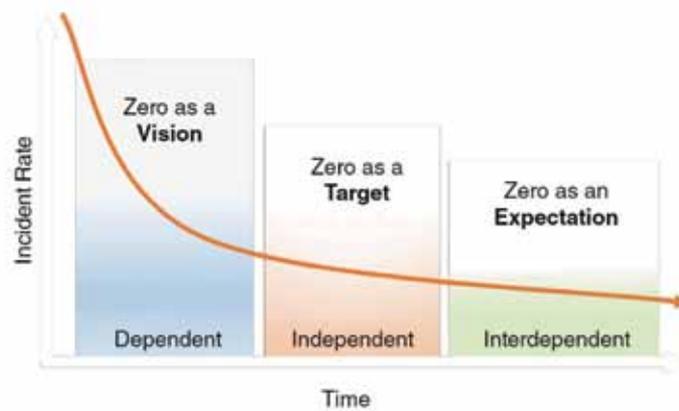
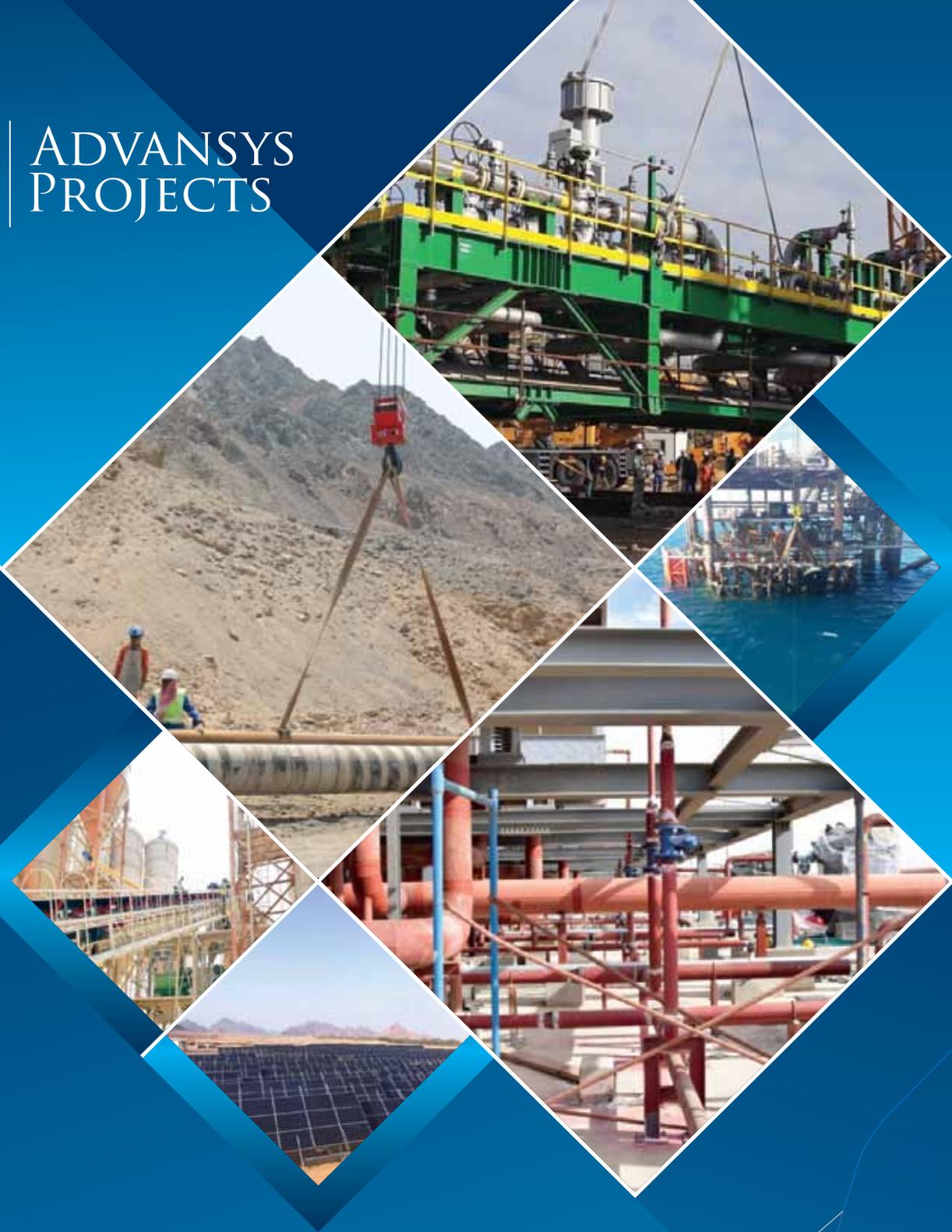


Fig. 4—DuPont Bradley HSE culture modified to include zero.



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# **GROWTH WITH ENERGY**



## AN INTERVIEW WITH

# MR. RANDALL C. NEELY, C.A., CFA

President and CEO, Director  
TransGlobe Energy Corporation



*TransGlobe Energy Corporation, in an interview with Petroleum Today Magazine highlights the remarkable strides Egypt has taken to modernize its petroleum sector and the opportunities for further investment, TransGlobe ,s steering strategy towards stable production along with the company ,s aim to expand it ,s operations in Egypt through synergistic acquisitions*



*Can we update our readers insight on the TransGlobe strategy in light of the current oil market?*

*Given the ongoing oil price volatility, TransGlobe is continually focused on strict capital discipline through operational cost controls and minimizing our exposure to financial leverage by remaining debt-averse. Despite fluctuations in the markets, we position ourselves as a nimble company with the ability to create value through a balanced portfolio of exploitation, development and exploration opportunities across our diversified onshore assets in Egypt and Canada. This approach has enabled us to build our production base and generate strong cash flows, as demonstrated by recently declaring and paying our first dividend (US\$0.035 in August 2018) since 2015.*

*Where are the most promising areas / concessions the company is working in?*

*We are most excited about our low-risk development operations in Egypt and are especially focused on the continued expansion of our Eastern Desert Concessions. As such, we are currently working alongside the Egyptian General Petroleum Company (EGPC) to extend the concessions and amend our licenses to encourage the increased development and recovery of the oil in place through secondary and tertiary applications as well as horizontal drilling and multi-stage completions. Subject to approval from the Egyptian government, the amendments sought should allow for improved efficiencies and increased reserve recovery from known oil pools through enhanced recovery techniques.*

**TransGlobe has been working in Egypt for more than a decade, what are some attractions in the Egyptian petroleum sector?**

The production and distribution of oil is an integral part of Egypt's economy and the country has developed a well-established service industry to support exploration and development operations, exemplified by the increasingly large and talented workforce. This presents an exciting opportunity for TransGlobe to operate within. On the other hand, the challenges that we face include inflexible contract terms that aren't always reflective of the underlying assets and varying interpretations of any grey areas. Nevertheless, the leaders within the Ministry and EGPC are admirably working towards modernizing the industry which should lead to a stronger and more investible operating environment.

**What is the amount of TransGlobe's 2019 allocated budget here in Egypt with reference to other countries? And how many wells do you plan to drill during the current calendar year?**

Our 2019 capital program equates to \$34.1 million (before capitalized G&A), which includes \$24.1 million for Egypt and \$10.0 million (C\$13.0 million) for Canada. This plan is strategically aimed at maximizing free cash flow to direct at future value growth opportunities in Egypt and outside of Egypt. This strategy is also in line with our 2018 drilling campaign where we drilled eight development wells in Egypt – 4 in West Bakr, 2 in North West Gharib and 2 in West Gharib – compared to six development wells in Canada.

**What is the operational update on the South Ghazalat exploration?**

We recently announced in our 2018 year-end reserves update that a successful discovery at South Ghazalat and successful extensions at West Bakr resulted in positive additions of gross 2P reserves of 2.1 MMboe. Based on the positive test rates from South Ghazalat, we are in the process of preparing a development plan for the discovery. In addition to this, we are also integrating the well results into our existing database and mapping to evaluate further exploration / appraisal drilling opportunities in the area to accelerate potential early development options and hopefully lead to additional discoveries.

**What is the growth strategy of TransGlobe worldwide and in Egypt?**

We are primarily focused on development and production with a core view of generating strong cash flows and long-term value accretion. By steering the bulk of the company's efforts towards stable production, we have been able to create a uniquely competitive position in the market. Given our strength in looking at older, under-loved and under-developed assets, we can capitalize our individual skillsets to improve field rejuvenation possibilities. Further to this, we are also looking to expand our operations in Egypt or similar regions through synergistic acquisitions, and in doing so, we hope to triple our production output and more importantly cash flow in the medium term. Having said that, having a little exploration success along the way is always welcome.

**Why did you exit the business in Canada then decided to re-enter the business in 2015?**

Our decision to exit and later re-enter Canada came from a strategic desire to diversify our portfolio of development assets and gain exposure to the increasing technological advancements in North American drilling and completion techniques. Our Canadian re-entry was part of the Company's ongoing strategy of portfolio diversification into countries with attractive netbacks to support growth. This decision inevitably played to our core strength of value creation through development drilling and reservoir management.

**What are your plans to mitigate oil price downturn?**

We have been able to weather unpredictable markets by maintaining control over our own operations and focusing on opportunities where we can operate most efficiently. Because we are the operator of all our Egyptian assets and the majority of our Canadian assets, if oil prices shift materially we can react quickly. We're not forced to push ahead when it isn't favorable to do so and we can therefore control our costs accordingly. Conversely, in periods of rapid price appreciation we are able to move swiftly in order to capitalize on those opportunities to our greatest benefit.

**You have a great journey with different positions and exposure, we would like to hear your story?**

I was born in Eastern Canada but spent my formative years in the Yukon Territory, where I established many close friends that I still have today. Post high school I spent a few years working odd jobs, including an oil exploration supply ship in the Arctic Ocean, and traveling. That traveling brought me to Egypt for the first time in 1986, when I visited Cairo, Aswan and Luxor, an amazing experience for a 19 year old. Realizing I couldn't travel and work odd jobs the rest of my life, I enrolled in Business at the University of Calgary, graduated in '92 and joined the chartered accounting firm of KPMG in Calgary. Following that I spent about four years as an energy investment banker until one of my clients enticed me into the energy business where I have been ever since.

**Finally, we would like to know about TransGlobe CSR policies and activities in Egypt?**

TransGlobe have been supporting the Ras Gharib hospital for many years, as a recipient of choice as suggested by our Joint venture employees. Our production assets are close to city of Ras Gharib on the Gulf of Suez and a large number of our joint venture employees live in Ras Gharib and have a strong attachment to the hospital. In 2013, TransGlobe provided support to of fund the establishment of the first intensive care unit at the hospital and we continue to support the unit with donations to fund the acquisition of specialist heart and lifesaving equipment on a regular basis. TransGlobe makes the donations to the hospital whenever a significant HSE achievement is reached so that we are improving safety continually as well as supporting an essential local facility in Ras Gharib.

In addition to this, TransGlobe has 2 staff members on the CSR committee, which is a subcommittee of the Egypt oil and Gas technical committee. Although only recently formed, this committee is already very active in liaising with other IOC's to share and align CSR activities across the industry.

## Docking Perforating System with Integrated Real Time Downhole Measurements

**By:** Carlos Eduardo Guedes, Marcia Benavides, Carlos Baumann, Fernando Garcia-Osuna, Sharif Aboelnaga, Zouhir Zaouali, Said Al Rasbi, and Moises Smart, Schlumberger

**A**bstract This paper presents field results of the first well perforating system integrated with a depth correlation and real time high-speed measurements device, this tool acquires and transmits downhole data to surface in real time while perforating. The docking gun system with plug-in design improves operational safety, efficiency and reliability, whereas downhole measurements help to obtain maximum well productivity by providing real-time downhole wellbore pressure, transient dynamic underbalance and/or overbalance for perforation cleanup and/or well stimulation.

The new perforating system consists of two main components: a docking gun system and an advanced measurements module. The docking gun system consists of a compact, plug-in, radio frequency safe, addressable firing system for single and multi-zone sequential perforating applications. The system eliminates port plugs and wellsite arming of detonators, reducing human error and improving overall safety, efficiency, and reliability. The advanced measurements module provides high-frequency transient wellbore pressure, peak acceleration amplitude, and low frequency pressure, temperature, gamma ray, and active casing collar locator. These measurements enable real time confirmation of downhole conditions before, during, and after perforating, with accurate depth correlation even in high chrome tubulars and large casing sizes.

This instrumented docking gun system delivered an outstanding field performance, adding value to operators

by increasing safety, efficiency and reliability, while at the same time maximizing productivity.

This instrumented gun system can be deployed with wireline, tractor or electrical coil tubing. The new docking gun system design reduces human error and the risk of wellsite accidents and failures. With this system we also maximize gun length deployment per run and operational efficiency. In addition, real time downhole measurements of low- and high-frequency wellbore pressure allow optimization of perforating cleanup and stimulation, maximizing productivity and reducing the overall cost per barrel produced.

### Introduction

Establishing an optimum flow path between the reservoir and the wellbore is the main objective of perforating not only for natural completions but also for wells that are to be fractured, stimulated, gravel packed, etc. Explosive shaped charges are the most common tool to puncture the casing, cement, and reservoir rock. Perforating with shaped charges is an extremely fast event which only lasts milliseconds.

Perforating technologies have evolved from just making holes in the casing to customized perforating designs depending on the reservoir properties and well type. Perforating designs cover all aspects of the job, from selecting the best perforating charges to recommending the best perforating method, such as perforating without killing the well and conveyance of long gunstrings on wireline.

By the end of the 20th century, manufactures and operators

were focused on API 19B Sect 1 performance.

The 2000's saw the advent of perforating with dynamic underbalance (DUB) for perforation cleanup (Behrmann et.al., 2002). By the end of the 2000's the industry recognized that focusing on API 19B Sect 1 penetration performance was not the right measure because charges could be good performers in concrete (Sect 1) but have a bad performance on real reservoir rock under stress (Baumann et.al. 2015). Therefore, during the last decade the industry has moved to Section 2 performance, rock models and rock optimized charges as well as unconventional reservoirs (Behrmann et.al., 2009). In terms of operational efficiency and reliability, plug and play gun systems were first developed for unconventional multistage fracturing, and extended to all type of operations to facilitate gun arming at the wellsite with minimum risk of misfires or misruns (Aboelnaga et.al., 2016, 2018). At the same time, the effects of gun shock on downhole tools and equipment were extensively studied and modeled, and gunshock simulation became an essential part of every perforating job design (Baumann et.al., 2012, 2014).

This paper presents field results of the first docking gun system integrated with a depth correlation device capable of acquiring real time downhole measurements while perforating. The gun system improves operational safety, efficiency, and reliability with a plug-in design, whereas the real-time downhole measurements allow for productivity maximization by confirming static and dynamic underbalance for perforation cleanup, and dynamic overbalance for stimulation applications.

### **Docking gun system with real-time downhole measurements**

The need to prevent perforating failures such as a misruns or off-depth perforations has always existed.

Many systems have been developed with the goal of reducing perforating non-productive time (NPT), and indeed many systems have reduced perforating related NPT, however, misfires, misruns and even surface detonation events still frequently occur.

A breakthrough development became available in 2018, the first docking gun system (see Figure 1) integrated with an advanced measurements module (see Figure 2) depth correlation device capable of acquiring real time downhole measurements while perforating. This innovative technology consists of two main parts: a docking gun system and an advanced measurements module capable of acquiring and transmitting to surface downhole data, in real time while perforating.

To radically increase the number of runs per misrun in radio frequency (RF) sensitive environments, the new docking gun

system shown in Figure 1 was introduced, this technology has helped to increase perforating reliability by drastically reducing perforating NPT, and being RF safe. This new system prevents typical wireline perforating misruns with a «plug-and-play» system that eliminates most human related errors (wiring and seal failures) and prevents initiator related failures and RF-triggered initiations, the system safety has been certified by a third-party independent lab.

This docking gun system is currently available in three sizes: 2 - 7 / 8», 3- 3 / 8 », and 4 - 1 / 2» OD, all rated at 350 F and 25,000 psi. The system's advanced measurements module (see Figure 2) provides reliable depth correlation and several measurements prior, during, and after perforating. The measurements module consists of two components: the primary assembly which includes an active Casing Collar Locator, Gamma Ray, Temperature, and slow- and fast-frequency Pressure measurements, as well as Peak Shock. The tool OD is 2 - 7 / 8 » and it is rated at 350 F and 20,000 psi.

### **Main applications and benefits of the instrumented docking gun system**

The combination of the advanced measurement module and the docking gun system increase productivity, safety, reliability, and operational efficiency. These benefits are described below.

#### **Productivity**

The advanced measurements module provides, among others, low- and high-frequency transient wellbore pressure. These measurements allow real time confirmation of downhole conditions before, during and after perforating, which are beneficial on any conventional perforating activity, and very important when seeking dynamic underbalance when perforating or stimulating wells post perforating.

#### **Dynamic Underbalance (DUB).**

Dynamic Underbalance Perforating (DUB) is a patented technique used to obtain clean perforations (Behrmann et.al., 2002, 2009, Baumann et.al. 2015). DUB is a technique used to control downhole well dynamics and it is a combination of perforating gun system and completion design to remove perforating tunnel debris and reservoir rock damage:

- Formation rock crushed zone is removed by tensile failure caused by a high differential pressure between reservoir and wellbore.
- Formation fines are removed by surge flow into the wellbore because of a high differential pressure between reservoir and wellbore (dynamic underbalance or drawdown).
- Dynamic underbalance at the sand face is key, we should not confuse this with other systems that only show a

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pressure drop at the entrance to surge chambers.

The advanced measurements module provides real-time instrumentation that plays significant role in understanding and controlling the perforating job from start to finish:

- While running in the hole, hydrostatic pressure gradient is used to check wellbore fluid levels and hydrostatic assumed in the DUB design.
- While correlating both gamma ray and active CCL measurements provide accurate gun position to place the guns at the desired pay zone location.
- Prior to shooting, static pressure measurement is compared with the DUB perforating design, and hydrostatic pressure can be adjusted to get the highest dynamic underbalance for perforations cleanup to maximize productivity.
- Measuring the DUB at the very moment the guns are shot to confirm DUB amplitude and duration, checked against the DUB model to make sure modeling and actual results are close enough, and adjust if needed to optimize the perforating job in subsequent runs.
- The gun string can be left for some time downhole to measure the buildup pressure to estimate reservoir pressure and skin.

**Post Perforating Dynamic Underbalance.** The post perforating DUB technology consists of using surge chambers to expose existing perforations to a high differential pressure between the wellbore and the reservoir. Typically, no new perforations are created, although it is perfectly possible to add perforations in the same run when the post perforating DUB is done. The objective is to clean dirty perforations and/or remove the crushed reservoir rock left when perforating without DUB.

The design of post perforating DUB jobs is like a perforating DUB job. The wellbore and formation parameters are used to design the gun size and density of gun carrier opening charges to be used. Job execution at wellbore conditions assumed in the design is very important for the success of the operation.

The advanced measurement module plays a key role by providing real time downhole measurements, thus ensuring optimal conditions are set before shooting the guns and registering the transient DUB to confirm DUB amplitude and duration (high frequency measurement) for perforation cleanup. Lower frequency pressure and temperature values are available all the time while the tool is in the well, therefore this data can be used to quantify productivity gains.

### Safety

Perforating with explosive shaped charges poses a significant operational risk to all personnel exposed to explosive charges. In the last 20 years, the industry has seen a very

large number of surface detonations, some are reported on the public website [www.perforators.org](http://www.perforators.org) where we found 70 surface detonations events.

Consequences of these events are catastrophic to all personnel, assets and companies involved.

Over 50% of surface detonations took place due to inadvertent application of power to the gun detonators.

The docking gun system has been designed with two important safety features that, by design, eliminate the risk of unintentional detonation events at surface and downhole. These safety features do not need or rely on users' adherence to procedures to prevent surface detonations.

First safety feature is addressable switch technology on the docking gun system, which uses an electronic chip to communicate with the detonator, eliminates the risk of accidentally powering the detonators. In upcoming years this system is expected to become an industry wide minimum safety requirement.

The second safety feature is wideband filtering to protect against radio-frequency, allowing perforating without switching off cellphones, hand-held radio, or any other radio frequency transmitters. The system has been tested and certified by an independent third-party organization.

The measurements module is also fitted with a safety protection system. Logging with perforating guns poses the risk of power leakage from the logging tools to the perforating tools, which could cause an unintentional detonation. The measurements module was designed with a dual safety barrier which enables data acquisition before, during and after multiple perforating events ensuring the guns are electrically isolated from logging power.

### Reliability

Key driver for the docking gun system was the industry need for a more reliable system. A failures analysis (Aboelnaga et.al. 2018) revealed that conventional systems mainly fail at seals, and at electrical and ballistic connections and transfers. To address these challenges many features were implemented in the docking gun system and the measurement module.

All the docking gun system module connections are done and tested at the manufacturing facility.

This eliminates the human factor when crews need to arm guns at the wellsite, affected by weather and psychological conditions. The elimination of scotch locks and field crimping operations was key to enable a step change in reliability. The need to cut and crimp primacord in the field was also eliminated. The docking module provides a side by side transfer from the detonator to the primacord. Additionally, all the side ports were eliminated with the

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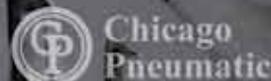


*Linde*  
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(recips built in Berlin up to the end of 1985)



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Demag



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potential for leaks that cause misruns. For single initiation runs the field does not need to be involved with any wiring operation because the only electrical connection made at the field is a coaxial connection, RCA type, which is done when the top sub is threaded on the gun. For multiple initiation runs the selective wires are connected through an IDC type connector using a simple hand tool. On both cases, all connections and switches are checked with a designated test box prior to running in hole. Finally, the data acquisition system can communicate with the docking gun system from 200-ft below ground level all the way to shooting depth. With this technology problems are detected at surface or soon after they occur while running in hole, saving a lot of time when compared with conventional systems. The measurements module has ruggedized electronics and sensors which eliminate the need for shock-absorbers.

### Efficiency

Perforating efficiency is critical whenever the daily cost of rigs is high, when production is on hold or delayed, when other operations such as hydraulic fracture are on standby, and in most other scenarios nowadays when the oil industry is working on very tight profit margins.

The instrumented docking gun system increases efficiency by increasing the effective perforated length per run, reducing preparation time at surface, and by eliminating NPT as described before.

The effective perforated length per run was increased because of 4 main components. First, the measurement module is only 60-in long, much shorter than other technologies used to measure pressure, temperature, gamma ray and collar location while perforating. Second, shock absorbers are not needed, which allows additional gun length to be deployed, increasing the perforated length per run and reducing the total number of runs required for the job. Third, selective gun adapters on this system are on average 12 - in shorter than previous versions, this again allows additional gun length to be deployed. Finally, the measurement module measures the peak shock, which is very important in jobs where the number of guns fired simultaneously is limited to ensure weakpoint survivability, this shock measurement can help to evaluate the merging of safety and possibly to increase the simultaneously fired gun length.

Surface preparation time is lower with a plug-and-play approach that simplifies arming the guns. The docking module connections from detonator to addressable board is done at the manufacturing facility.

Additionally, a safer docking gun system circuit design allows arming the guns before starting the actual the perforating job, simultaneously with other well work, this eliminates the

arming time from the needed rig time (critical path).

### Test Results

The new instrumented docking gun system was tested in 9 countries, in 2018 more than 200 operations were executed. The advanced measurement module was extensively used in Ecuador, where 4 tools were deployed, and a total of 38 jobs with 83 runs were performed. Figure 4 shows number of runs per job type and per gun size.

#### Some of the operational highlights/records achieved were:

- Time savings in arming, loading, and connecting/testing selective strings.
- Robustness was tested even with 7-in guns, including propellant perforating, and always without using shock absorbers.
- Heaviest perforating tool string: 40 ft of 7-in guns
- Maximum number of runs per job: 7
- Dynamic events recorded in every job, low- and high-frequency recordings, which were available in real time at the well head. This established a step change in performance and reliability when compared with third-party memory fast gauges which only give saved data after the job.

Low- and high-frequency dynamic measurements while perforating allowed operators, field personnel, and perforating specialists to:

- Measure downhole conditions before and after perforating to validate hydrostatic pressure on the first and subsequent runs, changing hydrostatic after perforating to determine reservoir pressure, in many cases reservoir pressure was substantially different from the values assumed.
- Real time high-frequency pressure measurements were used for all types of jobs, see Figure 5.
- Real time fast pressure measurements while perforating provided a direct way of comparing the simulation results with the actual job DUB or dynamic overbalance pressure, in all cases the match between actual job data and simulations was close enough for cleanup estimates, see Figure 6.
- An important enhancement to gas fracturing / propellant stimulation jobs is the new highfrequency wellbore pressure measurements. The energetic dynamic overbalance event often damages conventional fast memory gauges, with the advanced measurement module the success rate has been 100%, allowing analysis / verification of the stimulation job, including propellant burn parameters and formation injectivity, which are used to improve job designs and productivity estimates. Figure 7 shows a comparison

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between a simulation output (left) and real-time wellbore pressure measurement (right), the latter was used to infer reservoir permeability.

In Oman the advanced measurements module was successfully deployed in 39 jobs, firing both selectively and non-selectively. Many wells were simultaneously perforated and stimulated with 4.5» HSD guns loaded with propellant sleeve installed on the gun carriers. Wellbore hydrostatic pressure data was continuously obtained while running in hole, this is essential information before propellant stimulation to ensure that enough confinement pressure is available for a successful well stimulation job.

Once again, the tool proved perforating shock robustness, the tool was run in many jobs with 4.5» HSD guns loaded with propellant sleeve, and without a shock absorber. High-frequency wellbore pressure was always recorded in real-time, for example Figure 8 shows the propellant stimulation peak pressure used to confirm the dynamic overbalanced achieved.

In the Kingdom of Saudi Arabia, the advanced measurement tool was successfully run with 2 - 7 / 8» HSD guns. Perforating was done in high temperature tight gas reservoirs, applying 300 psi of static underbalance (UB) to create clean perforations without formation damage. Typical perforating runs included:

- Record low-freq GR, CCL, pressure and temperature data while RIH.
- Depth correlation at target perforating depth.
- Fire, high-freq dynamic pressure data automatically recorded together with other job parameters.
- Record low-freq wellbore pressure buildup (BU) (few hours).
- Record low-freq wellbore pressure and temperature while POH.

Jobs were completed successfully. Feedback from real-time downhole measurements:

- In one case wellbore pressure gradient before perforating indicated poor mud displacement across the target zone, this helped the operator to re-design the CT mud displacement in subsequent wells.
- After perforating, in one case the low-freq wellbore pressure indicated a wellbore overbalance with respect to the formation, which is not desirable because of the formation damage risk. We must revise the assumed reservoir pressure to make sure that jobs are executed with an initial static underbalance.
- After perforating, in one case the low-freq wellbore pressure indicated a very large wellbore static underbalance with respect to the formation, which is not

desirable in a gas well because of the risk of blowing the guns uphole. We must revise the assumed reservoir pressure to make sure that jobs are not executed with an initial static underbalance that is too large and poses an operational risk.

Based on the experience gained from multiple runs in the Kingdom of Saudi Arabia, our client prefers DUB over static UB, DUB jobs (tradename PURE) are considered the best option to get wells with low skin. The advanced measurement tool capability to get real-time downhole data and confirmation of firing in multi-stage perforating jobs was used to optimize perforating jobs, real-time data was used to update the stimulation model.

A few jobs have also been successfully completed in the following countries:

- **Colombia:** the measurement module was just introduced, only two jobs so far.
- **United States (Alaska):** 4 runs with 2 7 / 8» and with 3 3 / 8» docking guns and measurement module,
- all jobs successfully completed, and maximizing operational efficiency.
- **Kuwait:** 8 runs including the measurements module, all jobs successfully completed.
- **Australia:** 15 runs with the 3 3 / 8» docking gun system and measurement module, all jobs successfully completed.
- **Egypt:** 17 runs with 2 7 / 8» docking gun system, all jobs successfully completed.
- **Algeria:** 30 runs 2 7 / 8» docking gun system, all jobs successfully completed, and in all cases maximizing operational efficiency.

## Conclusions

The new instrumented docking gun system delivered an outstanding field performance, adding value to operators by increasing safety, efficiency and reliability, while at the same time maximizing productivity.

The new docking gun system design reduces human error and the risk of wellsite accidents and failures, and it can be deployed with wireline, tractor or electrical coil tubing. This system maximizes gun length deployment per run and operational efficiency, and the downhole measurements of low- and high-frequency wellbore pressure in real-time allow optimization of perforating cleanup and stimulation, maximizing productivity and reducing the overall cost per barrel produced.

The RF-safe docking gun system has delivered 100% reliability even when used under extreme conditions, from arctic to desert environments, including downhole temperatures reaching 340F. Customers benefited from

reduced operational times, lower number of runs per job and no misruns translate into significant rig time savings, less time to production and lower logistic costs. Operators have also benefited from more downhole measurements and accurate correlation, real-time measurement of downhole hydrostatic pressure before shooting, and real-time high-frequency downhole pressure to assess perforation tunnel clean up that lead to lower skin and higher production.

#### **Summary of performance results from more than 200 jobs executed to date:**

- Quick, safe and reliable docking plug-in guns eliminated arming time and reduced operational time.
- Real time pressure and temperature measurements allowed verification of wellbore conditions before perforating, and whenever needed adjustments before perforating, thus preventing formation damage and / or other non-optimal perforating conditions.
- Real time downhole pressure and temperature measurements after perforating allowed to evaluate well response.
- High frequency pressure measurements while perforating provided actual dynamic underbalance and/or overbalance, necessary to validate job designs for optimum perforations clean up (DUB job) and/or stimulation (propellant jobs).

- Perforating with up to 40-ft of 7-in guns demonstrated the robustness of the measurement module, without using shock absorbers. Shock measurements reached accelerations of over 50,000 G and provided input data to plan challenging perforating operations.

#### **Acknowledgments**

The new perforating tools described in this paper have been possible thanks to SLB R&D and all the people on locations around the world who tested and used these new tools over the last year.

#### **Nomenclature**

- HSD High shot density
- DUB Dynamic Underbalance (marketed by Schlumberger as PURE)
- NPT Non-productive time
- SPF Shots per foot

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Figure 1—Innovative Docking Gun System

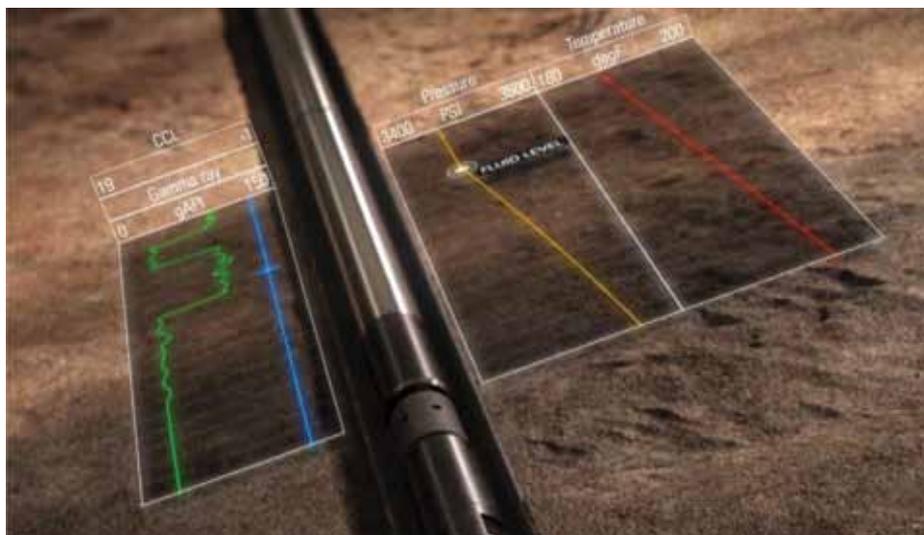


Figure 2—Advanced Measurement Module

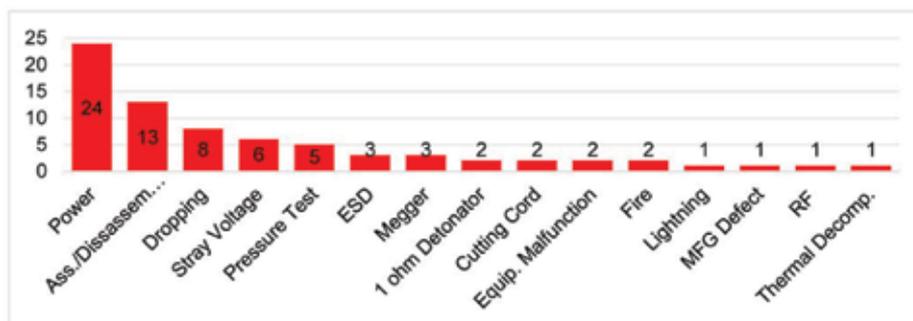
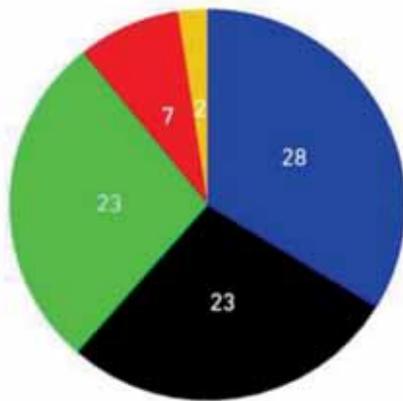
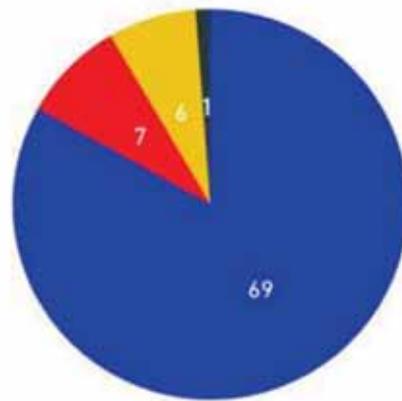


Figure 3—Last 20 years surface detonation events reported in perforators.org

# of runs - Type of operation



# of runs - Gun size



● DUB ● Conventional ● Standalone DUB ● PLUG ● Propellant

● 4.5 ● 3.375 ● 7 ● 3.5

Figure 4—Operations in Ecuador - Job type and gun size break down

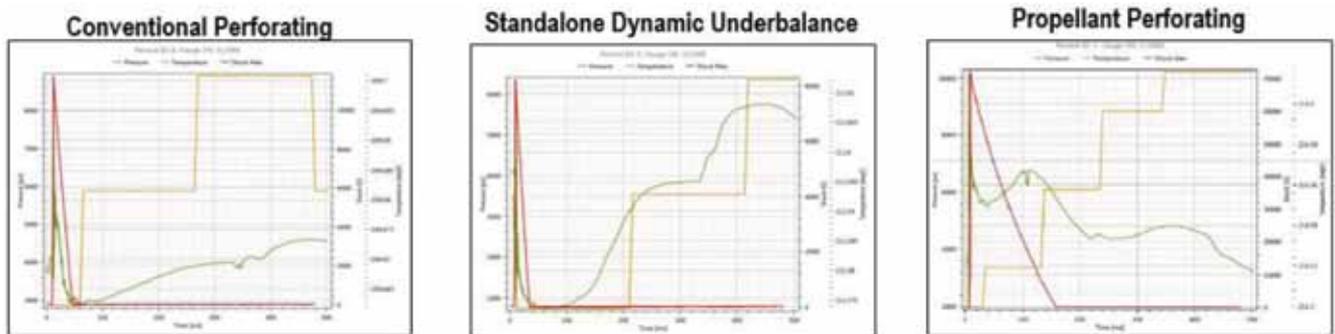


Figure 5—Different applications of the measurement module

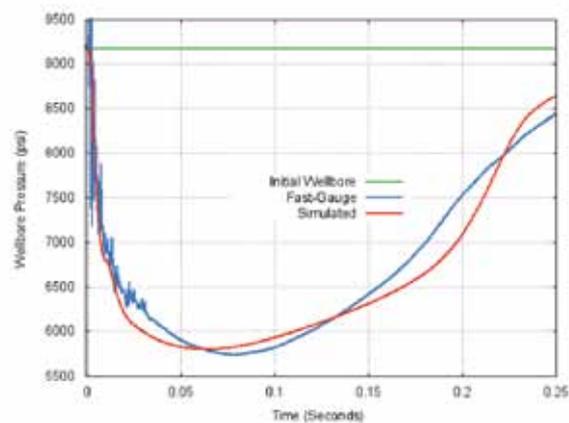


Figure 6—High-frequency pressure data and predicted transient pressure at the gauge location

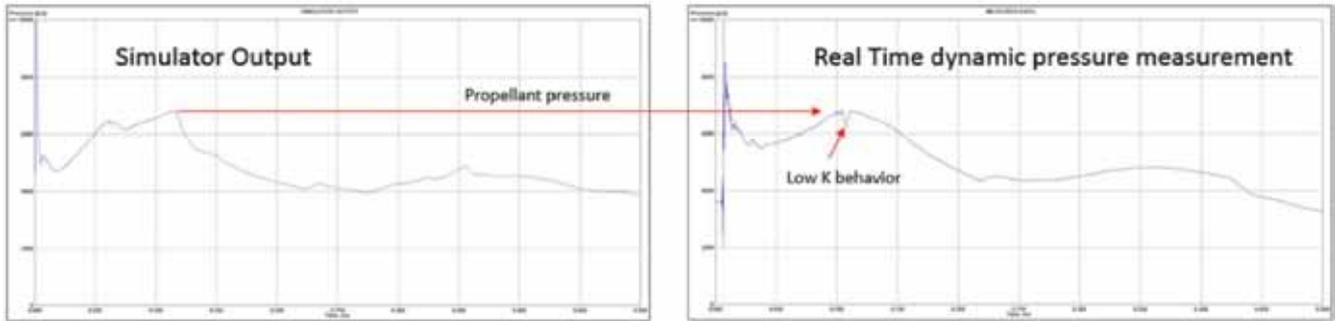


Figure 7—Dynamic pressure response: simulated and actual real-time high-frequency measurement

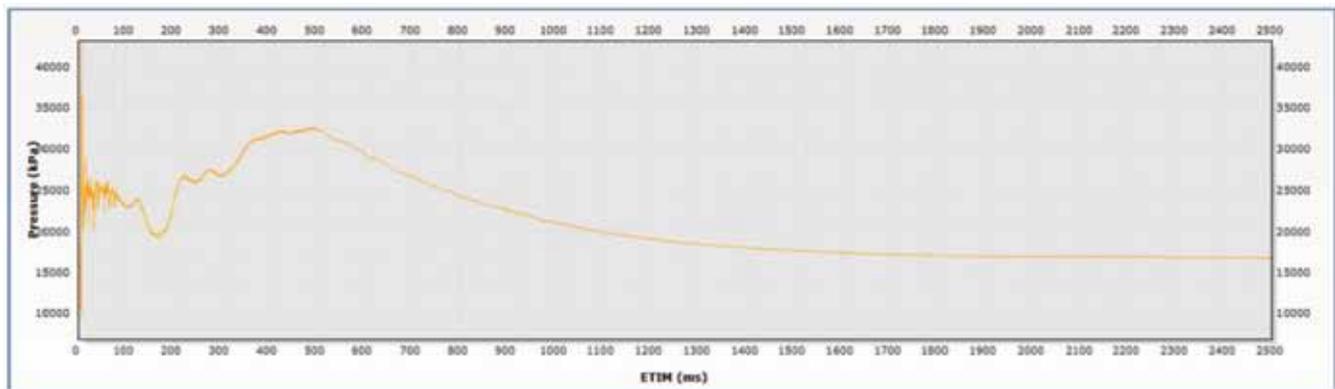


Figure 8—High-frequency pressure measurement in real time - propellant peak pressure



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- /// **Ain Sukhna Product Hub ASPH new project (SUMED):** Our Clients were awarded the supply of coated and lined carbon steel piping system, including fittings.
- /// **ERC Refinery:** Our Clients were awarded the supply of 4 desalter packages of EDGE II second stage desalter, including complete skids and piping, valves, instrumentation and Electrical package.

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## Improved Predictions in Oil Operations Using Artificial Intelligent Techniques

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**A**bstract  
Oil is considered one of the main drivers that affects the world economy and a key factor in its continuous development. Several operations are used to ensure continues oil production, these operations include; exploration, drilling, production, and reservoir management. Numerous uncertainties and complexities are involved in those operations, which reduce the production performance and increase the operational cost.

Several attempts were reported to predict the performance of oil production systems using different approaches, including analytical and numerical methods. However, severe estimation errors and significant deviations were observed between the predicted results and actual field data. This could be due to the different assumptions used to simplify the problems. Therefore, searching for quick and rigorous models to evaluate the oil-production system and anticipate production problems is highly needed.

This paper presents a new application of artificial intelligent (AI) techniques to determine the efficiency of several operations including; drilling, production and reservoir performance. For each operation, the most common conditions were applied to develop and evaluate the model reliability. The developed models investigate the significance of different well and reservoir configurations on the system performance.

Parameters such as, reservoir permeability, drainage size, wellbore completions, hydrocarbon production rate and choke performance were studied. The primary oil production and enhanced oil recovery (EOR) operations were considered as well as the stimulation processes. Actual data from several oil-fields were used to develop and validate the intelligent models.

The novelty of this paper is that the proposed models are reliable and outperform the current methods.

This work introduces an effective approach for estimating the performance of oil production system and refine the

current numerical or analytical models to improve the reservoir managements.

**Keywords:** Artificial intelligent, an effective approach, new application, production performance

### Introduction

The cost of drilling and production operations are an essential element in developing the oil and gas fields.

Several approaches are utilized to minimize this cost, mainly by maximizing the operational performance (Li et al., 2012; Chen et al., 2016a, 2016b, Mirhaj et al., 2016). Several models were reported to optimize the drilling variables; operational parameters such as rate of penetration (ROP), weight on bit (WOB) and revolution per minutes (RPM) are adjusted to maximize the drilling performance (Pessier and Fear 1992; Dupriest et al., 2005a, 2005b; Miguel 2008; Mohan et al., 2009). Also, different methods were used to increase the oil production while minimizing the total cost (Cherif 2012; Chen et al., 2014; 2015).

Well planning plays an important role in the well deliverability; because it can be used to predict the drilling and production problems. Analytical and numerical models are used to estimate the production performance (Lesage et al., 1988; Reiber et al., 1999; Aadnoy 2006). Recently, the drilling data are divided into individual sets based on the formation types which allows the drilling engineer to have a closer look for the drilling parameters. Also, the drilling parameters are coupled with different approaches (such as mechanical specific energy) to produce an efficient drilling system. More complicated well trajectories, such as fishbone multilateral wells, were applied to enhance the oil production and ensure higher hydrocarbon recovery.

In the petroleum industry, artificial intelligence techniques have been widely used to estimate the performance of several operations. Alarifi et al., (2015) applied the several AI techniques to determine the well productivity for horizontal wells. Artificial neural networks (ANN), fuzzy logic and functional network methods were used to obtain the

production profiles for several production scenarios. Alajmi et al., (2015) used artificial neural networks (ANN) to predict the performance of wellhead, by determining the production rate for different choke sizes. Also, several attempts are reported by Elkatatny et al., (2016, 2017) to estimate the drilling fluids properties and the reservoir permeability using artificial neural networks (ANN). Intelligence models were developed with high level of prediction performance, an average error of less than 5% was reported. Furthermore, artificial neural network technique was utilized to determine the efficiency of CO<sub>2</sub> flooding based on the reservoir condition and fluids properties (Van and Chon, 2017a, 2017b). Mousa et al., (2018) presented a new approach for determining the reservoir permeability using well logging data. Several artificial intelligence techniques were applied to come up with the permeability model.

They mentioned that, the developed equations are rigorous and outperform the current permeability models.

In this study, artificial intelligence (AI) techniques were applied in several operations in the oil industry including; drilling operations, oil production and reservoir performance. In the drilling operations, the optimum condition for drilling system is defined by predicting the ROP using the profiles of torque and mechanical energy, for real-time drilling operations. For hydrocarbon production, the well productivity was predicted for multilateral well. The developed model was verified using flow rate tests for fishbone well produced from dry gas reservoir. For reservoir performance, an accurate and simple model is presented to predict the temperature distributions with time and distance from the injection well. The temperature variations were estimated during thermal-EOR, for the distance between the producer and injector. AI techniques was used for the first time to determine the reservoir temperature due to hot water injection.

Finally, an improved model is proposed to determine the reservoir performance during CO<sub>2</sub> flooding. The impact of reservoir temperature, oil density and hydrocarbon components on the miscibility pressure was investigated.

The ultimate objective of this work is to help in improving the efficiency of several operations in the oil industry, by accurately predicting the common parameters of drilling and production systems. The suggested networks enable the petroleum engineers to maximize the drilling and production performance in real-time application; by adjusting the surface and controllable parameters in such a way that maintains the drilling and production operations within the optimum conditions.

### Data Acquisition and Analysis

In this study, the data was gathered from different resources to

ensure the wide spread and the high level of representations. Data from actual oil and gas fields over the world were used (Rathmell et al., 1971; Alston et al., 1985; Yuan et al., 2003, 2004, 2005; and Shokir et al., 2007). The acquired data cover several reservoir conditions, hydrocarbon compositions and production strategies. The data sets were randomly divided into two groups, 70% for training and 30% for testing. Before developing the AI models, statistical analysis was conducted by determining the minimum, maximum, mean, mode and other statistical parameters. Tables 1 to 4 list the results of statistical study performed in this work.

### Results and Discussion

In this work, four different oil systems are analyzed to predict the performance of each part and emphasize its effect on the ultimate performance of oil production and drilling systems. The performance of drilling system, oil production, Thermal-EOR operation, and miscible CO<sub>2</sub> flooding are discussed.

#### Determination of Rate of Penetration (ROP)

Drilling for oil is very expensive operation and involves different problems especially for drilling deep or hard formations. The most effective technique for reducing the operational cost is improving the drilling performance and optimizing the ROP. The drilling variables and the formation behavior are playing a significant role in controlling the ROP, therefore, a strong robust model should be used to estimate the ROP profile.

In this work, the ROP profile was predicted for real-time drilling operations using the drilling parameters.

Statistical description was utilized to understand the interactions between the drilling parameters. More than 20,000 data point from actual drilling operation, that coving depth up to 18,000 ft, were used. Drilling variables such as RPM, WOB, and hydraulic horse power (HPb) were studied. Denoising and outlier removal were applied to reduce the data into a manageable size. The ROP was estimated for different drilling sections based on the geological data and the formation response as shown in Figure 1. The developed model determines the ROP with high accuracy, the average absolute error and correlation coefficient are of 8.5% and 0.91, respectively.

#### Prediction of Oil Production Rate

Predicting the well productivity is an essential factor in designing and completing the production well, as well as selecting the artificial lift and stimulation processes (Guo et al., 2008). Different correlations were proposed to determine the inflow performance relationship (IPR), the most popular

equations are Fetkovitch's and Vogel's correlations (Furui et al., 2003; Ahmed et al., 2016). Recently, numerical simulators are utilized to estimate the well productivity. However, significant deviation was observed between the actual production data and the predicted results using the current models.

In this paper, AI technique was used to quantify the productivity of multilateral well. An intelligent model was proposed and evaluated using 250 data sets. The developed model predicted the flow rate with an absolute error of 7.2% and relatively high correlation coefficient of 0.98. Figure 2 shows the measured against the predicted flow rate using AI technique. Moreover, the developed model was verified using two rate tests of multilateral, an average absolute error of 6.92% was achieved.

### Estimation of Temperature Distribution

An accurate and simple model is developed to predict the temperature distributions with time and distance from the injection well. The temperature variations were estimated during thermal-EOR operation. AI techniques is used for the first time to determine the increasing of reservoir temperature due to the hot water injection. The effects of injection time and reservoir permeability on the temperature propagation was investigated. Total of 270 data points were utilized for the model training and testing; 30% of the data were unseen by the model and used only to evaluate the model performance. The proposed model showed an accurate prediction for determining the reservoir temperature during thermal EOR operation, the absolute error and correlation coefficient are 6.2% and 0.98, respectively. Figure 3 shows the temperature predicted using AI model against the actual temperatures.

### Performance Evaluation for CO<sub>2</sub> Flooding

Significant deviations between the measured and predicted CO<sub>2</sub>-MMP were reported. Most of the analytical and empirical models showed severe estimation errors, which reveals that those models might not consider several fluids behavior such as vaporization and condensation processes. In this work, a reliable approach is proposed to predict the miscibility pressure during the CO<sub>2</sub> miscible flooding. More than 140 data sets belonging to CO<sub>2</sub>-MMP experiments were used for developing and investigating the model reliability.

The developed model determines the CO<sub>2</sub> - MMP with correlation coefficient and error of 0.98 and 6.56%, respectively.

In addition, a comparison study was performed between different determination approaches for calculating the CO<sub>2</sub>-MMP. Figure 4 shows the actual against the predicted CO<sub>2</sub>-

MMP using Glaso (1985) empirical correlation, Yuan et al., (2005) equation and the developed AI model. Among all approaches, Yuan et al. (2005) equation showed the highest error (18.3%) and the lowest correlation coefficient (0.60).

The absolute error and correlation coefficient of 17.2% and 0.67, respectively, were obtained using Glaso empirical correlation. Which indicates that, Glaso (1985) and Yuan et al. (2005) models might be developed based on several assumptions. The developed AI model showed a high level of prediction accuracy, the correlation coefficient and absolute error are 0.98 and 6.6%, respectively. Table 5 summarizes the comparison study for determining the CO<sub>2</sub>-MMP using different approaches.

### Conclusions

In this work, the artificial intelligence (AI) techniques were applied in several drilling and production operations. Data set from actual measurements were utilized to develop and evaluate the AI models. The model reliability was evaluated using average absolute error and correlation coefficient. The following points can be drawn;

- The artificial intelligence techniques were applied successfully in several oil operations including; drilling, production and reservoir evaluation.
- The proposed AI models are quick, rigorous and outperform the current models.
- The developed models investigate the impacts of reservoir condition, hydrocarbon component and injected fluid composition on the production performance.
- The developed models showed a reliable estimation accuracy, the average estimation error and correlation coefficient are 7.12% and 0.96, respectively.
- The AI models, developed in this study, would help in minimizing the uncertainties of numerical methods. Also, they could be used as effective tools to predict the efficiency of drilling and production operations.

### Acknowledgement

The college of petroleum and geoscience (CPG) at King Fahd University of Petroleum and Minerals (KFUPM) is acknowledged for the technical supports and permission to publish this paper.

### Nomenclature

AAPE	Average absolute percentage error
ANN	Artificial neural network
D	Distance between Laterals, ft.
EOR	Enhanced Oil Recovery

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HKLD	Hook load
HPb	Bit hydraulic horse power
$K_h/K_v$	Permeability ratio.
MMP	Minimum miscibility pressure, psia
MSE	Mechanical specific energy
MW	Injected mud weight

$MW_{C7+}$	Molecular weight of heptane plus fraction in crude oil
N	Number of lateral or branches.
$P_{wf}$	Flowing bottom hole pressure, psia.
Q	Flow rate, Mscf/D.
$Q_{max}$	Absolute open flow, Mscf/day.
R	Correlation coefficient

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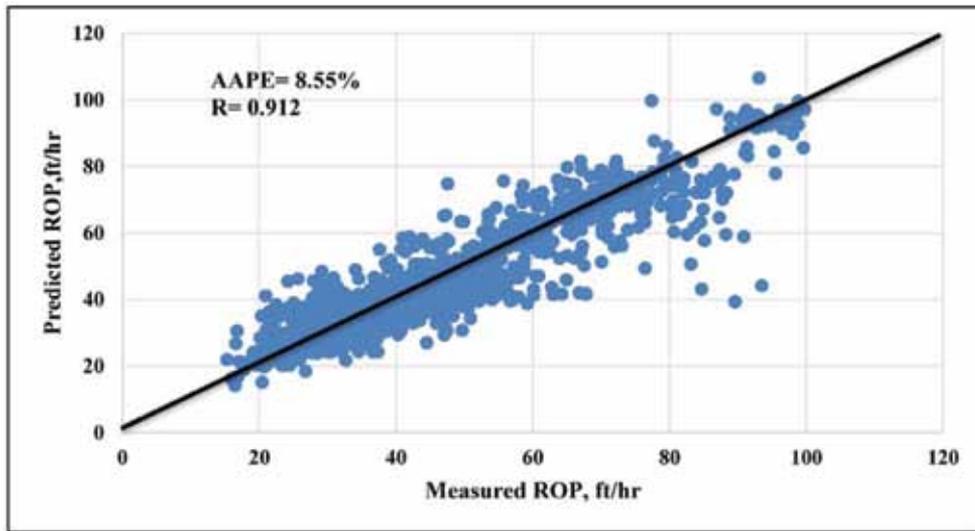


Figure 1—The measured against the predicted ROP, using AI technique.

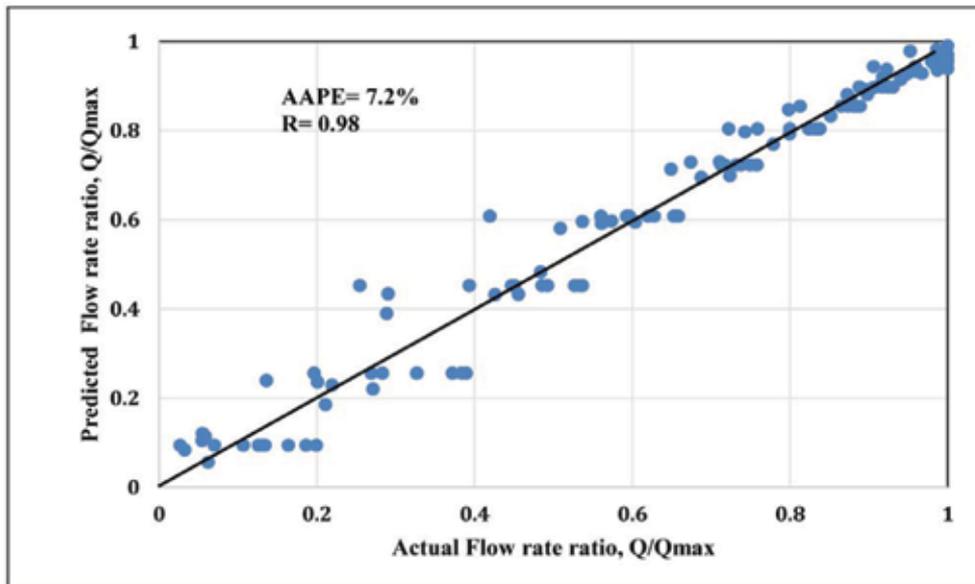


Figure 2—Cross plot of actual and predicted flow rate using AI model.

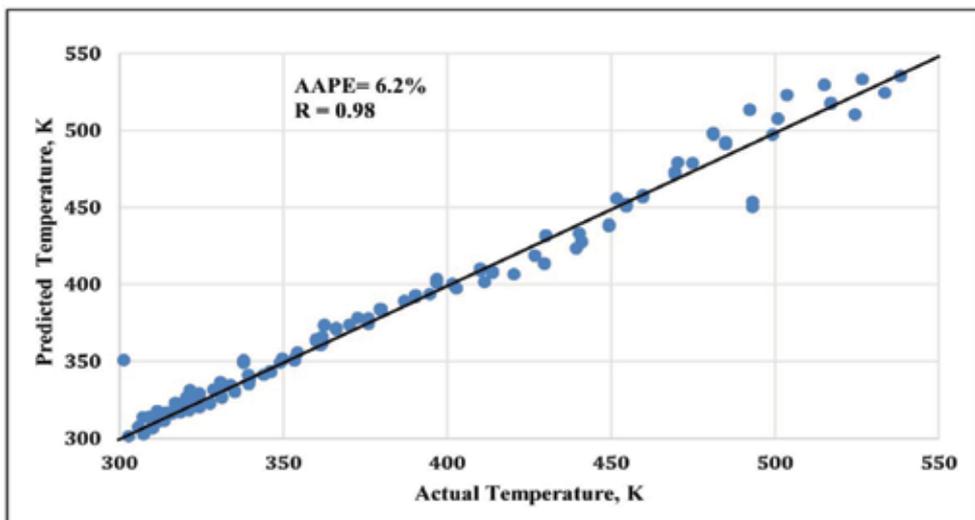


Figure 3—Cross plot of actual and predicted temperature values using AI model.

**Table 1—Statistical analysis for the drilling data.**

Parameter	HKLD	ROP	RPM	TRQ	WOB
Minimum	93.0	74.8	15.9	35.0	0.0
Maximum	18146.0	191.5	99.8	154.4	25.9
Mean	7492.7	136.4	49.2	112.7	8.8
Mode	93.0	74.8	21.4	40.0	0.0
Range	18053.0	116.6	83.9	119.4	25.9
Variation	32659532	393	386	1390	33
Standard Deviation	5714.9	19.8	19.6	37.3	5.6
Skewness	0.5	0.1	0.5	-1.0	0.2
Coefficient of variation	76.3	14.5	40.0	33.1	63.4

**Table 2—Statistical analysis for the production data.**

Parameter	$K_h/K_v$	No. of laterals	Length (ft)	Distance(ft)	$P_{wf}$ (psi)	Flow rate (scf/D)
Minimum	1	2	700	1300	14.7	0
Maximum	1000	14	3100	5200	4800	197903.2
Mean	61	6.6	2759.5	2723.8	2359.5	81860.4
Mode	10	6	3100	2600	14.7	0
Range	999	12	2400	3900	4785.3	197903.2
Standard Deviation	211.2	2.49	693.9	685.1	1551.73	48712.5
Skewness	4.192	1.412	-1.9159	2.0689	0.09535	-0.118
Kurtosis	18.73	5.358	5.3081	9.503	1.7184	2.216
Coefficient of variation	346.3	37.4	25.11	25.15	65.76	59.50

**Table 3—Statistical analysis for the thermal-EOR data.**

	Permeability, mD	Time, month	Distance, m	Temperature, K
Minimum	7.60	1.00	10.00	301.20
Maximum	45.60	24.00	185.00	538.30
Mean	21.52	11.76	67.05	383.73
Mode	15.00	12.00	10.00	301.20
Range	38.00	23.00	175.00	237.10
Variation	238.23	64.01	1784.23	4852.66
Standard Deviation	15.43	8.00	42.24	69.66
Skewness	0.85	0.43	0.66	0.66
Kurtosis	1.88	1.92	2.63	2.17
Coefficient of variation	71.72	68.06	63.00	18.15

**Table 4—Statistical analysis for the CO<sub>2</sub>-MMP data.**

Parameter	Temperature, °F	Mole% of C <sub>2</sub> -C <sub>6</sub>	MW of C <sub>7+</sub>	MMP, psia
Minimum	71.00	2.00	139.00	1100.00
Maximum	300.00	43.50	319.70	5000.00
Mean	185.67	22.06	204.85	2583.49
Range	229.00	41.50	180.70	3900.00
Variation	3630.62	73.64	1550.35	769100.02
Standard Deviation	60.25	8.58	39.37	876.98
Skewness	0.23	0.16	-0.11	0.21
Kurtosis	2.00	2.54	2.53	2.20
Coefficient of variation	32.45	38.90	19.22	33.95

**Table 5—Determination of CO<sub>2</sub>-MMP using different approaches.**

Determination approach	Average absolute error, %	Correlation coefficient
Correlation	17.2	0.67
Analytical	18.3	0.60
AI model (this work)	6.56	0.98



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# TECHNOLOGY APPLICATIONS

## A Case Study from a 53 Year Old Asset - The Importance of Integrity and Risk Management for a Mature Asset

By: Ammer Jadoon, BP

**A**bstract  
BP is a joint venture partner in GUPCO, which operates in the Gulf of Suez, Egypt. The asset is over 50 years old and has a large operational footprint. This includes 3 onshore process facilities handling over 450,000 barrels of fluid per day from over 100 offshore structures and 200 pipelines. The field is supported by gas lift and water injection from two onshore facilities.

The asset presents a challenge from an integrity perspective, namely corrosion and production chemistry threats. These are managed through an inspection program and anomaly management process.

This case study presents how our asset integrity is managed and forward plan for improvement. The important relationship with the risk management process is highlighted.

### Introduction

#### GUPCO

GUPCO is a BP joint venture in Egypt, operating in the Gulf of Suez (Egypt). The asset is over 50 years old and includes 3 onshore process facilities handling over 450,000 barrels of fluid per day from over 100 offshore structures and 200 subsea pipelines. This field is supported by gas lift and water injection.

For continued safe and reliable operations, a robust integrity management and risk management program must underpin the operations. This also contributes to an effective safety culture in the organisation.

#### Production

Natural field decline has been managed through well-work and new well delivery. In recent times, the value of effective well-work has been realized and will continue to play a key role in the future. By 2020, LoSalTM water will be injected in the central field via a specially constructed reverse osmosis plant. This BP proprietary technology enables a greater sweep efficiency, meaning greater oil recovery compared to

standard treated sea water.

#### Integrity Management

Figure 1 shows the four elements of Integrity management and their interfaces. Each element must have a company standard, outlining the process to enable this and performance indicators for effective management. These typically are a combination of international standards and the company's field experience.

The process to drive Integrity management is paramount, and this is shown in Figure 2. This should exist for each element of Integrity management. The importance of this cannot be understated. One way to view this is through the 4 'P's' – namely process, plant, people and performance, and this has been marked on. The importance for each cannot be underestimated.

#### GUPCO experience

Our focus in recent times has been to strengthen people (mainly competency) and implementation of effective inspection, maintenance and corrosion management programs, particularly for pipelines (PIMS) and top-side facilities (FIMS).

**People.** A combination of on-job training, support and class room courses has been used to improve the competency of our staff such as our Inspection Engineers, for example. We have also looked at staff numbers and organisation and made changes. These include the hiring of a dedicated repair co-ordinator and pigging specialist at site. As most of the work executed is by contractors (over 90%), greater emphasis has been placed.

**Top-side facilities (FIMS).** A specialist inspection contract has recently been awarded. The plan is to use techniques such as in-service robot inspection of our crude oil storage tanks. Long range ultrasonic inspection and digital radiography for piping and vessels. The improved accuracy and speed will translate to greater assurance to operate and strengthen the inspection program and anomaly management.

**Pipeline integrity (PIMS).** The internal inspection program (ILI) has been refreshed and a super-MFL (magnetic flux)

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tool will be used, as opposed to standard-MFL. The main driver is greater accuracy in detecting small sized defects (i.e. potential pin holes).

The maintenance pigging program had issues around timely replacement of consumable parts (seal and guide discs) and collecting pigging trash samples for chemical analysis for sulphate reducing bacteria. This was primarily based around human factors and low in-house stock.

### Risk management

Risk classification is based on a 5×5 risk matrix. The consequences are safety, production or environment, and the highest one is selected for the risk. Our philosophy for risk management is maintaining barrier strength, and to have a combination of barrier types for each threat. There are three barrier types; passive, active or procedural, and this is the order of preference. For any threat, the barriers must be independent of each other, Figure 3 shows a generic bow-tie diagram which is used, showing the preventative (pre-event) and mitigation (post-event) barriers.

In GUPCO, there are 16 major accident risks (MAR) which are often termed inherent or enduring. These are always associated with operations by all operators. Examples include transportation (vehicle, vessel, helicopter or fixed wing aircraft), pipeline rupture, fire and explosion and lifting over live plant. Each risk has its own risk action plan (RAP) capturing actions to improve the barrier strength.

On another risk register and risk matrix are the point risks. These are very specific risks (e.g. replace flare header at platform x). Each risk has its own RAP, with a clearly defined plan and owner. There is a quarterly performance review meeting, led by the Managing Director with the leadership team and action owners all attending.

### Human factors

The latest technology, best process or strategy is useless in the hands of a person not fully competent.

Additionally, people will make mistakes. This issue of 'human factor' is faced by all industries whether medical, aerospace or oil and gas. Human intervention or minimum consequences cannot ever be fully achieved. Competencies and skills are important and having the right people in the right job.

Given over 90% of the site work is done by contractors, this presents a challenge. A very useful tool is self-verification and audit by the operator, at various levels and frequencies. The case study in the next section is a direct result of human fac-

tors and errors made by an inspection contractor. The consequence was a gas release which could have been fatal. Thankfully, no harm was done, and this was treated as a high potential incident and many lessons learnt.

### Case study

**Introduction.** A gas release from a large ruptured (hole) section on a 2"×3" high pressure safety relief Piping from the gas compression system occurred. This is part of the gas lift system, where produced gas is re-injected into the reservoir to aid production. A gas compression module is composed of 3 stages:

compressor, cooler and scrubber. The pressure of the gas increases at each stage, with the final discharge pressure at 1,100 psi and temperature 51°C can cool down to 10°C in the pipe. The primary function is to increase the pressure and to knock-out water. The gas is not dried and contains CO<sub>2</sub> in the range of 0.9 mol %. In addition, due to a combination reservoir souring and its natural occurrence in some fields, H<sub>2</sub>S is also present in the gas, latest H<sub>2</sub>S reading issued from the chemical lab was on April 2016 and the measurement was 290ppm. Due to the age and efficiency of the system, water is carried through, so the discharge gas is not dry. There is no further dehydration treatment post discharge header. Water condensation is mainly driven by gas temperature variation and is believed to occur. When a fresh new gas enters the amount of water simulated from HYSIS is 2.1 gm of water.

**Laboratory testing.** The experimental testing was split into visual inspection, material characterization, SEM observation and EDX analysis for the failed surfaces, XRF & XRD for corrosion products Around holes, and mechanical testing. The visual inspection consisted of inspection of the external surfaces and internal surfaces after cutting focusing on areas around the rupture.

The material characterization included metallographic examination of cross-sectional micrographs and macrographs in the as-polished and etched conditions, as well as chemical analysis of the pipe material.

The mechanical testing included hardness and ten-

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sile testing.

Illustration of the samples locations for different tests is shown in Figure 4.

### Visual inspection

The as-received pipe was inspected visually and photographed in the as-received condition, and after cutting longitudinally into halves. The internal and external surfaces of the halves were inspected and photographed by optical methods.

Figure 5 shows photographs of the section in the as-received conditions. The main pipe was 2" diameter and 5.4mm estimated original wall thickness which conforms to schedule 80. The coating was remaining in some areas and on the others the coating disappeared completely with general corrosion on the surface.

The corroded surface contains different areas of thinning and dimples. There were no observed material defects or mechanical damage.

The main observation was that the bottom side surface contained a thick and hard adhered layer of accumulated scale. The scale layer thickness of the bottom side was thicker than that of the top side of the pipe and this is due to gravity.

### Elemental analysis

A specimen was cut off away from marked area and was prepared for chemical analysis by spectrum technique. The elemental analysis of the pipe material and the standard values of the elemental concentration as specified by the API 5L X42N are shown in table 1. Comparing the values one can observe that the pipe material is confirmed with the API 5L Grade 42N.

### Mechanical testing

#### Hardness

A vicker's hardness tester with 10kg load was used to measure the hardness values at different locations of one specimen from the rupture spool pipe. The hardness indentations positions were taken according to API Specification 5L / ISO 3183. Table 2 shows the measurements of hardness test of main pipe material.

The mean value of the measured hardness of base metal was 168 HV. The hardness values were in

good conformity with both chemical composition and microstructure of the pipeline.

### Tensile testing

Tensile test for pipe material was performed at room temperature and the results of the tensile test are given in Table 3. These are in accordance with the correct material specification.

### Chemical analysis of corrosion product

Table 4 shows the XRF analysis of the scale from the pipe outer surface and inner side. The analysis reveals the presence of Na, Ca, Silica, Cl and iron oxides from the outside scale. This indicates general corrosion from the atmosphere and silica may be from surface preparation prior to applying the coating, as sand blasting is typically used.

The XRF from the inner scale consists mainly of sulphur and iron oxides. This indicates typical corrosion products of iron oxide and different sulphate compounds namely Iron sulfate, Iron sulfate hydrate, iron oxide sulfate, parabutlerite and troilite which indicate higher sulfur content of the corrosion products.

### Conclusion

Based on the experimental results the following conclusions are made:

1. Microstructure, chemical compositions, and mechanical properties showed that the main pipe material belongs to API 5 L grade X 42N. With original diameter of 2" and estimated wall thickness of 5.4 mm which conformed to Schedule 80.
2. Deterioration by corrosion was observed at the external surface where the coating had failed
3. The dominant peaks of the XRD analysis for corrosion products inside spool, showed that the main corrosion products were; iron oxide ( $Fe_2O_3$ ) and iron sulfate ( $Fe(SO_4)_3$ ).
4. Measurements of thickness indicate that the material loss by corrosion is excessive from the internal surface of the pipe rather than external surface.
5. The primary corrosion mechanism was internal, and external corrosion was secondary

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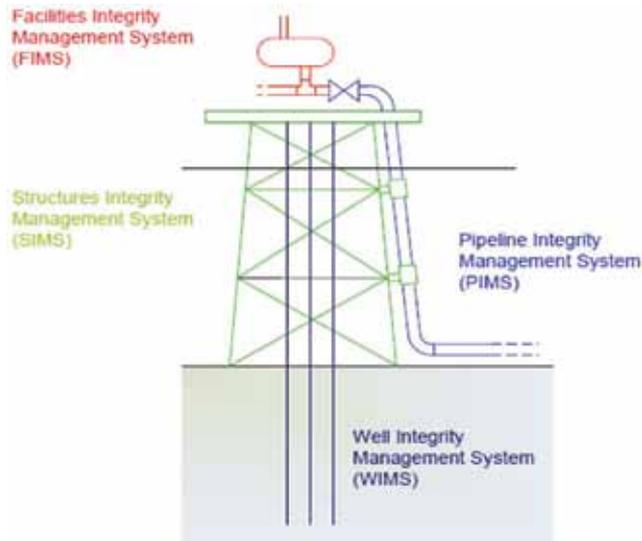


Figure 1—Elements of Integrity management and the interfaces.

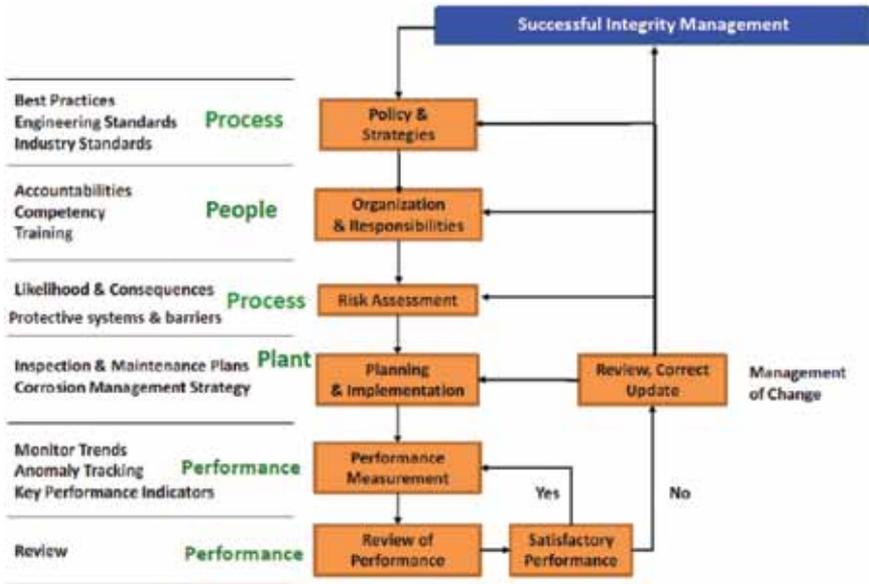


Figure 2—Integrity management cycle

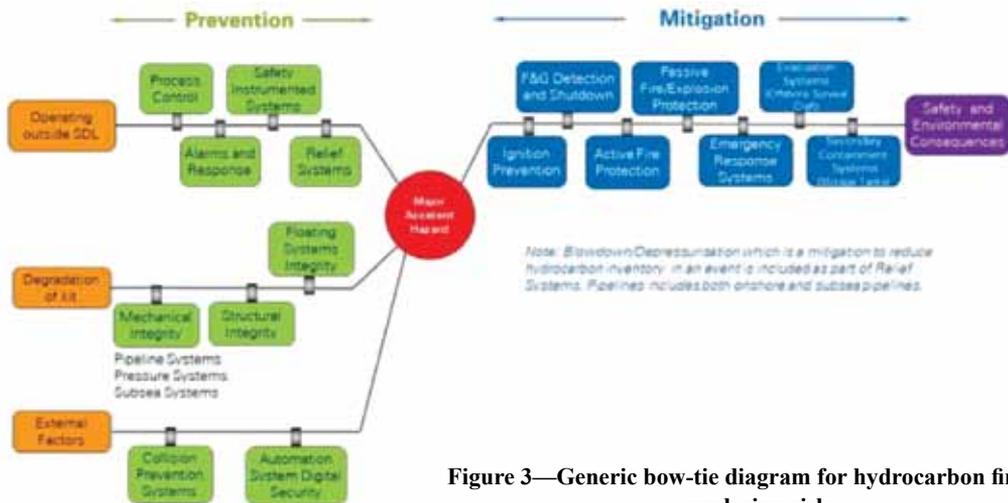


Figure 3—Generic bow-tie diagram for hydrocarbon fire and explosion risk

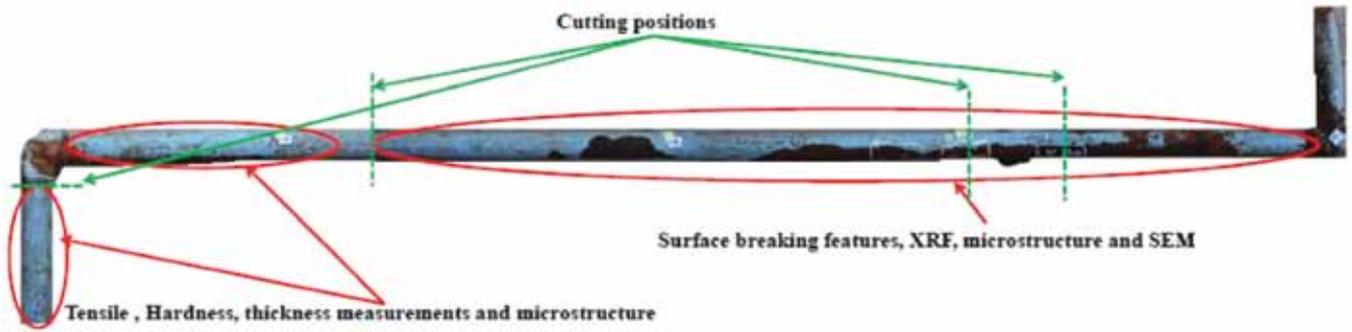


Figure 4—Photograph showing sample cutting and characterization plan.

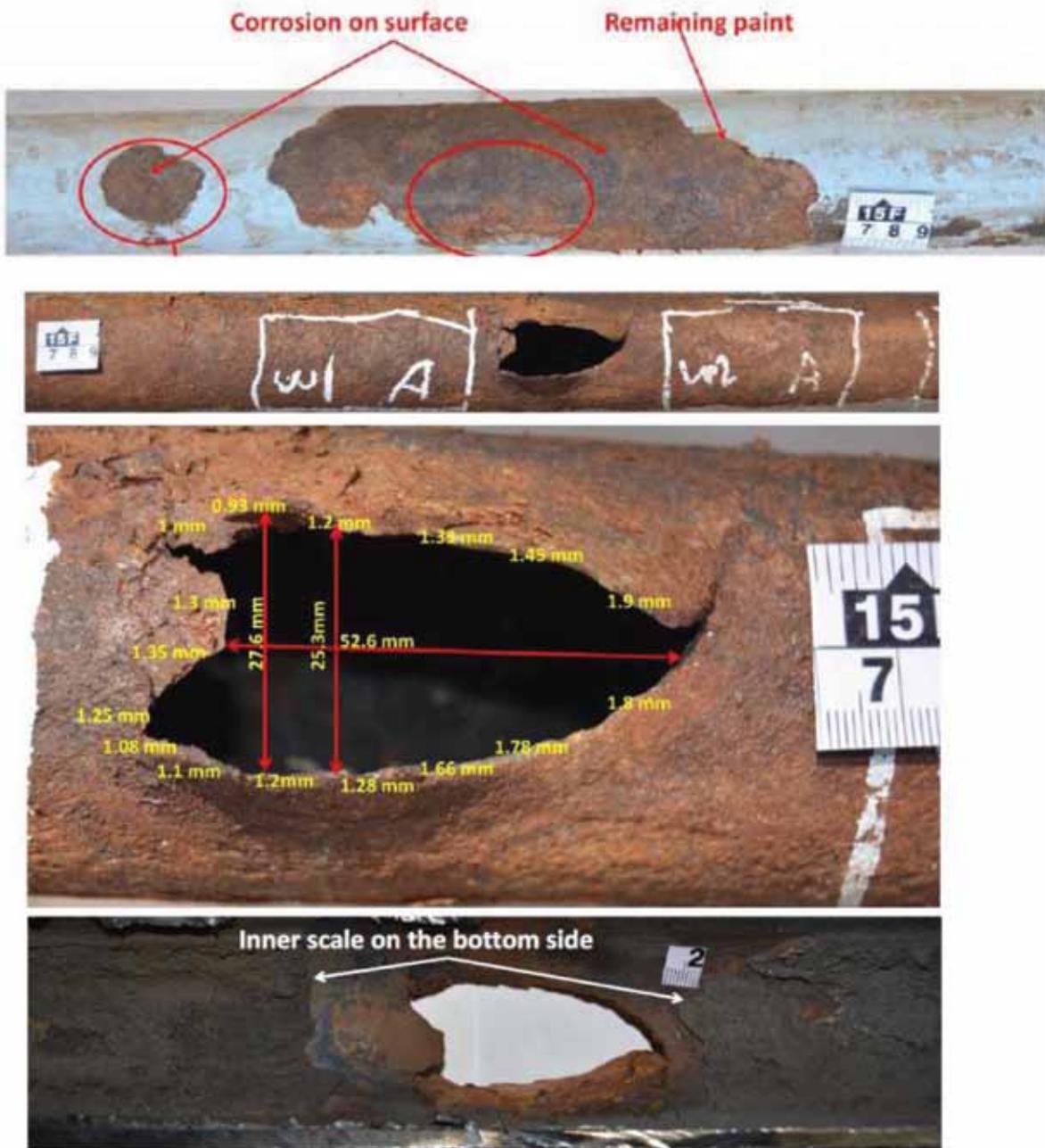


Figure 5—General and close-up pictures of the as-received pipe

Table 1—Chemical composition of pipe

Type of materials	Chemical composition (Mass %)												
	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Nb	Ti	Fe
API 5L X42N	0.24	0.4	1.2	0.025	0.015	0.3	0.3	0.15	0.5	0.06	0.05	0.04	Bal.
Standard	Max.	Max.	Max.	Max.	Max.	Max.	Max.	Max.	Max.	Max.	Max.	Max.	
Rupture spool	0.292	0.26	1.02	0.025	0.0149	0.095	0.0215	0.018	0.005	0.0045	0.0	0.0004	Bal.

Table 2—Hardness measurements of pipe

Specimen	Point 1	Point 2	Point 3	Point 4	Average
Top line	167	173	165	165	168
Middle line	165	170	166	164	166
Bottom line	174	168	163	169	169
Average					168

Table 3—Tensile test results

Specimen	Yield strength (MPa)	Ultimate strength (MPa)	Elongation (%)
1	313	461	24
2	272	415	25
Average	293	438	25

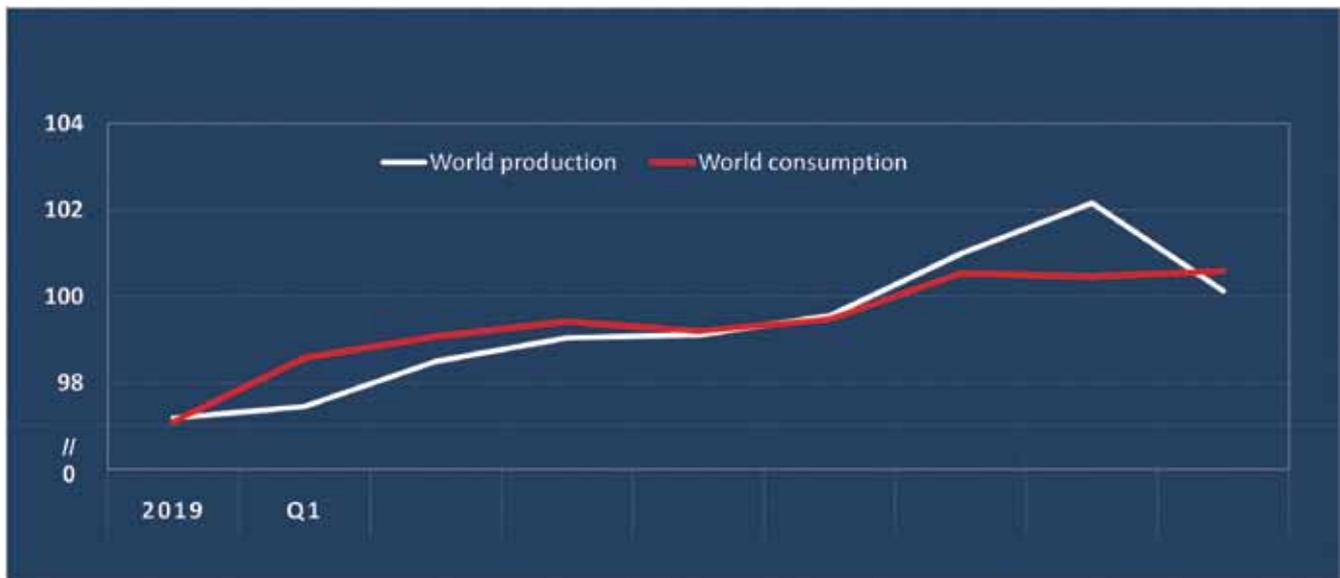
Table 4—XRF analysis of corrosion product from inner and outer side of failed spool

Element	Compound formula	Concentration, %	
		Outer surface	Inner surface
Na	Na <sub>2</sub> O	1.9466	0.141
Mg	MgO	1.2	0.055
Al	Al <sub>2</sub> O <sub>3</sub>	1.01	0.158
Si	SiO <sub>2</sub>	3.062	0.321
S	SO <sub>3</sub>	2.797	21.28
Cl	Cl	2.684	0.076
K	K <sub>2</sub> O	0.354	0.02
Ca	CaO	3.775	0.1
Ti	TiO <sub>2</sub>	0.552	0.025
Pb	PbO	0.05	0.0
Cr	Cr <sub>2</sub> O <sub>3</sub>	0.053	0.042
Mn	MnO	0.452	0.482
Fe	Fe <sub>2</sub> O <sub>3</sub>	40.5	55.735
Ni	NiO	0.035	0.018
Cu	Cu	0.029	0.043
Zn	ZnO	0.797	0.009
Mo	MoO <sub>3</sub>	0.012	0.039
Ba	BaO	0.14	0.032

# INDUSTRY AT A GLANCE

by: Ali Ibrahim

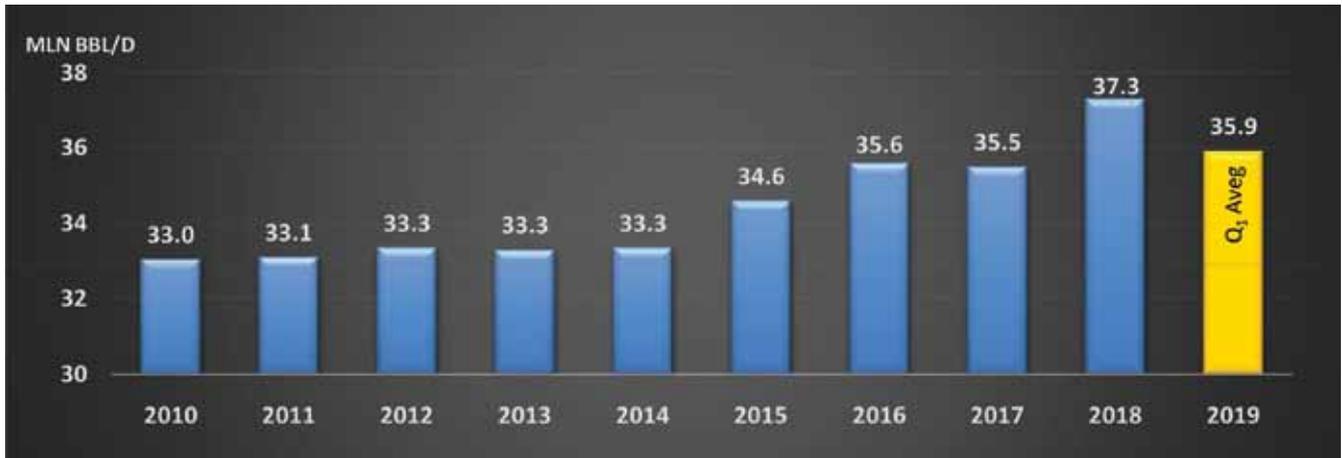
**World liquid fuels production and consumption balance**  
million barrels per day



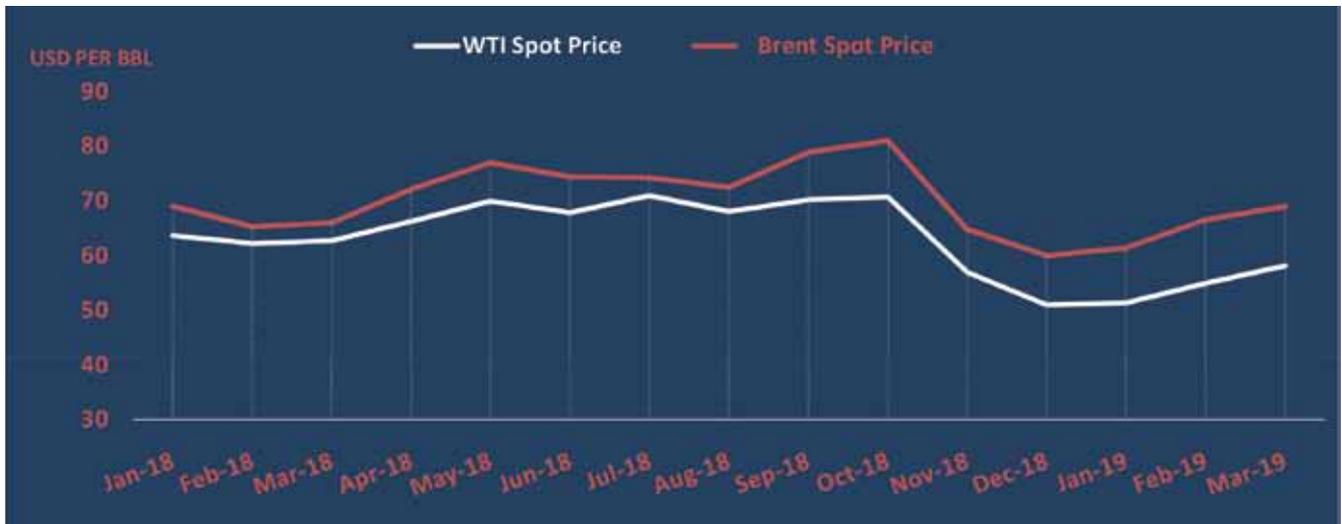
**Annual change in world liquid fuels consumption**  
million barrels per day



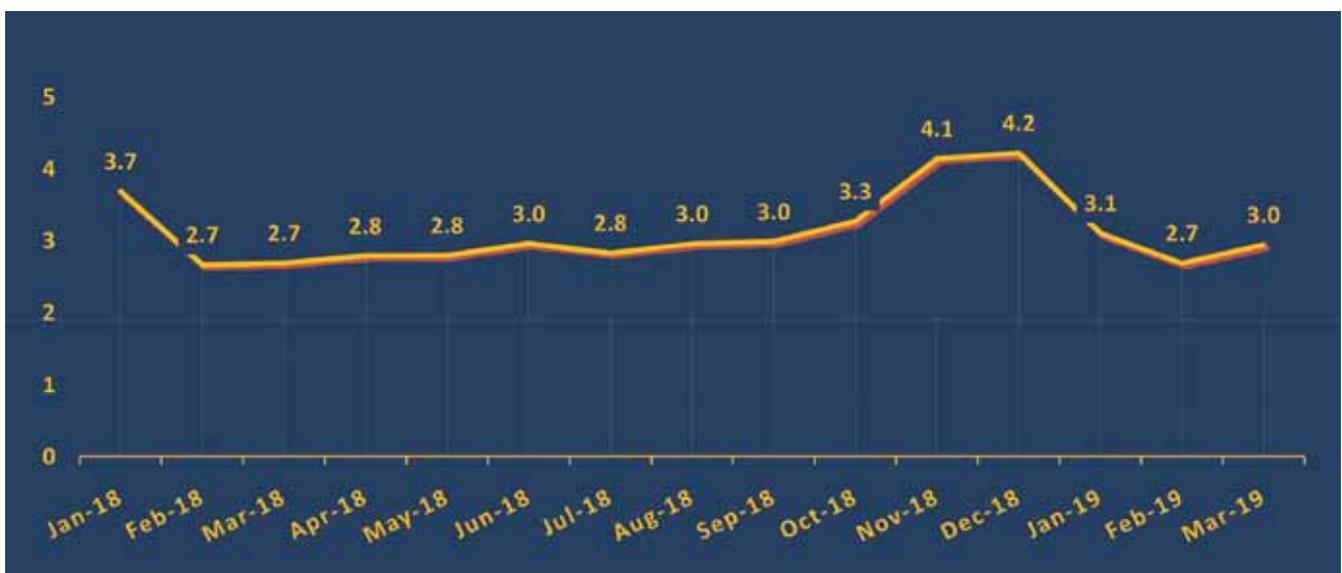
## OPEC Crude Oil Production



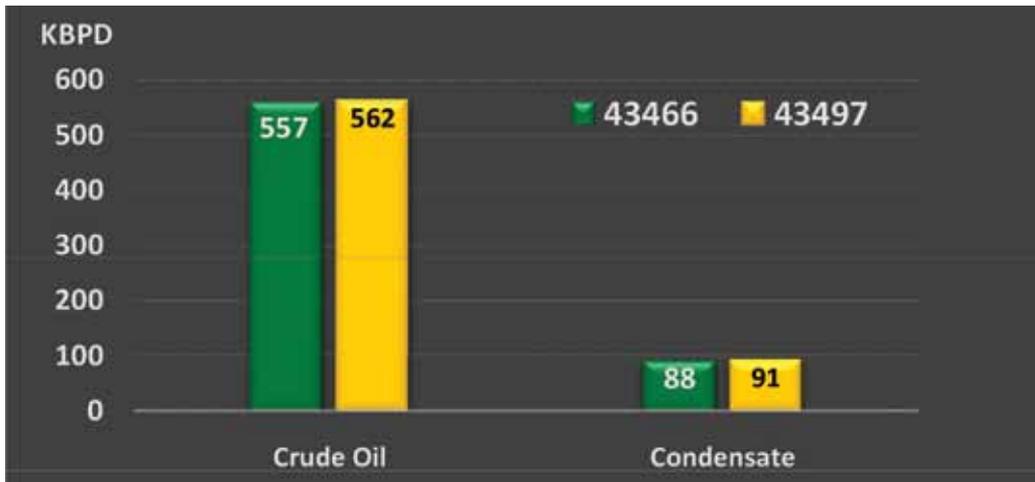
## Crude Oil Prices



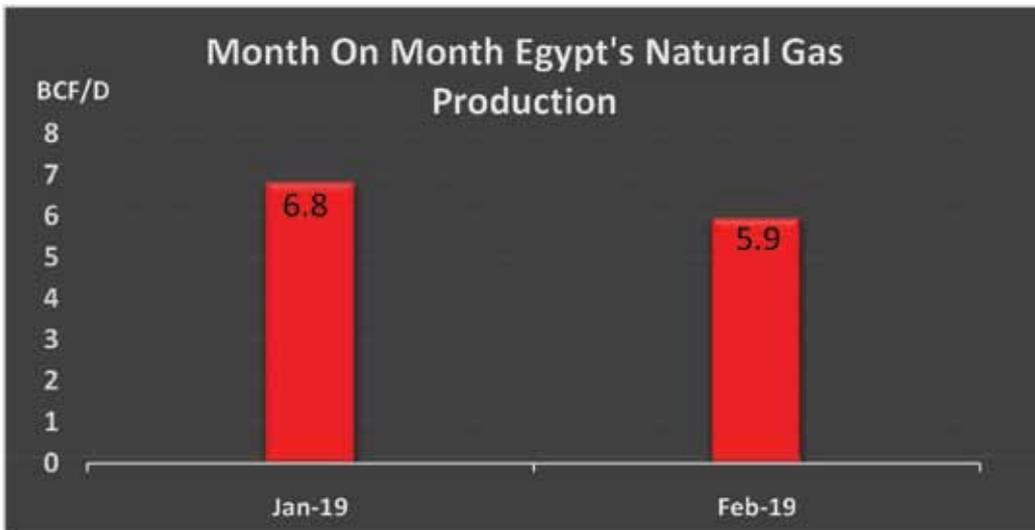
## NYMEX Natural Gas Prices USD/Million BTU



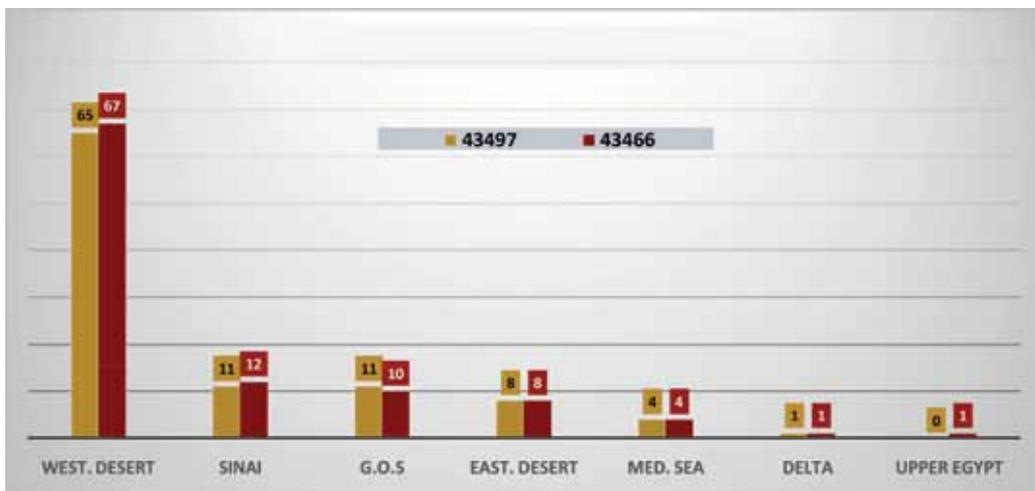
### Month On Month Egypt's Production



### Month On Month Egypt's Natural Gas Production



### Egypt's Geographical Rig Count





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MIDCO is an agent for CST Well head manufacture in Egypt- Hungarian company founded in 1991- Close to 50 years of experience in manufacturing assemblies for the oil & gas industry, Manufacturer of high-quality Wellhead and X-mas tree assemblies to fulfill individual customer needs worldwide- Assemblies described under API 6A and API 16A

### Maintenance and Refurbishment of Well Head

Based on API Standards- Setting up Well Head- Conducting on-site & long-term well head maintenance- Service benefits are far greater than purely- providing integrity assurance for an Operator's assets.- Strict guidelines are imposed on every activity undertaken to assess risk and eliminate it- MIDCO Wellhead Maintenance is very powerful in risk elimination and meeting customer needs.



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شنايدر إلكترونيك مصر، "إنشاء المرحلة الأولى لمحطة الطاقة الشمسية في شرم الشيخ شهدت قصة نجاح كبيرة، بدأت منذ ثلاث سنوات فور توقيع بروتوكول التعاون مع محافظة جنوب سيناء، إلى جانب الدعم الهائل لنجاح المشروع من معالي اللواء خالد فودة محافظ جنوب سيناء ومعالي وزير الكهرباء والطاقة المتجددة الدكتور محمد شاكر".

وقامت شركة «انترو انيرجي» بدور المطور الرئيسي للمشروع بما في ذلك إدارة عملية التطوير بدءاً من مراحله الأولى ووصولاً إلى صورته المكتملة البناء، وقد انضمت إلى انترو انيرجي؛ شركة «جيلا التوكول إلكترونيك» كمطور مشارك، فيما قامت شركة «شنايدر إلكترونيك» بدور الشريك الفني للمشروع.

ومن ناحية أخرى، عبّر المهندس/ وليد شتا رئيس مجلس إدارة شركة شنايدر إلكترونيك مصر، عن فخره بمساهمة الشركة في بناء أول محطة للطاقة الشمسية في محافظة جنوب سيناء، وأشار أن شركة شنايدر قد أسهمت بجهودها في تعظيم المردود الإيجابي لكافة الأطراف المعنية، إضافة إلى ترسيخ مكانتها كمطور استراتيجي في مختلف الآفاق التكنولوجية الجديدة. وتابع شتا أن الشركة ستساهم بخبرتها العريقة خلال الفترة المقبلة في زيادة قدرة المشروع إلى ٤٠ ميجاوات، مشدداً على التزام الشركة في دعم استراتيجية الدولة لإنتاج الطاقة المتجددة وبلوغ أعلى درجات الإنتاجية من المصادر النظيفة بحلول عام ٢٠٢٢ استناداً إلى توصيات اتفاق باريس للمناخ.

قال المهندس/ شريف عبد الفتاح نائب رئيس مجلس الإدارة وعضو مجلس إدارة شركة

سوف تعمل «انترو انيرجي» مع شركائها على إتمام الخطط والاستعدادات اللازمة لزيادة قدرة المحطة بواقع ٢٥ ميجاوات إضافية من أجل الوصول بطاقاتها الإجمالية إلى ٤٠ ميجاوات.

جدير بالذكر أن المحطة بقدرتها الحالية البالغة ٥ ميجاوات ستغذي الشبكة القومية للكهرباء بطاقة قدرها ١٠ جيجاوات / ساعة، وهو ما يكفي لتغطية أكثر من ٢٠٠٠ وحدة سكنية مع تقليص البصمة الكربونية بما يصل إلى ٢٥٠٦ طنًا سنويًا، وهو النجاح الذي سيعمل بدوره على تعزيز استراتيجية الدولة في تطوير حلول الطاقة المتجددة بهدف الوصول لإنتاج ٢٠٪ من إجمالي الطاقة من المصادر النظيفة بحلول عام ٢٠٢٢.

ومن جانبه قال أ/ محمد عمر توكول رئيس مجلس الإدارة بشركة «جيلا التوكول إلكترونيك»، أن الجهود المتضافرة لإتمام هذا المشروع جاءت بمردود إيجابي ملموس على حياة العديد من المواطنين وكذلك المشروعات التجارية في المنطقة المحيطة بالمحطة، مشيرًا أن استمرار العمل على المراحل القادمة من المشروع سوف يجني ثمارها آلاف المواطنين في المستقبل القريب. على مدى السنوات القليلة الماضية، برزت جيلا كشركة رائدة في قطاع الطاقة الشمسية، حيث تعمل كشريك ملتزم برؤية مصر لاستخدام الطاقة النظيفة. تتطلع أعيُننا على توسيع محفظتنا المحلية والإقليمية في أفريقيا والشرق الأوسط لخدمة ملايين الأشخاص ودعم الجهود العالمية إلى تحقيق هدف التنمية المستدامة للأمم المتحدة رقم ٧".



# "انترو انيرجي" تشترك مع "شنايدر إلكتروك" و"جيلا التوكل إلكتروك" لإفتتاح أول محطة للطاقة الشمسية في شرم الشيخ



الطاقة المتجددة لا يستهدف فقط تنوع أعمال ومشروعات الشركة في قطاع الطاقة والتوسع في قطاع الخدمات والمرافق الذي يشهد نمواً مطرداً في مصر، وإنما يستهدف أيضاً القيام بدور وطني ملموس للمساهمة في تنمية شبكة الكهرباء القومية.

توسعات الشركة في مجالات وتطبيقات الطاقة المتجددة، واصفاً نجاح المشروع في تغذية الشبكة القومية للكهرباء بقدرة ٥ ميغاوات بأنه حجر الزاوية لبناء منظومة ضخمة ومتكاملة في قطاع الطاقة المتجددة على الساحة الإقليمية. وأضاف أن تركيز الشركة على الدخول في مشروعات

شركة «انترو انيرجي» تنجح في إطلاق المرحلة الأولى من المشروع بالتعاون مع شركتي «شنايدر إلكتروك»، و«جيلا التوكل إلكتروك»: انطلاقاً من استراتيجيتها التطلعية لإنشاء منصة متكاملة لمشروعات الطاقة المتجددة

أعلنت شركة «انترو انيرجي» - ذراع استثمارات الطاقة التابع لشركة انترو جروب - عن نجاحها بالتعاون مع شركائها «شنايدر إلكتروك» و«جيلا التوكل إلكتروك» في إطلاق محطة للطاقة الشمسية بقدرة ٥ ميغاوات في شرم الشيخ. ويمثل ذلك المرحلة الأولى من مشروع حقل إنتاجي متكامل للطاقة الشمسية بقدرة ٤٠ ميغاوات على أن يتم تشغيل المحطة الجديدة ضمن المرحلة الأولى من نظام تعريفية التغذية لمشروعات الطاقة المتجددة.

وتم افتتاح المحطة الجديدة خلال احتفالية أقيمت على موقع المشروع بحضور سيادة اللواء/ خالد فودة محافظ جنوب سيناء، محمد عمر توكل رئيس مجلس الإدارة بشركة جيلا التوكل إلكتروك والمهندس وليد شتا رئيس مجلس إدارة شركة شنايدر إلكتروك مصر والرئيس الإقليمي لشنايدر إلكتروك شمال شرق إفريقيا وبلاد الشام.

وفي هذا السياق أعرب ممدوح عباس رئيس مجلس الإدارة بشركة انترو انيرجي عن سروره بإطلاق المرحلة الأولى من مشروع الطاقة الشمسية في شرم الشيخ باعتباره باكورة





في المرحلة السابقة، ونأمل في الاستمرار بنفس وتيرة النجاح، وبالنسبة للطاقة سنشارك بالعمل في إنشاء ٥ مراكز تحكم في إطار خطط الدولة لإنشاء ٢٥ مركز تحكم على مستوى الجمهورية بحجم استثمارات ضخمة جداً، بالإضافة إلى تواجد الشركة في مشروعات محطات تحلية المياه ونعمل في أربعة محطات منها، ونشارك أيضاً في مشروعات الطاقة الشمسية ونحن بصدد المشاركة في مشروعات صناعية بالمنطقة الصناعية بقناة السويس.

### ■ وماذا عن مشروعات المسؤولية المجتمعية لشركة شنايدر اليكتريك؟

مشروعات المسؤولية المجتمعية تحتل جزءاً رئيسياً من أعمالنا في أي بلد نعمل بها وللشركة أكثر من دور في هذا المجال حيث نتعاون مع مجموعة من الوزارات بشأن ذلك ومنها وزارة القوى العاملة لتدريب العمالة، وإنشاء معامل للتدريب لجامعة حلوان وجامعة عين شمس، ذلك لأن مصر تحتاج إلى العمالة الفنية المدربة، وطلبنا من وزارة التضامن إمدادنا بأسماء بالقرى والمناطق المحرومة من الكهرباء لانارتها، ومؤخراً عملنا في مشروعات استخراج المياه من باطن الأرض بالطاقة الشمسية في عدد من القرى ومنها مشروع في قرية الحيز لتوفير مصدر مستدام لمياه الري وتولى عدد من القرى الصغيرة لمساعدة أهاليها فيما يتعلق بمشروعات الكهرباء والمياه

ذلك يساعد العاملين في حقول البترول البعيدة وفي المنصات الموجودة في عرض البحر، ويتم نقل كل البيانات والمعلومات على شاشات وأجهزة المحمول، لأن مشروعات البترول والغاز المصرية واحدة من أهم المشروعات على مستوى المنطقة، ومن الأهمية إمتلاكها أحدث التكنولوجيات التي تحقق أعلى معدلات الإستدامة.

### ■ حدثنا عن استثمارات الشركة في عام ٢٠١٩؟

نحن بصدد بناء مصنع جديد على مساحة ١٥ الف متر مربع بجوار المصنع الحالي ونبحث نقل المبنى الرئيسي لها من التجمع الخامس إلى العاصمة الإدارية الجديدة والتي ستضم أحدث تكنولوجيات مدن المستقبل، ونحن بصدد إمتلاك المقر الجديد وليس استئجار مثلما تفعل الشركات الأجنبية في مصر، وكانت استثمارتنا العام الماضي ٢٠ مليون يورو، ومن المتوقع تضاعف هذا الرقم في ٢٠١٩ وهذا يعكس ثقة الشركة في مناخ الاستثمار في مصر كقاعدة للانطلاق بالاستثمار في إفريقيا، ونؤمن أن السوق المصري يعد مركزاً إقليمياً لأعمالنا في المنطقة ومصر لديها إمكانيات هائلة لكي تصبح مركزاً إقليمياً للطاقة وتكنولوجيا المعلومات، ويدعم ذلك الإصلاحات الاقتصادية التي اتخذتها الحكومة المصرية مما يجذب المزيد من الاستثمارات إلى مصر.

### ■ أهم المشروعات التي تشارك بها شنايدر في ٢٠١٩؟

مستمرون بالعمل في حقل ظهر ١ و ٢ بعد نجاحنا

طبيعية جداً، ونحن راعي ذهبي لذلك المعرض المهم وتشارك الشركة بجناح كبير ومميز ووسط كبرى شركات البترول العالمية مثل إكسون موبيل وإيني وبتروجيت.

### ■ ما هي رؤية سيادتكم لقطاع البترول في المرحلتين الحالية والمقبلة؟

طبعاً قطاع البترول المصري من القطاعات الحيوية، ويحظى باهتمام الدولة والقيادة السياسية تعطى له اهتماماً كبيراً في الفترة الحالية والمقبلة، خاصة وأن هناك إتجاهاً قوياً لتحويل مصر إلى مركز إقليمي للطاقة، وتم إتخاذ خطوات إيجابية من أجل لذلك، ومنها ترسيم الحدود مع كلا من قبرص واليونان، تلك الإجراءات التي أثمرت عن اكتشافات حقل ظهر ١ و ٢ وكذلك ترسيم الحدود مع المملكة العربية السعودية والذي أدى أيضاً إلى طرح ٦ مناطق إمتياز في البحر الأحمر، ونستطيع القول أن مستقبل مصر في الغاز الطبيعي سواء في الإنتاج أو التسييل.

### ■ حدثنا عن استراتيجية شركة شنايدر اليكتريك ومدى توافقها مع رؤية مصر ٢٠٣٠؟

مصر هي المركز الآن في إفريقيا والشرق الأوسط، كما أن لها ثقل كبير، فتعداد السكان كما نعلم الآن ١٠٠ مليون نسمة كما نعلم أن الأيدي العاملة والكوادر الفنية الموجودة في الدول العربية والإفريقية أغلبها مصرية، كما أن الشركات المصرية تعمل في مشروعات عملاقة بتلك الدول أثبتت كفاءة عالية في إنجاز مهامها، ونحن بدورنا نصدر ٢٠٪ من منتجاتنا إلى تلك الدول العربية والإفريقية.

### ■ ونحن في عصر التحول الرقمي لإدارة الطاقة ما هي الحلول الرقمية التي تقدمها شنايدر اليكتريك لقطاع البترول؟

التحول الرقمي الآن على مستوى العالم كله وحولنا التقليدية موجودة كمصدر لمستلزمات الطاقة التقليدية، إنما الجديد في شنايدر اليكتريك أننا نحول ذلك للتحكم الرقمي من خلال منظومة جديدة ابتكرتها الشركة وهي EcoStruxure أحدث إبتكارات شنايدر إلكترتك في عالم رقمنة العمليات التشغيلية، لتحقيق أعلى معدلات التحكم في مواقع على بعد المئات الكيلومترات وكيفية التحكم في منظومة الطاقة كلها عن بعد، وكل

المهندس خالد كامل نائب رئيس شنايدر إيكتريك :



## EcoStruxure منظومة مبتكرة لخدمة العاملين في حقول البترول والغاز



### ■ نود القاء المزيد من الضوء على مشاركة شركة شنايدر في إيجيبس ٢٠١٩

هو إمتداد لمشاركة الشركة في إيجيبس ٢٠١٨ حيث تولي شنايدر إيكتريك إهتماماً خاصاً لقطاع البترول المصري، وتضخ مزيداً من الاستثمارات في ذلك القطاع حيث تعمل في مشروعات قومية عملاقة مثل مشروعات حقل ظهر ١ و ٢ ومثل حقل آتون وبالتالي فإن مشاركتنا

تعد شركة شنايدر إيكتريك، من كبرى الشركات العالمية في قطاع الطاقة وتصنيع لوحات توزيع الجهد المتوسط وحلول التحكم الآلي، تساهم شنايدر إيكتريك بحلول متكاملة في قطاع الصناعة لتوفير أكبر قدر من الطاقة وتعمل الشركة في مصر منذ أكثر من ٣٠ عاماً حيث تعمل على توفير جميع الحلول المتطورة والتقنيات الجديدة في قطاع الطاقة والبترول .

من جانبها التقيت مجلة بتروليم توداي بالمهندس خالد كامل، نائب رئيس شنايدر إيكتريك لقطاع الطاقة لمصر وشمال شرق إفريقيا والمشرق العربي على ، حيث قال في حوار خاص إن مصر أصبح لها ثقل كبير في صناعة الطاقة الإقليمية، حيث تعد اكتشافات الغاز الطبيعي الكبرى في السنوات الأخيرة، بما في ذلك حقل غاز "ظهر" العملاق حجر الزاوية في صناعة الطاقة في المنطقة مؤكداً أن مصر لديها إمكانيات هائلة لتصبح مركزاً إقليمياً للطاقة، واليكم نص الحوار .



شneider إلكترونيك هي شركة عالمية رائدة متخصصة في إدارة الطاقة والتحكم الآلي في المنازل والمباني ومراكز قواعد البيانات والبنيات التحتية والصناعات. يمتد تاريخها لأكثر من ١٠٠ عاماً، حيث تعتبر شركة شneider إلكترونيك بلا شك شركة رائدة في إدارة الطاقة - في الضغط المتوسط والمنخفض، والطاقة الأمنة، وفي أنظمة التحكم الآلي. فهي توفر حلول ذات كفاءة متكاملة من خلال دمج الطاقة مع التحكم الآلي والبرمجيات. وفي إطار شبكتنا العالمية، نحن نعمل مع أكبر الشركاء والمطورين على منصتنا المفتوحة للحصول على تحكم فوري وكفاءة عملية. نحن نؤمن بأن موظفونا وشركائنا هم السبب وراء نجاح شركة شneider إلكترونيك وأن التزامنا للابتكار والتنوع والاستدامة يضمن توفير جميع خدماتنا بفاعلية لكل فرد وفي كل زمان ومكان.

Under the Patronage of  
His Highness Sheikh Jaber Al-Mubarak Al-Hamad Al-Sabah  
Prime Minister of the State of Kuwait

Society of Petroleum Engineers

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## إيني الإيطالية تتفق على تمديد عقد توريد الغاز الجزائري إلى ٢٠٢٧

قالت مجموعة النفط والغاز الإيطالية إيني إنها عززت علاقاتها مع سوناطراك الجزائرية عبر تجديد عقد توريد الغاز الجزائري لإيطاليا حتى عام ٢٠٢٧. وذكرت إيني، التي تملك عدة أصول استكشاف وإنتاج في الجزائر، أن الاتفاق مع سوناطراك يتضمن أيضاً خياراً لتمديد التاريخ النهائي للعقد عامين إضافيين وأضافت أن الاتفاق يغطي نحو ١٥ بالمئة من الغاز الذي تستورده إيطاليا. وقال كلاوديو ديسكالزي الرئيس التنفيذي لإيني "يسعدني كثيراً تجديد عقد توريد الغاز ومستوى الشراكة الاستراتيجية مع سوناطراك". وترتبط إيطاليا بعقود غاز مهمة مع روسيا وليبيا والجزائر وهولندا، وتستورد نحو ٩٠ بالمئة من احتياجاتها للغاز وتعتمد إيطاليا أيضاً استيراد الغاز من أذربيجان حين ينتهي العمل في خط الأنابيب العابر للأدراتي.



## سبكيم والصحراء السعوديتان تسعيان لصفقات في أمريكا وأوروبا بعد الاندماج

(قال مسؤولان تنفيذيان كبيران إن الشركة السعودية العالمية للبتروكيماويات (سبكيم) وشركة الصحراء للبتروكيماويات تعتزمان استهداف استحواذات ومشاريع مشتركة في الولايات المتحدة وآسيا حين يكتمل اندماجهما وذلك بهدف توسعة نطاق السوق. وسيملك الكيان الجديد، شركة الصحراء العالمية للبتروكيماويات، إجمالي أصول بقيمة تزيد على ٢٢ مليار ريال (٥,٩ مليار دولار) ليحتل المركز الثاني بعد الشركة السعودية للصناعات الأساسية (سابك) أكبر شركة بتروكيماويات في المملكة. وقال صالح باحمدان الرئيس التنفيذي للصحراء والذي سيكون الرئيس التنفيذي للكيان الجديد "دمج سبكيم والصحراء سيخلق شركة بتروكيماويات رائدة متكاملة ذات مركز تنافسي أفضل في السعودية وعالمياً". وقال عبد الله السعدون الرئيس التنفيذي لسبكيم، والذي سيتولى منصب مدير العمليات في الشركة الجديدة "تتفقد فرصاً في الأسواق الآسيوية والأمريكية سواء لاستحواذات أو نمو ذاتي أو مشاريع مشتركة، ومحلياً نقوم باستكشاف الفرص أيضاً".

(قال مسؤولان تنفيذيان كبيران إن الشركة السعودية العالمية للبتروكيماويات (سبكيم) وشركة الصحراء للبتروكيماويات تعتزمان استهداف استحواذات ومشاريع مشتركة في الولايات المتحدة وآسيا حين يكتمل اندماجهما وذلك بهدف توسعة نطاق السوق. وسيملك الكيان الجديد، شركة الصحراء العالمية للبتروكيماويات، إجمالي أصول بقيمة تزيد على ٢٢ مليار ريال (٥,٩ مليار دولار) ليحتل المركز الثاني بعد الشركة السعودية للصناعات الأساسية (سابك) أكبر شركة بتروكيماويات في المملكة. وقال صالح باحمدان الرئيس التنفيذي للصحراء والذي سيكون الرئيس التنفيذي للكيان الجديد "دمج سبكيم والصحراء سيخلق شركة بتروكيماويات رائدة متكاملة ذات مركز تنافسي أفضل في السعودية وعالمياً". وقال عبد الله السعدون الرئيس التنفيذي لسبكيم، والذي سيتولى منصب مدير العمليات في الشركة الجديدة "تتفقد فرصاً في الأسواق الآسيوية والأمريكية سواء لاستحواذات أو نمو ذاتي أو مشاريع مشتركة، ومحلياً نقوم باستكشاف الفرص أيضاً".



## إدارة الطاقة ترفع توقعاتها لنمو إنتاج النفط الأمريكي في ٢٠١٩ و٢٠٢٠

قالت إدارة معلومات الطاقة الأمريكية إن من المتوقع أن يرتفع إنتاج الولايات المتحدة من النفط الخام ١,٤٩ مليون برميل يومياً في ٢٠١٩ إلى ١٢,٤٥ مليون برميل يومياً في المتوسط، مقارنة مع زيادة قدرها ١,٤٢ مليون برميل يومياً في التقديرات السابقة. كما توقع إدارة معلومات الطاقة أن يزيد الإنتاج ٩٣٠ ألف برميل يومياً في ٢٠٢٠ إلى ١٣,٣٨ مليون برميل يومياً، وهي زيادة أكبر مما أشارت إليه التقديرات السابقة.

## مراجعة استراتيجية مصر مركزاً إقليمياً للطاقة في صورتها النهائية

رأس المهندس طارق الملا وزير البترول والثروة المعدنية اجتماعاً بمقر الوزارة للجنة الحكومية المشكلة بقرار رئيس مجلس الوزراء لمشروع تحويل مصر إلى مركز إقليمي للطاقة والتي تضم في عضويتها ممثلي عدد من الوزارات والجهات المعنية بالدولة. وأوضح المهندس طارق الملا أن الاجتماع شهد مراجعة استراتيجية المشروع في صورتها النهائية بعد إعدادها وصياغتها خلال الفترة الماضية وإرسالها لكل الوزارات والجهات المعنية لدراساتها وابداء الملاحظات عليها تمهيداً لإتمامها، لافتاً إلى أن اعتماد هذه الاستراتيجية سيتزامن معه تحديد المهام والاعمال الموكلة للجهات الحكومية المختلفة وفقاً للخطة التنفيذية التي تتضمنها الاستراتيجية لترجمتها بصورة فعلية على أرض الواقع. وأشار إلى أن القيادة السياسية تولى أهمية كبيرة ومتابعة مستمرة لمشروع تحويل مصر إلى مركز إقليمي للطاقة الذي يسهم بقوة في تعظيم دور مصر الإقليمي سياسياً واقتصادياً ودعم دورها كلاعب رئيسي في مجال الطاقة في المنطقة خاصة وأن مصر تمتلك بنية أساسية قوية في مجال الغاز والبترول ومؤهلة حالياً للبدء في تعظيم استخدامها لتحقيق مردود اقتصادي كبير فضلاً عن قابليتها للتطوير والتوسع وإضافة قدرات جديدة في مراحل تالية لتعظيم العائد منها لصالح الاقتصاد المصري.

## جاسكو تخطط لإنتاج ٢ مليون طن من مشتقات الغاز من مجمع غازات الصحراء الغربية ومصنع استخلاص البوتاجاز بالعامرية



قال المهندس ياسر صلاح رئيس شركة جاسكو ان مجمع غازات الصحراء الغربية ومصنع استخلاص البوتاجاز بالعامرية نجح فى إنتاج ٢٦٦ مليون طن من المنتجات منذ بدء تشغيل المجمع وإشراف شركة جاسكو على إدارة وتشغيل مصنع بوتاجاز العامرية قام خلالها المجمع والمصنع بدعم السوق المحلى بحوالى ١٠ مليون طن من البوتاجاز بالإضافة إلى إمداد معامل تكرير البترول بالأسكندرية بحوالى ١٥ مليون طن من المتكثفات ، كما قام مجمع غازات الصحراء الغربية بتصدير حوالى ٥ مليون طن من البروبان التجارى للأسواق العالمية ، ودعم صناعة البتروكيماويات بحوالى ١٠ مليون طن من خليط الإيثان/بروبان.

خلال الربع الأول من عام ٢٠٢٢ ، وذلك بتكلفة استثمارية قدرها ١٤٥ مليون دولار للحفاظ على مستوى إنتاج المشتقات للوفاء باحتياجات شركتى سيدبك وإيثيدكو من خليط الإيثان / بروبان ، بالإضافة إلى إنتاج البروبان والذى سيتم تدفيعه إلى مصنع إنتاج البروبيلين الجارى إنشاؤه ضمن خطة توسعات شركة سيدبك ، مع استمرار دعم السوق المحلى بمنتج البوتاجاز .

وأوضح رئيس جاسكو أنه جارى العمل فى مشروع نقل غازات حقل ريفين إلى مجمع غازات الصحراء الغربية ومصنع بوتاجاز العامرية والسذى يتضمن خط غاز قطر ٣٠ بوصة بطول ٧٠ كم وخط غاز قطر ١٨ بوصة بطول ٥ كم بالإضافة إلى ضاغطين لرفع ضغط الغاز قبل دخوله للمجمع ، ومن المخطط الانتهاء من تنفيذ خطوط الغاز نهاية العام الجارى، والضواغط

وأشار صلاح إلى أنه من المخطط خلال عام ٢٠١٩ إنتاج ٢ مليون طن من مشتقات الغاز من المجمع والمصنع منها حوالى ١٨ مليون طن من مجمع غازات الصحراء الغربية وتشمل ٩٨٠ ألف طن خليط الإيثان / بروبان ، و ٤٥٠ ألف طن من البوتاجاز ، و ٢١٥ ألف طن من البروبان بالإضافة إلى ٨٣ ألف طن من المتكثفات .

## باستثمارات تقدر بحوالي مليار دولار . . الملا يوقع اتفاقية ترخيص استغلال خام الفوسفات بهضبة أبوظطور

وقع المهندس طارق الملا وزير البترول والثروة المعدنية اتفاقية ترخيص استغلال خام الفوسفات بهضبة أبوظطور بالصحراء الغربية مع الهيئة المصرية العامة للثروة المعدنية وشركة فوسفات مصر على مساحة ٢٢٠ كيلومتر مربع. وأكد الملا أن هذه الاتفاقية تأتى كنتيجة حقيقية لخطة العمل التى تنتهجها الوزارة فى تطوير قطاع الثروة المعدنية والاستغلال الأمثل لخام الفوسفات والانطلاق نحو آفاق التصنيع فى هذا المجال وتعظيم القيمة المضافة للثروات الطبيعية وتحقيق مساهمة فعالة فى تنمية المجتمعات. من جانبه وأشار رئيس شركة فوسفات مصر إلى أن حصولها على تراخيص الاستغلال يمثل حجر الزاوية فى دفع مشروعات التصنيع والإنتاج فى منطقة الوادى الجديد حيث يعتمد مشروع إنتاج حامض الفسفوريك الجديد على توافر خام الفوسفات وتبلغ طاقته الإنتاجية حوالى مليون طن سنويا وباستثمارات تقدر بحوالى مليار دولار موضعا ان هذه الصناعات تعتمد فى تطبيقها على مبدأ التكامل بين التعدين والتصنيع ، كما أن هذه التراخيص تعد ضماناً من قبل المساهمين فى شركة الوادى للصناعات الفوسفاتية والأسمدة له بانع الأثر فى طمأنه، من خلال إنشاء مناطق صناعية جديدة وزيادة فرص الاستثمار فى نطاق المحافظات التى تحتاج مثل هذه المشروعات من أجل تنمية مواردها وتحسين المستوى المعيشى بها. ووقع الاتفاقية عن هيئة الثروة المعدنية الجيولوجى أسامة فاروق رئيس الهيئة وعن شركة فوسفات مصر المحاسب خالد الغزالي رئيس الشركة بحضور الجيولوجى فكرى يوسف وكيل وزارة البترول لشئون التعدين.

## دعم الوقود بمصر يهبط نحو ٢٨% في أول ٩ أشهر من ٢٠١٨-٢٠١٩

قال وزير البترول المصري طارق الملا لوكالة رويترز إن تكلفة دعم الوقود بلغت ٦,١ مليار جنيه (٣,٥ مليار دولار) في الأشهر التسعة الأولى من السنة المالية الحالية ٢٠١٨-٢٠١٩ التي تنتهي في ٣٠ يونيو. بذلك تكون تكلفة دعم المواد البترولية قد تراجمت نحو ٤٥, ٢٨ بالمئة مقارنة مع ٨٤ مليار جنيه في الفترة ذاتها من السنة المالية الماضية ٢٠١٧-٢٠١٨.

يبلغ الدعم المقدر للمواد البترولية في ميزانية ٢٠١٩-٢٠١٨ نحو ٨٩ مليار جنيه، بينما تستهدف مصر في السنة المالية المقبلة دعما بنحو ٥٢,٩ مليار جنيه

## لجنة الطاقة توافق على ميزانية البترول ٢٠١٩ / ٢٠٢٠



وافقت لجنة الطاقة والبيئة بمجلس النواب، برئاسة المهندس طلعت السويدى، على مشروع موازنة الهيئة العامة للبترول للعام المالى ٢٠٢٠/٢٠١٩.

واستعرض أمين عثمان، ممثل الهيئة، تفاصيل خطة الهيئة خلال العام المالى الجديد، مشيراً إلى أن هناك طفرة فى الغاز الطبيعى المصدر إلى الخارج، حيث من المتوقع أن يصل خلال العام ٢٠٢٠/٢٠١٩ إلى ١٢ مليون طن بقيمة قدرها ٢ مليار دولار (٣٦ مليار جنيه) مقابل ٤ ملايين طن بقيمة قدرها ٥٨٩ مليون دولار (١٠ مليارات جنيه) بموازنة العام المالى السابق ٢٠١٩/٢٠١٨.

وقال ممثل الهيئة، إن إجمالى ما سيؤؤل إلى الخزانة العامة للدولة من الهيئة العامة للبترول خلال العام المالى الجديد سيصل إلى ٩١,٣ مليار جنيه.

ولفت عثمان، إلى عدد من الاعتبارات التى تم مراعاتها عند وضع الموازنة، فى مقدمتها إعداد تقديرات الموازنة طبقاً لقانون الموازنة العامة للدولة رقم ٥٣ لسنة ١٩٧٣ ولائحته التنفيذية ومنشور إعداد الموازنة للسنة المالية ٢٠٢٠/٢٠١٩

من الخامات والمتكثفات والغاز الطبيعى والمسال من المصروفات والإيرادات بنفس القيمة لعدم تضخيم الموازنة ولتلافى ملاحظات مراقبى الجهاز المركزى للمحاسبات.

ونوه عثمان، عن أنه تم إدراج مبلغ قدرة ٢٤ مليار جنيه قيمة خسائر فروق عمله ضمن أعباء وخسائر وذلك طبقاً للمعيار المحاسبى المصرى رقم ١٣ أثر التغيرات فى أسعار صرف العملات الأجنبية، وكذلك ملاحظات مراقبى الجهاز المركزى للمحاسبات.

الوارد من وزارة المالية، وتم إعدادها الموازنة وفقاً للخطة الكمية المتمثلة فى خطة الإنتاج (الزيت الخام، المتكثفات، الغازات الطبيعية، البوتاجاز)، خطة التكرير، خطة الاستهلاك والنقل والتوزيع.

وأشار ممثل الهيئة العامة للبترول، إلى أنه تم تقدير سعر خام برنت بنحو ٦٨ دولار /برميل، مقابل ٦٧ دولار / البرميل بالموازنة المعتمدة العام المالى ٢٠١٩/٢٠١٨، وتم حساب قيمة المنتجات البترولية المستوردة طبقاً للأسعار السارية، بالإضافة إلى استبعاد حصيلة الهيئة

## خدمات البترول الجوية تشتري

### طائرة جديدة من طراز CRJ 900

وقع اللواء يحيى حسين رئيس مجلس الإدارة والعضو المنتدب لشركة خدمات البترول الجوية، التابعة لوزارة البترول، عقد شراء طائرة جديدة من طراز CRJ 900 مع شركة بومباردير.

وتم توقيع العقود بمقر الشركة الرئيسى، وتعد تلك الطائرة هى الطائرة الثالثة من هذا الطراز والتى ستضم لاسطول الشركة خلال النصف الثانى من ٢٠١٩. وكانت وزارة البترول والثروة المعدنية قد شددت على أهمية تنفيذ الخطط التوسعية الجارى العمل بها حالياً فى مجال خدمات البترول الجوية والعمل المستمر على تطوير ورفع كفاءة أسطول الطائرات والكوادر البشرية لتعزيز دور شركة خدمات البترول الجوية كمنافس كفاء فى مجال تنظيم الرحلات الإقليمية الخارجية وتقديم خدمات متميزة للقطاع السياحى.



## بتكلفة استثمارية حوالى ٥ مليار دولار ... الملا يتابع الموقف التنفيذى لمشروعات التكرير والبتروكيمياويات

كما استمع الوزير ومرافقوه لعرض من المهندس جمال القرعيش رئيس الشركة حول الموقف التنفيذي لمشروع توسعات ميدور والذي تبلغ تكلفته الاستثمارية حوالى ٢٢ مليار دولار ويهدف لزيادة الطاقة الإنتاجية للمعمل بنسبة ٦٠٪، مشيراً إلى أن بتروجت تعمل حالياً في تجهيز أرض الموقع الذى يتم العمل على الانتهاء من وضع تصميماته الهندسية مع شركتى إبنى وتكنيب الإيطالية وتنفيذ خطة التغلب على تحديات التوسعات الجديدة وأهمها الربط بين الوحدات القائمة بالمعمل والوحدات الجديدة ،



استمع الوزير ايضا الى موقف تقدم الأعمال فى مشروع مجمع التكسير الهيدروجيني للمازوت بأسيوط الذى تنفذه شركة أسيوط الوطنية لتصنيع البترول (أنوبك) لزيادة تأمين احتياجات صعيد مصر حيث أوضح المهندس محمد بدر رئيس الشركة أن المشروع يقوم على الاستفادة من تحويل ٢٥ مليون طن مازوت ينتجها معمل تكرير أسيوط إلى منتجات عالية القيمة "سولار - نافتا - بوتاجاز" وغيرها من المنتجات باستثمارات حوالى ١٩ مليار دولار.

والبولي إيثيلين وتصدير الفائض للخارج لتوفير العملات الأجنبية لسد احتياجات السوق ودعم الاقتصاد القومى ، كما أشار إلى تقدم الأعمال فى مشروع التوسعات الجديدة "مجمع مشتقات البروبيلين" والذي تبلغ تكلفته الاستثمارية حوالى ١٢ مليار دولار لإنتاج ٥٠٠ ألف طن بروبيلين و٤٥٠ ألف طن بولى بروبيلين ويأتى استثماراً للزيادة الحالية فى إنتاج الغاز الطبيعى والتكامل المثمر بين شركات وكيانات قطاع البترول .

تفقد المهندس طارق الملا وزير البترول والثروة المعدنية موقف تنفيذ المشروعات والتوسعات الجديدة بشركتى سيدى كرىر للبتروكيمياويات "سيدبك" والشرق الأوسط لتكرير البترول "ميدور".

واستمع الوزير ومرافقوه لشرح من الكيميائى مسعد القصبى رئيس شركة سيدى كرىر للبتروكيمياويات حول ما قامت به فى توفير احتياجات السوق المحلى من منتجات الإيثيلين

## وزير البترول يلتقى شباب برنامج بناء قدرات العاملين بمجال السلامة والصحة المهنية

ونشر الوعى الكامل بها بين كافة المستويات الوظيفية ، مشيراً الى انه من المقرر ان يكون توافر الخبرات والعمل خلال المسار الوظيفى فى مجال السلامة والصحة المهنية هو احد الاشتراطات التي لا غنى عنها لتولى الوظائف القيادية فى قطاع البترول .

فى مجال الامن والسلامة والصحة المهنية قادرة على مواكبة التغيرات والتطورات السريعة التي يشهدها هذا المجال فى صناعة البترول والغاز بصورة متلاحقة .

وشدد الملا على الاهتمام بتعميق ثقافة السلامة على جميع المستويات داخل شركات قطاع البترول

عقد المهندس طارق الملا وزير البترول والثروة المعدنية لقاء موسعاً مع الشباب الملتحقين ببرنامج بناء القدرات للعاملين بمجال السلامة والصحة المهنية فى قطاع البترول فى ختام المرحلة الأولى من البرنامج والذي تم اطلاقه فى اطار تنفيذ رؤية مشروع تطوير وتحديث قطاع البترول للإستثمار فى تنمية الكوادر البشرية ودعم الكفاءات الشابة .



شارك فى اللقاء ٧٤ مهندساً وكيميائياً شاباً من إدارات السلامة والصحة المهنية بمختلف شركات قطاع البترول والذين التحقوا بالبرنامج بعد اجتيازهم الاختبارات المؤهلة للانتحاق به وانتهوا من المرحلة الأولى ضمن عدة مراحل يشملها البرنامج للمساهمة فى اعداد كوادر شابة

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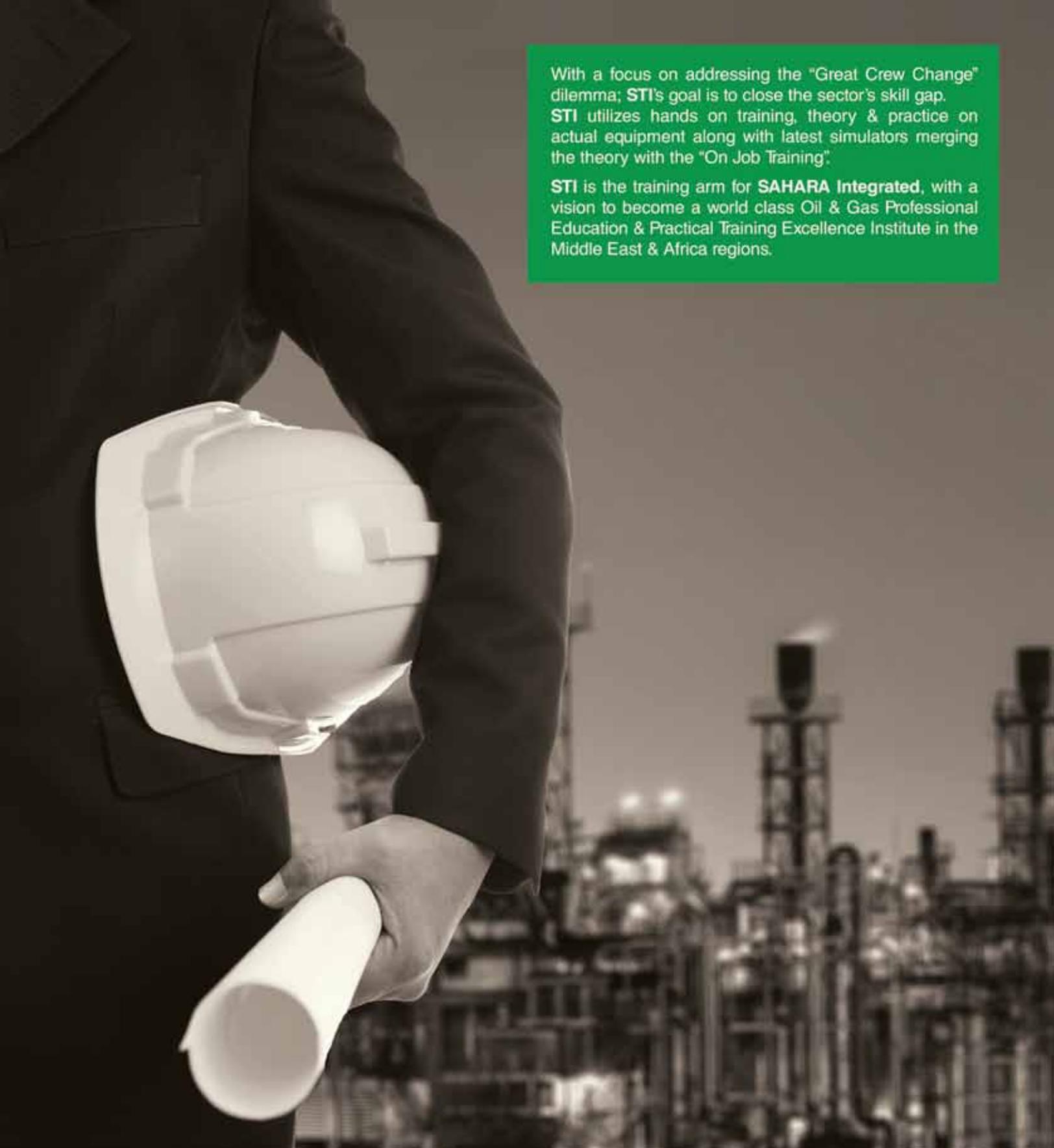
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