

Petroleum Today

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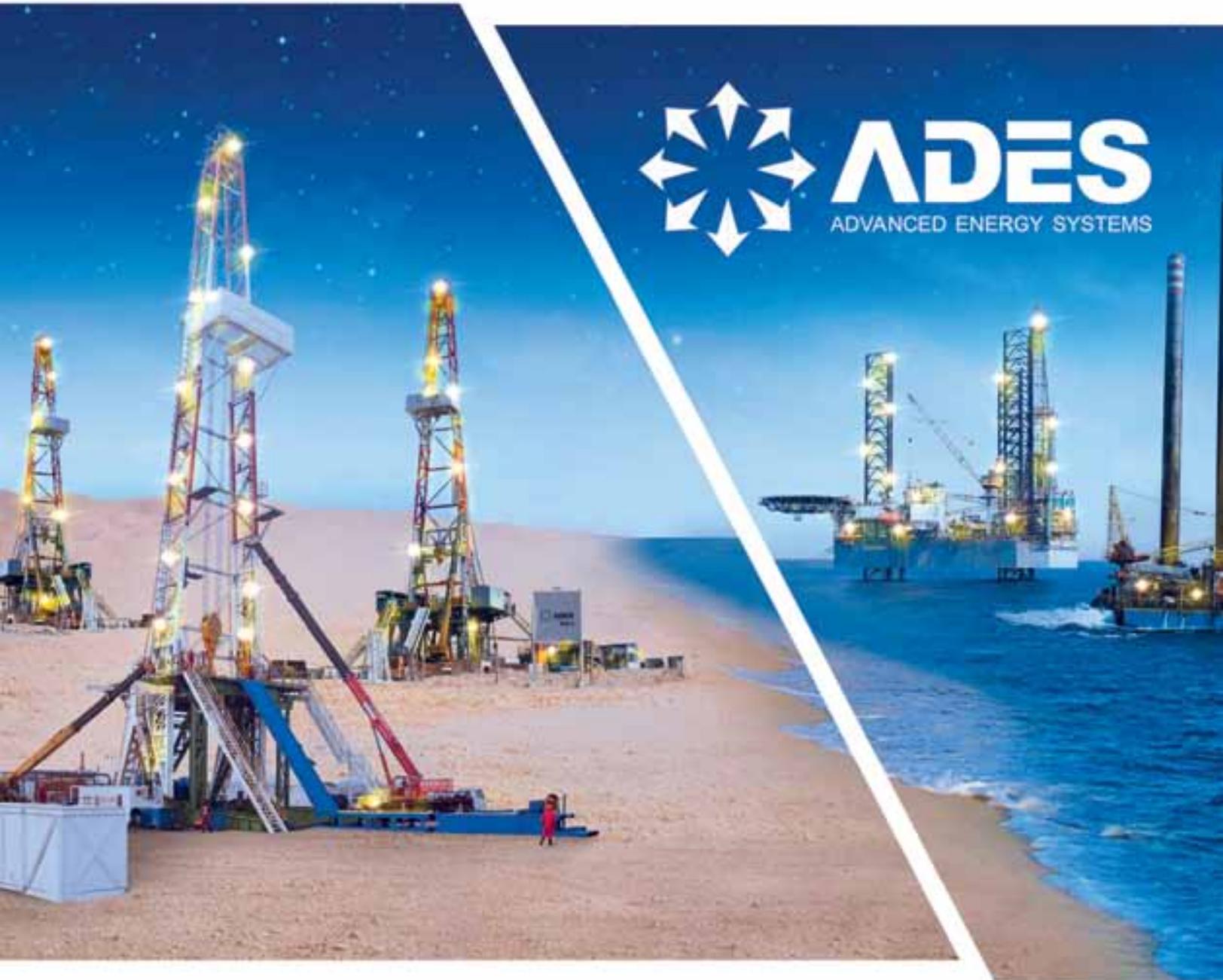
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M: +2-010-062-44-952

Marketing & Client Care Manager Eng. Mohamed Fathy

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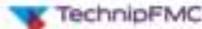
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Successful steps for Egypt in the gas market

Egypt is rapidly moving towards the completion of its large project to be a regional hub for the trading of energy in the Eastern Mediterranean region. Recently, Egypt was able to form an international alliance to support this policy and to help achieve the mega project, the Eastern Mediterranean Forum, which brings together the major players of gas production in the region with participation from United States and the European Union.

The newly formed entity strives to “create a regional gas market that serves the interests of its members by ensuring supply and demand, optimizing resource development, rationalizing the cost of infrastructure, offering competitive prices, and improving trade relations.” The EMGF will “take advantage of existing infrastructure and develop further infrastructure options to accommodate current and future discoveries.”

Egypt did not stop at that point, but it is accelerating the process of exploiting gas from the huge gas fields in the Eastern Mediterranean region, the most important of which is the giant Zohr field, which currently recorded 2.7 BCFD and that is about 4 months ahead of schedule recent gas discoveries, which Egypt is keen to put same on the production map as possible.

Egypt has also accelerated the development and modernization of the infrastructure, through which it aims to support its project, which will change many concepts in the region as well as huge projects in the field of petrochemicals to increase the added value and make the most of Egypt’s natural gas wealth by setting up urgent plans to maximize such benefits, such as Compressed natural gas cars conversion as well as projects to bring natural gas to homes for domestic use

The Egyptian political leadership, headed by His Excellency President Abdel Fattah El-Sisi, has had a vision since the beginning of the new discoveries. His Excellency ordered the re-mapping of the Egypt natural gas situation and speeding up of the implementation of large projects, through which Egypt was able to put its feet steadily in the Eastern Mediterranean as the largest gas producer in the region.

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

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The Egyptian Company For Marketing
29th Abd El - Aziz Gawesh st. Lebaanon Sq.,
Mohandeseen Giza - Egypt
Tel. : +202 33050884
Mob.: 01006596350
Mob.: 01000533201
E-mail: petroleum.mag@gmail.com
E-mail: mohamed@ petroleum-today.com
www.petroleum-today.com

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EGYPT NEWS

Egyptian-American Partnership in the Energy Sector

Eng. Tarek El Molla, Minister of Petroleum and Mineral Resources signed a Memorandum of Understanding (MoU) with Mr. Rick Perry, U.S Secretary of Energy, on bilateral cooperation in the energy sector by bolstering and strengthening collaboration among the Ministry of Petroleum and Mineral Resources (MoP), the Ministry of Electricity and Renewable Energy (MERE) and the Departments of Energy of the United States (DOE) in various energy domains.

The MoU includes a number of cooperation areas, one of which is to facilitate sharing of technical knowledge, skills, advice, expertise, technology transfer, as well as cooperation in the various fields of the conventional and unconventional oil and gas industry especially in Upstream, Downstream, Midstream, in addition to supporting cooperation in the domains of Clean Coal Technology and



Bio fuel. Furthermore, the MoU will support cooperation in the fields of energy efficiency, renewable energy, green building technologies, and smart Grid. The agreement includes encouraging collaboration of technical experts at the research departments related to the Participated Ministries in both parties in achieving mutual beneficial and exchanging the energy scientific and technical information, and conducting workshops, meetings, as well as study tours, training and job opportunities in both countries.

Inking an MoU with Halliburton International to Develop Young Cadres Capacities



Minister of Petroleum and Mineral Resources Tarek El-Molla held a session of talks with Mr. Joe Rainy, President of Halliburton International for the Eastern Hemisphere and the delegation accompanying him, where the discussed the joint cooperation between the two sides and means of increasing it over the coming period. During the talks, the two sides discussed cooperation in the field of applying the latest advanced technologies to enhance the petroleum drilling activities efficiency and improve field productivity, along with supporting occupational safety and health activities at production sites. Minister of Petroleum and Mineral Resources Eng. Tarek El-Molla and Chief Executive of Halliburton International also witnessed a Memorandum of Understanding signature to develop the capacities of human cadres within the program of training young and medium leaders in the context of the Petroleum Sector's Modernization Project.

The agreement was signed by Osama Mobarez, the Minister's Undersecretary for Technical Office Affairs and Colby Fuser, Vice President of Halliburton Company in Egypt & Libya, in the presence of Geo. AshrafFarag, First Undersecretary of the Ministry for Agreements and Exploration, Eric Carrie, Executive Vice President of Halliburton for Global Business Lines, Ahmed Kenawi, Senior Vice President of Halliburton for the Middle East and North Africa Region.

Celebrating the Joint Cooperation Project among the Ministry, the EU and the Port of Antwerp, Belgium

Eng. Tarek El Molla, Minister of Petroleum and Mineral Resources and Mr. Ivan Surkos Ambassador of the EU in Cairo, witnessed the joint workshop in energy domain, celebrating the joint cooperation project among the Ministry of Petroleum, the EU and the Port of Antwerp, which is the second- largest seaport in the European continent, in light of the Ministry of Petroleum's vision to get acquainted with the International developed models, and benefit from what has been achieved in the domain of provision, trade and energy supplies exchange, through petroleum ports, to bolster the national project's implementation for transforming Egypt into a regional oil and gas hub.

The event was attended by Dr. Sahar Nasr, Minister of Investment and International Cooperation, Ms. Sibille de Cartier, Ambassador of Belgium in Cairo, Mr. Laurens Westhoff, Ambassador of the Netherlands in Cairo, Kristof Waterschoot, CEO of Port of Antwerp, Eng. Abed Ezz El Regal, CEO of EGPC, Eng. Osama Al-Bakly, President of EGAS Geo. Ashraf Farag, Undersecretary of the Ministry for Agreements and Exploration & Osama Mobarez, Undersecretary of the Ministry's Technical Office and a number of the Petroleum Sector's companies' Chairmen.

In his speech, Eng. Tarek El Molla asserted the high-level strategies between Egypt and the EU in energy domain, results in positive outcomes, in light of both parties' commitment for joint work to accelerate implementing the MOU signed between both sides last year in April. He pointed out to the successful model of the Egyptian- EU cooperation in energy domain between the Ministry of Petroleum and Port of Antwerp to develop bunkering activities in Egypt and to incorporate Egypt's plans for a low Sulphur fuel hub. The Minister clarified "the EU is one of our most significant strategic partners with an active and guiding role. Their support was clear from the very beginning to transfer Egypt to an oil and gas hub, starting with providing the needed grants for high-level strategies, development as well as bolstering major projects, technical support, sharing expertise and developed global experiences, till oil and gas industry".



WintershallDea Increases Its Investments in Egypt After the Merger

Eng. Tarek El Molla, Minister of Petroleum and Mineral Resources, during his speech on the occasion of completing merger procedures of the German companies Dea and Wintershall Holding, creating WintershallDea, in the presence of Mr. Mario Mehren, Chairman of the Board and CEO of WintershallDea, Eng. Sameh Sabry, the Managing Director of WintershallDea in Egypt, and a number of leaderships of the Ministry of Petroleum, EGPC and Holding Companies as well as CEO's of Egyptian and international petroleum companies operating in Egypt, asserted that the merger resulted in WintershallDea, one of the major companies in Europe operating in the Upstream domain, moreover, its operations in Egypt reflects its positive view of the investment climate. He pointed out that such merges achieve significant gains for the Egyptian oil and gas industry as well as pumping more investments. He highlighted the Company's interest to pump investments globally of about \$800 million during the current and next year.

For his part, Chairman of the Board and CEO of WintershallDea asserted that such merger reflects the company's confidence in the Egyptian Petroleum Sector and the available investment opportunities. He pointed out that the company prepared major plans to expand its operations in Egypt, aiming at reaching its production to about 800 thousand barrels of oil equivalent per day in all its operations worldwide.

Mr. Mario praised the radical changes in Egypt's petroleum industry, a significant improvement in the investment climate and achieving positive results in various petroleum activities, witnessed by the Egyptian petroleum industry.

The CEO of the company in Egypt affirmed that Dea has a long history with Egypt and a 45 years partnership, as well as the merger of both companies aimed at expanding triple its operations in Egypt and pumping large investments in the Egyptian petroleum industry.

ARAB & INTERNATIONAL NEWS

Iraq and Kuwait sign a contract with a British company to prepare a study to develop joint oil fields

Iraq has agreed with Kuwait to appoint British energy advisory firm ERC Equipoise to prepare a study for the development of joint border oilfields, the Iraqi oil ministry said.

A statement from the ministry said. Under the contract, ERC Equipoise will conduct technical studies, such as examining reservoirs, for the Ratqa and Safwan fields.

There are several oilfields in the border area between Iraq and Kuwait, most prominently Ratqa, which is a southern extension of Iraq's giant Rumaila field. The study will set out the technical and legal mechanisms to invest in oilfields shared by the two countries.

Production from cross-border oilfields has long been a source of tension between Iraq and Kuwait, which are members of the Organization of the Petroleum Exporting Countries.

In the build-up to Iraq's 1990 invasion of Kuwait, Baghdad accused Kuwait of drilling wells that crossed the border and pumped oil from Iraqi territory. Kuwait denied the charge.



U.S. shale oil output to rise to record 8.77 mln bpd in September – EIA

U.S. oil output from seven major shale formations is expected to rise by 85,000 barrels per day (bpd) in September, to a record 8.77 million bpd, the U.S. Energy Information Administration said in its monthly drilling productivity report.

The largest change is forecast in the Permian Basin of Texas and New Mexico, where output is expected to climb by 75,000 bpd, to 4.42 million bpd in September, an all-time high. That was also the biggest increase forecast for the basin since April.

Output in North Dakota and Montana's Bakken region is expected to edge higher by 3,000 bpd to a record 1.44 million bpd, the data showed.

Production increases in the Permian and Bakken have been at the forefront of a shale boom that helped make the United States the biggest oil producer in the world, ahead of Saudi Arabia and Russia.

Output increases in the Permian, the country's largest basin, had slowed as independent oil producers cut spending on new drilling and completions and focus more on earnings growth.



Trump's Oil Sanctions Leave Russian Exporters \$ 1 Billion Richer

U.S. President Donald Trump's sanctions against Iran and Venezuela have inadvertently increased demand for a Russian brand of crude oil, boosting revenues for the nation's exporters.

Russian oil companies received at least \$905 million in additional revenues between November and July, data compiled by Bloomberg show. The calculation is based on difference between the Urals spread to the Brent benchmark over the period compared to the five-year average.

The sanctions added to a jump in demand for Russian crude in the wake of output cuts from the Organization of Petroleum Exporting Countries and their partners. As a result, Russia's Urals blend of crude has started to regularly trade at a premium to Brent.

"There is a shortage of competing heavier, sourer crude right now as a result of sanctions on Iran and Venezuela, but also because of OPEC+'s current production cut agreement.

China CNPC extends Oman oil production contract for 15 yrs



China National Petroleum Co., or CNPC, has extended a contract for developing an aged oilfield in Oman for another 15 years, the Chinese state oil and gas group said on Thursday

In 2002, CNPC won a 50 percent stake in Oman Block 5, an oilfield that covers an area of 992 sq kms (383 square miles) but was producing only 700 tonnes of crude oil a day after more than a decade of over-rapid drilling, said CNPC. Using technology such as horizontal water injection widely applied in China, CNPC raised output at Block 5 to 2.62 million tonnes in 2018, or about 52,400 barrels per day (bpd).

- Production at the block reached 1.33 million tonnes in the first half of this year
- Oman, a member of the Organization of the Petroleum Exporting Countries (OPEC), produced an average of 978,400 bpd of oil 2018

Morocco, Nigeria Review Progress of Gas Pipeline Project

A Moroccan delegation has flown to Nigeria to attend a meeting to assess the progress of the major Nigeria-Morocco Gas Pipeline project.

During the meeting, the Moroccan delegation along with experts from international oil and gas companies reviewed the progress of the gas pipeline project. The assessment is



part of the Moroccan-Nigerian determination to deliver the project in "record time."

Members from Nigerian National Petroleum Corporation (NPPC) and Morocco's National Office of Hydrocarbons and Mines (ONHYM) discussed the importance of the key project, emphasizing that it is designed to develop the regional integration of West Africa.

ONHYM Director-General Amina Benkhadra, who led the Moroccan delegation, also held talks with the President and the new Director-General of the NNPC, Mallam Mele K. Kyari. The delegation along with experts and NPPC members stressed that the pipeline will develop the delivery of gas to the population and industrial units, while also enabling Nigeria to export its abundant gas resources.

“SAHARA Technical Institute - STI Advanced courses by Jonathan Bellarby”



SAHARA Technical Institute – STI; an Oil & Gas professional education & practical training excellence institute; is planning to run the most advanced courses in the industry by Mr. Jonathan Bellarby, who is an author of “Well Completion Design” book published by Elsevier - Over 8,000 copies sold. The following courses which will be held the next period are comprehensive and fully prac-

tical technology workshops to train the nominated participants in the aspects related to “Advanced Completion Engineering Workshop” from the period of 8th to 12th of September-2019 at renaissance hotel fifth settlement in Cairo, “HPHT Completions Workshop” from the period of 27th to 31st of October-2019 at renaissance hotel fifth settlement in Cairo and “Tubing and Casing Design” from the period of 15th

to 19th December-2019 at renaissance hotel fifth settlement in Cairo.

These workshops are targeting to increase and build up participants’ overall knowledge and understanding towards the essential areas of field development, through maintaining company’s production and solving the most sophisticated operational shortfalls using the up to date and the most practical engineering technologies.



Saudi Aramco Says It’s ‘Ready’ for I.P.O. as It Reports Half- Year Earnings

The oil giant Saudi Aramco is prepared for an initial public offering, its chief financial officer said, reviving the prospects for a long-awaited listing that could be a major step toward diversifying Saudi Arabia’s economy.

The state-owned company has been moving toward greater financial transparency as it courts international investors, and the suggestion that it was ready for a public offering came during its first-ever earnings call. The company, the world’s largest oil producer, said that it had generated net income of \$46.9 billion in the first half of the year.

Khalid al-Dabbagh, Saudi Aramco’s senior vice president for finance, strategy and development, said the timing of

a public offering would be up to the “shareholder” — the Saudi government — and offered scant insight into when such a listing would happen.

“The company is ready for the I.P.O.,” Mr. al-Dabbagh told analysts on the call, adding that Saudi officials would “announce it depending on their perception of what will be the optimum market conditions

He also discussed a newly signed memorandum of agreement with Reliance Industries of India, saying that it would enable Aramco to examine Reliance’s books and that a potential deal between the two companies was “at the very, very early stages.”



BP second-quarter profit of \$ 2.8 billion above expectations

A strong rise in oil and gas production helped BP (L:BP) offset weaker crude prices and refining profit to again beat profit expectations, boosting its shares.

BP's second quarter contrasts with Total (PA:TOTF) and Norway's Equinor (OL:EQNR), which posted sharp earnings drops, and builds on a steady recovery after deep cost cuts since the 2014 downturn, project start-ups and last year's \$10.5 billion purchase of BHP's U.S. shale assets.

«At the midpoint of our five-year plan, BP is right on target,» Chief Executive Bob Dudley said in a statement.

Although BP's dividend remained unchanged at 10.25 cents per share, its Chief Financial Officer Brian Gilvary said the company would consider raising it towards the end of the year as proceeds from asset sales come through and debt is reduced.

BP's results beat expectations for 10 quarters in a row, analysts at Bernstein said.

«Strong volume growth from accretive barrels and seamless execution remains underappreciated,» said Bernstein, which has an «outperform» recommendation on the stock.

PETROBEL announces new gas discovery in Nile Delta area

The Egyptian petroleum ministry announced a new gas discovery in the Nile Delta area with an estimated production of 20 million cubic feet per day, which would help the North African country become a regional energy hub.

According to a ministry statement, the discovery was made by Petrobel-Belayim, an Egyptian petroleum company which manages gas and oil projects in the Nile Delta area.

The drilling of the exploratory well in El Qaraa area of the Nile Delta, which began in May, resulted in the discovery of gas-carrying layers.

According to the ministry, Petrobel-Belayim is accelerating the development to put the well on stream once it is linked to production facilities.

The figure came a few months after officials said the country's natural gas output had grown to 6.6 billion cubic feet per day after an increase in production at Zohr field, the largest natural gas discovery ever made in the Mediterranean.

Egypt aims to become a regional gas hub for the trade of liquefied natural gas after major gas discoveries in recent years, including the Zohr gas field which holds an estimated 30 trillion cubic feet of gas.

Last September, EGYPT announced self-sufficiency in natural gas consumption with the gradual increase in local production and the plan to develop major gas fields in the Mediterranean in cooperation with giant international companies

Eni, ADNOC Close Landmark Strategic Partnership Agreements in Refining and Trading

Eni and ADNOC, Abu Dhabi's National Oil Company, said they closed their strategic partnership, announced in January, through which Eni acquired a 20 percent equity interest in ADNOC refining. The partners – which

include Austria's OMV – also set up a new trading joint venture.

ADNOC Refining refines in excess of 922,000 barrels per day of crude at its Ruwais and Abu Dhabi based refineries. The transaction is one of the world's largest-ever in the refining business and reflects the scale, quality and growth potential of ADNOC Refining's assets. Ruwais is the 4th biggest single-site refinery in the world and is the focus of further expansion and integration to develop the world's largest single-site refining and petrochemicals complex. Expanding its refining and petrochemical operations at Ruwais supports ADNOC as it evolves to become a leading global downstream player. The final cash price is approximately \$3.24 billion.



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Contact Persons:

Khaled abdeltawab
General Manager
012 2364 0198
K.tawab@fms.com.eg
admin@fmseg.com

Mahmoud Rashwan
Service Quality
01211122491
qhse@fmseg.com

Mahmoud Hamed
lab workshop specialist
01211122495
ls@fmseg.com

Sayed Ahmed
Financial Accountant
01211122494
f1@fmseg.com
fm@fmseg.com

Mazen Mohammed
Business & Development
01211122496
op@fmseg.com

Anawr ashraf
Senior engineer
01273773385





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Wireless Sensor Node

KCF Technologies has developed vibration sensors that attach to several components of a pumping unit. The firm analyzes the data from its headquarters and, when issues are detected, its technicians alert field crews if a pumping unit should be proactively taken out of service for maintenance. Historically, the industry has not monitored fracturing equipment in this way.

According to KCF, coupling its sensor technology with a centralized monitoring center has resulted in an 80% reduction in unplanned downtime due to machine failures. “That means 80% of the dangerous fires—both figuratively and literally—that would have started, never did,” said Ben Lawrence, the vice president of KCF.

In the past few years, the firm has seen its monitoring technology used on 90 fracturing fleets across the US. US Well Services, which has KCF sensors on all its fleets, found in the first 6 months of using them that it reduced nonproductive time to 19 minutes a day.



[Fig-1 KCF wireless sensor node]

Supply Chain Finance Platform



[Fig-2 Oildex Supply Chain Finance Platform]

Oildex, a provider of financial automation solutions for the oil and gas industry, announced the availability of its Supply Chain Finance Program through its Open Invoice automated payables platform. Open Invoice Supply Chain Finance is enabled through Cass Information Systems, a strategic partner of Oildex. Cass will pay suppliers quickly, less a competitive early pay discount, allowing the operator to

maintain or even extend its payment terms. In addition, there is an opportunity for the operator to also receive a financial rebate based on the transactions. The Oildex model is delivered on the same proven, secure Open Invoice platform that many operators and suppliers currently use to process invoices and payments. In addition, it works with all major enterprise resource planning and information management systems.

Multi-Spectrum Flame Detector



[Fig-3 3M's Multi-Spectrum Flame Detector]

3M's MultiFlame DF-TV7-T is designed to respond to unwanted hydrocarbon fires, while maintaining a high degree of false alarm immunity. The device offers a wide range of output options and is suitable for use in SIL 3 applications. The unit may be interfaced directly with a wide range of fire panels, controllers, and PLCs. The detector is fully configurable using a tireless handheld terminal like a TLU, or optionally via HART. Time delays, sensitivity, and output configuration are all set up through the TLU.

Vibration Protection System



[Fig-4 Trelleborg Tri-Strakes Combi vibration suppression system]

The Tri-Strakes Combi from Trelleborg is a vortex-induced vibration suppression system for risers and pipelines. It consists of overlapping and interlocking moldings with three-start helical strakes to provide a triangular or trapezoidal strake profile. The system is temperature resistant up to 140°F, and it is available with anti-foul coating or paint designed to prevent the build-up of marine growth, particularly in shallow water environments.



[Fig-5 Self-contained power system supplying compressed air, electricity, and hydraulics.]

Self-Contained Power System

MGB Oilfield Solutions had invented a multipurpose power system developed by MGB Oilfield Solutions enables companies to decouple tractor-trailers with the pressure pumps, while providing several other support functions. The broader concept is to take independent systems—electric generators, pneumatic air compressors, and hydraulic pressure sources—and replace them with a single source of energy.

With this technology, pumping units can be delivered to a job site and their tractors rerouted for other work elsewhere. This reduces the spread's headcount and footprint on a pad by up to 35%.

Besides the trailers, this approach to depopulating a crowded job site extends to generator sets and the mechanics' trucks used to supply compressed air to wireline or pumping crews.

A single MGB power unit can provide enough electricity or hydraulics for the entire fracturing spread, but for the sake of redundancy, MGB deploys two power units to each site. One powers the left bank of pumps along with the data van, while the other powers the pumps to the right side of the wellhead and the sand conveyer system.

Fire-Resistant Material

Trelleborg's next-generation Firestop material is lighter and thinner than the company's first-generation release. It is a passive fire-protection material used to protect personnel and equipment by minimizing fire escalation, providing time to evacuate people, close down critical equipment, and for responders to gain control of a fire. The certified rubber-based material protects structures from exceeding critical temperature limits. Its dampening, noise-reducing, flexible nature can also protect equipment from vibrations, collisions, and explosions.



[Fig-6 Trelleborg's next-generation Firestop material]

Oceaneering launches digital asset inspection system



[Fig-7 Oceaneering digital asset inspection system]

Oceaneering International, Inc., has launched the Inform Inspect digital asset inspection system, which aims to streamline non-destructive testing (NDT) and inspection management. The tablet-based technology equips technicians, supervisors and managers

with the ability to deliver seamless, end-to-end inspection – from planning to review – with standardized data captured into a cloud-based system. Information is instantly available for analysis, enabling more effective planning and optimization of personnel time onsite. Hardware is rated for

onshore and offshore applications and is certified for use in hazardous areas. Field trials have demonstrated conservative productivity gains of up to 30% in end-to-end inspection times, and the speed and scope of the technology provides major safety benefits, ultimately enabling personnel to spend less time onsite in hazardous environments. The software can also be integrated with a computerized maintenance management system (CMMS) and integrity management systems to increase efficiencies and provide a holistic approach to inspection and integrity management. The Inform Inspect system is the first of a series of innovative solutions Oceaneering will launch under its Inform suite.

The technology will be available through Oceaneering's Asset Integrity business, which provides integrity, management, analytics, maintenance and risk management, conventional and advanced non-destructive testing (NDT) and specialist inspection solutions.

Well-SENSE launches miniature optical gauge

The Aberdeen-headquartered company has developed its own exclusive technology in partnership with optical sensor company Fibos in Toronto, Canada. Believed to be one of the most compact Bragg grating based gauges on the market, at around only 10 mm³, it can be combined with other sensors and incorporated inside Well-SENSE's smallest FLI probe. This means that it can be deployed in narrow access wells to log data during descent and capture bottom hole temperature and pressure over time. It is long-lasting and can be left in the well with the FLI system for days, or even months, and will stream real-time, live well data along the optical fiber back to surface.

Well-SENSE CEO Craig Feherty, said: "Typically, optical sensors have been combined into complex well surveillance systems which are costly and deliver sophisticated levels of capability. Systems run in wireline require either batteries or electrical power and also need specialist equipment to be deployed, which inflates operational costs.



[Fig-8 Well-SENSE optical gauge]

"To counter this for our clients, we have developed a miniaturized optical pressure-temperature gauge, utilizing advanced Bragg grating technology, which will combine seamlessly with our simple, low cost, disposable FLI system. The technology is sophisticated and sensitive to suit high value production logging operations, whilst the flexibility and simplicity of the FLI

system allows it to access places in the well that wireline sensors physically can't at a much lower cost.

"The introduction of this pressure and temperature sensor as part of our technology roadmap is an exciting addition to our FiberLine solution. We have further optical developments in the pipeline to expand the range for our customers – so watch this space."

3D logging-while-drilling technology

Halliburton has introduced 3D reservoir mapping, a new logging-while-drilling (LWD) capability that provides a detailed representation of subsurface structures to improve well placement in complex reservoirs. Three-dimensional inversion, an advanced reservoir mapping process, reveals overlooked features such as faults, water zones, or local structural variations that can considerably alter the optimal landing trajectory of a well. In geosteering applications, the technology maximizes contact with oil and gas zones while mapping the surrounding formation to identify bypassed oil, avoid drilling hazards and plan for future development.

"This unique technology moves beyond layered reservoir models to full 3D characterization of the reservoir, enabling accurate well placement," said Lamar Duhon, V.P. of Sperry

Drilling. "In complex formations, visualizing data in a 3D environment helps operators significantly enhance reservoir understanding to drive better drilling decisions and maximize asset value."

The 3D capability originates from downhole measurements taken by the EarthStar ultra-deep resistivity service, an LWD sensor that identifies reservoir and fluid boundaries up to 225 ft (68 m) from the wellbore. This range more than doubles the depth of detection of other industry offerings.

An operator in the North Sea recently deployed the 3D capability in a field with a long history of production and water injection. The data allowed the operator to better assess the movement of reservoir fluids and visualize fault boundaries, which supported more accurate well placement and increased production.



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Oil & Gas Regulations in Egypt: Fundamentals legal aspects for the Liquefied Natural Gas (LNG)

Egypt is considered as one of the two countries in North Africa - along with Algeria - that have a hub of liquefied natural gas (LNG) infrastructure. Egypt used to have both LNG importing and exporting facilities; however, the country recently gave up on one of its importing facilities in its way to gain back its position as an LNG exporting hub.

Egypt has two LNG plants that include a total of three LNG trains, with combined capacity of around 610

billion cubic feet per year (or 12.7 million tons per year).

The main producers or exporters of LNG having liquefaction, storage and export facilities are the Spanish Egyptian Gas Company (SEGAS) Liquefied Natural Gas (LNG) Complex in Damietta, Northern Egypt.

Egyptian Liquefied Natural Gas (ELNG) sponsored with diversity of the mega up-streamers; Shell, Petronas and Total. ELNG is considered one of the most renowned companies specialized

in liquefied natural gas on both the Egyptian and international levels. EGAS and EGPC are also a significant equity shareholders in these LNG projects.

The plant is a two-train facility on the Mediterranean coast with a capacity of 10 billion cubic meter per year (bcm/y) to export the Egyptian LNG to Europe, Asia Pacific and the US. ELNG acts as a tolling facility with the upstream suppliers paying processing fees for the liquefaction service. The ELNG

can accommodate an expansion of other trains with potentially different ownerships and sources of feed gas.

Achieving SELF-SUFFICIENCY in 2019

Egypt became a pioneer towards being a remarkable LNG exporter, for the European market, after overcome the challenges of 2013-2015-. The ownership of the exceptional technology of liquefaction infrastructure, running at full capacity, and resuming natural gas discoveries particularly known as “Nour” and “Zuhr”; also the future are promoted by two promising deals:

- First, signing of memorandum of understanding on 23 April 2018 for the strategic partnering in the energy field between Egypt and European Union.
- Second, Egypt signed an agreement with Cyprus, in September 2018, to establish a direct subsea gas pipeline that will transport gas from Cyprus’ Aphrodite gas field to Egyptian liquefaction plants then re-exporting LNG to European countries. The agreement sets the regulatory framework for the exchange of natural gas between the two countries and aims to facilitate the export of natural gas from Cyprus to Egypt through the establishment and operation of a direct sea pipeline from the exclusive economic zone of Cyprus, to natural gas liquefaction plants in Idku and Damietta in Egypt.

Recent regulatory framework applied to LNG

1. Gas Market Activity Law No. 196 of 2017 amended by the law no. 13 of 2019, and also the Prime minister

executive decree no. 239 of 2018 for regulating the activities of the GAS market, with a particular definition for the LNG industry, the activities related to it in terms of storage and pipelines before the transmission to the ports and sites, and all procedures relating to its restoration.

The government as a regulator is taking the key role in monitoring industry players to ensure the government objectives and establishing the rules and also incentives to develop the market across the value chain.

2. Suez Canal Authority Circular No. 7 / 2017 – Concerning LNG Tankers operating between the American Gulf, the Arabian Gulf, India and its eastern ports.

The decree is encouraging more LNG vessel’s owners and operators to transit the Suez Canal, the Suez Canal Authorities (SCA) have decided to grant LNG tankers in loaded or in ballast operating between the American Gulf, the Arabian Gulf, India and Eastern ports the following Suez Canal tolls discounts:

1. The Arabian Gulf and west of India up to port of Kochi. A reduction of 30% of Suez Canal normal dues.
2. East of port of Kochi, India west of India and up to the port of Singapore, a reduction of 40% of SC normal dues.
3. Singapore and its eastern ports, a reduction of 50% of SC normal dues.

The tanker has no right to benefit from other rebates (reduction) granted by SCA to LNG tankers, beside that rebate (reduction) subject of this circular.

LNG Sale & Purchase Agreements (SPAs):

In most cases, LNG supply contracts take the form of long-term sales and purchase agreement which can be renewed or extended. However, before concluding such contracts, some aspects must be taken into consideration; such as the integrated commercial structure. The producer of natural gas is the mostly the owner of the LNG export facilities as well as the upstream. The revenues are derived from the sale of LNG under the (SPAs) entered into by the participant or the integrated project company, which usually take the structure of JV company.

The price indexation is one of the significant conditions that determine the payment terms. Such a pricing mechanism is markedly different from one found in traded gas markets as know by market areas or “hubs”. In UK, the index of pricing called national balancing point (NBP), but other oil index price could take a leverage in the long term contracts if co-exist. In Asia-Pacific the pricing is rely on the Japanese custom cleared crude (JCC) as used in long term agreements as well. Some other players are using the indexation of Coal such as Italy, Netherland and Norway.

Other terms and conditions as transportation and discharge, level of commitment, volume of cargo, Cargo diversions, transfer of title and risk, and gas feedstock are on top of discussion while negotiating these type of agreements.

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EASTERN MEDITERRANEAN GAS FORUM: A PORTENT OF A NEW RULE IN MIDDLE EASTERN GEOPOLITICS?



The Eastern Mediterranean Gas Forum (EMGF), which aspires to create a regional gas market, appears to be paving the way toward a new age of energy dependence and cooperation. However, old tensions and hidden agendas might undermine its potential and fuel new economic and political conflicts.

The Inauguration

The energy ministers of Egypt, Cyprus, Greece, Israel, Italy, Jordan, and Palestine gathered in Cairo on January 14th, 2019 to inaugurate the Eastern Mediterranean Gas Forum (EMGF).

The newly formed entity strives to “create a regional gas market that serves the interests of its members by ensuring supply and demand, optimizing resource development, rationalizing the cost of infrastructure, offering competitive prices, and improving trade relations,” among other things.

It also strives to provide a platform for improved cooperation between the gas exporters (Cyprus, Egypt, and Israel), countries of transit (Greece and Italy), and gas importers. “The forum will support producing countries by enhancing their cooperation with consumer and transitory parties in the region,” according to a statement by Egypt’s Ministry of Petroleum. The EMGF will “take advantage of existing infrastructure and develop further infrastructure options to accommodate current and future discoveries.”

Successive Evolvement

Upon the invitation of H.E. Mr. Tarek El Molla, the Minister of Petroleum and Mineral Resources of the Arab Republic of Egypt, the second ministerial meeting to consider the establishment of the East Mediterranean Gas Forum (EMGF) was convened in Cairo on July 25th, 2019.

The meeting was attended by the Cypriot, Greek, Israeli, Italian, Palestinian Ministers of Energy and the representatives of the Jordanian Minister of Energy, as the founding members of the Forum, hereinafter referred to as the Founding Ministers. The meeting was also attended by the US Secretary of Energy as a special guest, the Director General of Energy of the European Union and representatives of France and the World Bank.

The Founding Ministers decided to establish the EMGF in Cairo that fully respects the rights of the Members over their natural resources in accordance with international law. To this effect, they endorsed the Rules & Procedures governing the work of the High Level Working Group that was mandated to execute the activities of the Forum. They also affirmed their commitment to consider elevating the Forum into becoming an international organization, and to work diligently to



discuss and finalize its general concepts in accordance with the agreed framework.

In order to allow for private sector participation, the Founding Ministers also approved the establishment of the Gas Industry Advisory Committee and highlighted the importance of its role contributing to the Forum’s activities.

Building on the outcomes of the first ministerial meeting, the Founding Ministers highlighted their determination to continue cooperating towards realizing the objectives of EMGF with a view to fostering regional energy cooperation, in line with international law, to capitalize on the region’s resources and pave the way for a sustainable regional gas market. The Founding Ministers discussed ways of cooperation to gradually develop gas infrastructure corridors to expedite monetization of the existing East Mediterranean gas reserves, utilize the existing infrastructure and develop infrastructures to facilitate the exploitation of future discoveries, as well as to leverage the private sector expertise in this regard.

The Ministers agreed to convene the next Ministerial Meeting during the second half of January 2020, in Cairo



The Ministers and heads of delegations expressed their sincere gratitude to the Arab Republic of Egypt and to President Abdel Fattah El Sisi for hosting the meeting and the warm hospitality and excellent organization.

A New Spirit of Cooperation

As more of the recently developed undersea gas production comes online, Egypt, Israel, Cyprus, Greece, Jordan, and Italy are increasingly inclined to coordinate their efforts to optimize the potential of this energy source. The members of the EMGF hope to transform the region into a major energy hub.

For Israel, however, the forum represents more than just another body governing economic cooperation. Tel Aviv's membership in the EMGF is a landmark development because it is an overt collaboration between Israel and several Arab countries, in stark contrast to past history. For the past 70 years, Israel has been isolated in the Middle East, making its membership in the newly-formed body a major geopolitical win.

Yuval Steinitz, Israel's energy minister, was the first Israeli minister to visit Egypt since the fall of President Hosni Mubarak and the Arab Spring uprisings in 2011. "Israel exporting natural gas to the Arab world and also to Europe—this is something that sounded like a dream or a fantasy just 10 or 15 years ago," Steinitz told Reuters.

The improving relations between Cairo and Tel Aviv are without a doubt one of the highlights of the meeting: "I think [the EMGF] is the most significant economic cooperation between Egypt and Israel since the signing of the peace treaty 40 years ago," said Steinitz.

Egypt was the first Arab country to make peace with

Israel in 1979. While the two countries have frequently cooperated on matters of security since that time, they have been discreet about it to avoid infuriating Palestinian supporters in Egypt. Nevertheless, warmer ties are creating new economic opportunities for the former enemies.

The Tides of Change

Offshore drilling in the Eastern Mediterranean has a rather short history. The first offshore gas discovery was made in 1969 in Egypt (34 km northeast of Alexandria). A new wave of interest developed after a handful of modest gas discoveries occurred in 1999 and 2000 at shallow depths west of the coastal town of Ashkelon in Israel and Gaza Strip. These successes accelerated exploration efforts resulting in three large scale discoveries: Tamar and Leviathan fields in 2009 and 2010 offshore Israel and Aphrodite in 2011 off the coast of southern Cyprus (RC). The next big discovery came in 2015 with the giant Zohr gas field in a deep offshore zone of the Mediterranean, off the coast of Egypt.

And yet, the region remains one of the world's most under-explored or unexplored areas and has good prospects for additional gas, and perhaps oil, reserves. Two assessments by the United States Geological Survey (USGS) in 2010—one on the Nile Delta and Mediterranean Sea sectors of Egypt, the other on the Levant Basin Province—indicated almost 10 trillion cubic meters of technically recoverable undiscovered gas potential in the region. To put this into context, Algeria's current proven gas reserves is about half of it.

The above mentioned discoveries, the USGS assessment as well as the eye-opening resource potential estimates by Cypriot and Lebanese officials, have not only significantly augmented hopes for large natural gas potential in the East Mediterranean but also made it a fast rising favorite for international oil and gas companies.

Egypt is a country with an old history of oil and gas production. Egypt enjoyed total energy independence and could export gas through two liquefaction terminals and two pipeline pipelines linking it to Israel and Jordan. Declining production and booming domestic demand have made the country recently a net gas importer. Recent discoveries, particularly the Zohr field in 2015 -with 845 bcm of gas in place it is considered as the largest ever gas discovery in the Mediterranean Sea- has radically changed the picture. Ongoing fast-track development program foresees first

gas deliveries at the end of 2017, and an estimated peak production of 27 bcm/y by 2019-20. This success, which is regarded as a geological game changer, is stimulating new exploration activity from various major international companies in the country

In Israel, the Tamar field, estimated to contain 282 bcm of natural gas, started production in March 2013. Today, 60% of the electricity generated in Israel comes from gas produced from Tamar.

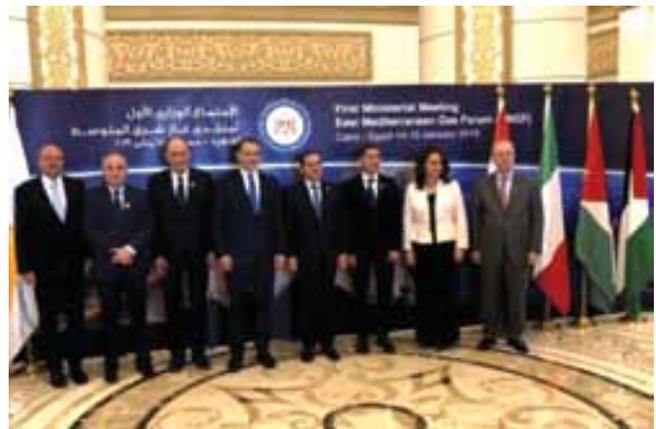
Developments of the Leviathan field -resource potential estimated at 621 bcm- and others have been jeopardized or unable to proceed as a result of numerous political and regulatory obstacles such as the allocation of discovered resources into exports and domestic market, taxation and administrative uncertainties, and an anti-trust ruling stemming from the concerns that the two leading companies active in the Israeli upstream sector constitute monopoly.

Progressively these uncertainties have been lifted and with the approval of the Supreme Court in May 2016, the so-called Natural Gas Framework has been established.

The removal of regulatory uncertainties and risks following the approval of the new gas sector framework by the government paved the way for a resurgence of exploration activity. In November 2016 the Ministry of Energy has launched Israel's first offshore bidding round for licensing new exploration areas, with closing date for bid submission July 2017. Results are expected in 2018. Meanwhile, in February 2017, the Final Investment Decision has been taken for the first stage development the Leviathan field. The plan has a proposed budget of \$3.75 billion with a capacity of 12 bcm per year of gas starting by yearend 2019.

In Cyprus, three offshore bidding rounds were held to date. Negotiations with the selected bidders for the offshore hydrocarbon exploration licenses for three blocks offered in the last bidding round in 2016 were completed in early March 2017. Approval by the government is expected soon. Despite successful bidding rounds, exploration activities so far have been rather disappointing. To date only one discovery (Aphrodite field, estimated to hold 128 bcm of gas, in December 2011) was made

The development program for the field has been presented in June 2015, with an estimated production capacity of 8.2 bcm/yr. The investment, excluding the cost of building a pipeline, is estimated to be around \$4 billion. The final investment decision is hoped to be taken soon. If everything



goes well, start of commercial flows from the fields to domestic and foreign markets are expected in 2020. The discovery of new fields would be a game changer for Cyprus, since the Aphrodite field alone does not allow the set-up of any export infrastructure and export plans.

In the other countries of the region perspectives have been less optimistic.

In Lebanon, extensive seismic research conducted over 80% of the country's exclusive economic zone shows promising prospects, but the country's first offshore licensing round, launched in the early 2013, was postponed 5 times because two decrees related to delineation of offshore blocks and model agreement to carry out the licensing round could not be approved by the government due to political chaos and institutional vacuum.

Finally these decrees were ratified in January 2017 and hence the process has been launched. Bids for 5 blocks (three of which are in the disputed zone with Israel) are due by mid-September. Agreements with winners are scheduled to be signed in November.

In Syria in December 2013, the government signed an exploration agreement with the Russian company SoyuzNeft-eGaz. Nevertheless with the conflict still raging, no progress has been registered and any development seems unrealistic.

Turkey has drilled 13 wells in the Mediterranean waters between 1966 and 2016 but no commercial quantity of hydrocarbons was discovered however, exploration activity in terms of seismic acquisition in the area has been increased recently.

To reduce its dependence on Russian gas, the European Union is encouraging the formation of new delivery routes, such as the East Med gas pipeline. The \$7 billion project, expected to be ready in six to seven years, is poised to trans-

form the region into a crucial energy hub. This could decrease Moscow's influence over the European energy market and thwart Tehran's ambitions to use Syria as a gateway to the eastern Mediterranean.

Fueling Future Cooperation vs Fueling Future Conflict

The Cairo Declaration highlighted the view of gas discovery as an impetus for "greater mutual understanding, and awareness of common energy challenges and interests." In the past decade, these countries scrambled to settle their maritime disputes regarding their exclusive economic zones (EEZ) and to agree on the best route to export their gas; however, the results were mixed and reflected regional geopolitical trends.

Tension over Eastern Mediterranean gas reached its peak last year in two hot spots, the Lebanon-Israel and Cyprus-Turkey maritime disputes, but has gradually receded since, mostly due to US diplomatic engagement. The blue line that was drawn in 2000 between Lebanon and Israel was not extended into the sea, which is causing a dispute over 860 square meters of international waters. The US-mediated talks between the two countries reached a stalemate last year, but managed to defuse the tensions. Moreover, Turkish naval forces intervened in the Eastern Mediterranean in February 2018 to halt gas drilling by Italy's ENI Company, which had announced a significant gas discovery in southwestern Cyprus. Ankara is objecting to the development of Cyprus's natural gas resources unless Turkish Cypriots would be able to share the financial benefits or until the island is reunited. Northern Cyprus has its own administration but is subject to Ankara's control. However, Israel and Egypt and the United States have backed Cyprus's efforts to explore its offshore gas. Last year, when Ankara described Egypt's EEZ accord with Cyprus as "null and void," Cairo made an unusual rebuke by asserting that the Turkish claim is "rejected and would be confronted."

Forming the EMGF sends a subtle message to Turkey and Iran that a potential regional alliance is emerging to counter them.

These two developments last year were key in shaping the parameters of the EMGF. There have been no indications that Lebanon, Israel, Turkey, or Cyprus would be keen to



escalate the situation, and US diplomacy has been successful in at least defusing these tensions—since resolving them seems improbable. However, forming the EMGF sends a subtle message to Turkey and Iran that a potential regional alliance is emerging to counter them. Most importantly, it is worth noting that the key members of the EMGF (Cyprus, Egypt, and Israel) share the same animosity toward Turkey, a fact that played a part in forming this energy triangle.

Transformational role

The year 2019 will be a transformational one for Eastern Mediterranean gas as the area's countries are expected to begin the offshore drilling process. However, the hopes of regional cooperation in the past few years have faded as the EMGF emerges. It is hard to imagine how Cyprus would be motivated to become united and how Israel and Lebanon could resolve their border dispute. While Mediterranean gas could encourage cooperation between certain aligned countries, it seems to reinforce existing dynamics and re-fuel long-standing tensions. If not managed effectively, the EMGF might become a geopolitical missed opportunity with domestic and regional politics shaping the energy game plan—and not the other way around.

The following three factors are just a few of the many realities that could limit the future success of the forum.

First, the natural gas reserves in the Eastern Mediterranean region (which are estimated to constitute less than 1 percent of the world's total reserves) cannot compete with traditional gas powers such as Russia, Norway, and Qatar.

Second, the prohibitive cost of transporting gas could motivate Eastern Mediterranean countries to limit their trading to each other or other countries in the region.

Last, the founding members chose to call the EMGF a "forum," denoting a more flexible structure, instead of an "organization" to retain the ability to change their trading or market strategies whenever necessary.

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 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.

Very Long Step-out Subsea Umbilical Fast-Track Design Approach based on Zohr Experience

By: Sameh Elsabbagh, *Enppi*; Hesham Elkhafif, *Petrobrel*

Abstract
Design of deepwater Subsea Control & Umbilical Systems is a challenging process subject. Challenges are emerging from subsea flow assurance ever demanding requirements as well as control and data transmission implications through long step-out. Zohr project Accelerated Start-up Phase FEED design adopted a Centre Control Platform (CCP) to accommodate the chemical injection, power & control Topsides facilities feeding and controlling subsea equipment at different drill centres through umbilical network. Subsea control is based on enabling multiplexed electrohydraulic Subsea Production Control System (SPCS) with Fiber Optic (FO) communication. Control of each drill centre is independent based on segregated power and data transmission scheme. The development adopted tight schedule due to the significance to country economics.

Chemical Injection and control with related data transmission through very long step-out umbilical has demonstrated to be a complex job in terms of assuring reliable connection of the CCP with subsea equipment located about 160km far away from the CCP. This complexity is merited to tight coupling between SPCS, umbilical system and installation engineering. Also, the heavy impact of failure downtime attributed to production loss along with increasing cost of intervention has significant footprint on every design aspect.

The current paper highlights a Fast-Track parallel design approach for very long step-out subsea development based on Zohr project achievements. With the tight schedule and massive amount of material involved in umbilical

manufacturing (i.e. 2.2 millions meter cables, 2 million meter of tubes, and 2.7 million meter of fillers), any change after umbilical purchase order issuance will have significant impact on project execution and will probably put the project schedule into major risk. The traditional relay-based design scheme is replaced with an approach minimising the dependency of Umbilical Design on SPCS and Installation engineering.

The criticalities include impact of power distribution/sparing scheme on electrical cables configuration and design of Umbilical Termination Assembly. Also, the work covers FO link budget design challenges, need for midway repeater and related impact on connection design between main umbilical sections. The proposed approach is supported with conservative deployment scheme to eliminate installation risks.

Finally, the paper will conclude with a summary for key aspects to be taken into consideration during FEED in case of very-long step-out projects. Very-long step-out subsea field development projects being limited worldwide, the work will be valuable reference for similar future projects as being handling technicality from project management perspective.

INTRODUCTION

Very long step-out umbilical design is challenging due to the need for edge design parameters making it unique. Also, the schedule requirements for Zohr project added an extra perspective for the challenge by adopting an overall 14 months for the umbilical from placement of Purchase Order

(PO) up to Load-Out LO from manufacturer quayside.

In the early start of the project, the challenges associated with the Main Umbilical very long step-out and the corresponding extended design cycle requirements were planned to be avoided by an initial Plan of Development (POD) calling for temporary locating the control equipment / chemical injection skids on a rental intervention vessel or FSPO in case the onshore facility and the first 26inch pipeline anticipation could not be achieved. With the adopted key design points that will be discussed and thanks to Umbilical contractor capabilities, the complete schedule for Umbilical system design and manufacturing of required umbilical lengths for Main Umbilical trunks and the infield umbilicals awarded was 14 months delivery date.

Zohr deepwater field development has been optimized as per the following points:

- Existing platform has been deleted as the schedule for the new CCP had been improved in order not to be in the critical path for the project. New CCP hosts Topsides control and chemical injection equipment needed for Zohr full field.
- Gas production lines have been optimized by increasing the RUP/plateau extension phase gas production pipelines OD from 26» to 30» which led to reduce the total required number from 6×26 » to 1×26 » plus 2×30 »
- Service line size modified from 8» to 14»
- 4 off additional wells relevant to RUP North culmination have been considered to be controlled by the same main umbilical trunk serving the first 6 off wells foreseen within accelerated production phase.

DESCRIPTION OF UMBILICAL DISTRIBUTION NETWORK

In the current development scenario, the laid Main umbilical, of 158km length, was split into two almost equal sections through an In-Line-Connector (ILC) to allow flexibility for selection of Installation vessel.

The Main umbilical serving ASU development (6 wells), Optimized RUP North (+4 wells) and relevant Subsea Control System, has the capability to supply power and communication to a total number of 24 SCMs with the following architecture:

UMBILICAL PARALLEL DESIGN APPROACH BASED ON DECOUPLING OF IMPACT ON INTERFACE REQUIREMENTS WITH PROJECT PACKAGES

Due to the significance of production start date for the country economics, a very tight schedule was adopted

through all project phases starting from FEED, detailed engineering, fabrication and installation.

The design of Umbilical was put in parallel with Project packages in order to eliminate extended time associated with the relayed design approach. An extreme care was expended to decouple effect of interface parameters between different packages by adopting worst case values / scenarios for interface parameters.

Each emerging interface was extremely scrutinized to figure-out the impact on involved packages and to identify the parameters in each package that could be improved without schedule impact. The next paragraphs will discuss some of the interfaces encountered along with solution adopted as an improvement for long step-out umbilical smooth Fast-Track Design.

CABLE CONFIGURATION FOR LONG STEP-OUT UMBILICAL

This interface between SPS and Umbilical is extremely affecting Umbilical cross section design.

Umbilical manufacturing schedule could be impacted by the selected Cable configuration where the cable configuration controls the number of paths to achieve Umbilical lay-up. The shortest schedule for umbilical manufacturing is achieved with single path lay-up.

As a rule of thumb, the number of elements to be laid-up in the umbilical shall not exceed the number of element reels that can be accommodated on planetary machine in order to be able to achieve a single path lay-up.

Though Cable configuration is strongly linked to the SPS architecture and the related Electrical/ Optical Distribution Network sparing / segregation philosophy, Cable configurations based on Electrical Quads and Multi-bundle FO cables can be adopted in an early design phase to cater for all channels / Drill centers connectivity requirements without increasing the number of elements in the Main Umbilical. Channels from different drill centers can be grouped together in the same cable in order to maintain the segregation philosophy. Tuning with the final SPS architecture can be achieved through proper FACT design which allow to the splitting of the Electrical QUADS and FO bundles into the number of needed subsea connectors.

FIBER OPTIC CABLE GRADE / ATTENUATION PARAMETER FOR LONG STEP-OUT UMBILICAL

This interface between SPS and Umbilical showed major importance and from first day there shall be a very clear Optical Power link budget. SPS Contractor adopted a design with 160km length between the Master Control

Station (MCS) and the first subsea modem based on an attenuation figure achieved in a previous project with FO cable attenuation of 0.185dB/Km. Contractual parameter of the awarded umbilical FO cable attenuation was 0.22dB/Km. The conflict appeared during the progress of the FO communication analysis while the Umbilical contractor achieved a big progress in manufacturing of FO cables (i.e Cable Drums for a total length of 44km had been manufactured out of the 160km before the conflict appeared).

It was investigated to adopt midway repeater solution. However, the ILC was in a very late stage and implementation of design modification to allow for retrievable mid-way repeater showed to have severe impact on Umbilical schedule due to optical connectors long lead time. Also the umbilical needed to be retrieved while in operation to get the modified structure supporting for retrievable repeater installed on the ILC later on which proved to be very complicated task. On a second parallel track, a conversion of UTAs design to be adopted midway was raised to allow for a future midway repeater to be connected upon need; however, this proved to delay the midway terminations and consequently the scheduled Load-Out (LO) date. On a third track, manufactured cable parameter was scrutinized and showed to be within the needed limit. FO link was extremely analyzed to secure the FO optical power budget. Manufacturing splicing and connector points that might lead to degradation of the overall cable attenuation parameter were identified and points of splicing / connection with potential optical loss were identified and further controlled. Though the FO cable attenuation parameter controlled during the ASU phase, having a step-out of about 160km is a major project risk and the best approach to adopt midway repeater – even if confirmed not needed by SPS contractor.

MIDWAY ILC VERSUS MIDWAY UTAS

The Main Umbilical length in ASU phase was about 160km. It was decided to adopt midway non-retrievable In-line-Connector (ILC) in order to divide the 160km into two nearly equal sections as a flexibility for the selection of installation vessel. The Main-umbilical being the vital link between the SPCS and chemical injection topside equipment at central control platform and the deepwater field, ILC was designed to eliminate any source of failure due to the introduced electrical and hydraulic connections. Although the ILC proved to be very reliable, it showed to be a limiting factor during the detailed engineering as it had not allowed for integration of midway repeater as described in next paragraph. Also, the ILC makeup to connect both sections of main-umbilical trunk demonstrated to be offshore critical operation as well as necessitating a standby time of more than 1 day for performing the rigging/ alignment / connections

of EL & FO connectors. This required to change the design of one ILC end had been modified to allow for subsea abandonment, wet storage and later retrievability in case the weather conditions are not suitable for an extended period of umbilical hang-off. A lot of care was performed during the scheduling of the offshore campaign to position the Main umbilical laying in a slot allowing for secured the weather window during main umbilical installation campaign.

BOLTED UTA VERSUS RETRIEVABLE UTA AND UMBILICAL SUBSEA TERMINATION INTERFACE CAPACITY

The interface between the UTA and the Umbilical Subsea Termination Interface (STI) proved not only to be dependent only on SPS and UMS contractors but also critically depending on the Installation scheme as it was affected by the type of UTA – UTA Foundation Base Interface (i.e. whether UTA frame is bolted to mudmat or is retrievable). Although the UTA Flange interface was highly rated to cater for about 800kN Tension/ Umbilical Installation load and about 300kNm Bending moment which cater for installation for UTA with Mudmat, the STI interface and the Bend restrictors were limited to 100kNm bending moment which was found to be non-satisfactory for both 1st & 2nd end UTA installation. 1st end UTA deployment limitation was due to that center of Gravity of the UTA with Mudmat is misaligned with the lifting points causing a high bending moment tending to rotate the UTA during the *Transfer / uprighting* from vertical to horizontal position. 2nd end UTA was due to the weight of the BR elements itself. The breaching of STI & BR elements capacity was due to that the installation analysis was done with a very conservative assumption of no usage of installation aids. 1st end UTA installation bending moment could be reduced by attaching a big clump weight to the front padeye and uprighting by adjusting the vessel offset in a better controlled manner. This would highly reduce the applied moment during both upending and landing. 2nd end UTA installation bending moment could be reduced by applying buoyancy module to carry out the weight of the BR elements and limit the Bending moment. The usage of installation aids was decided to be kept as a contingency during offshore to assure extreme integrity of equipment while deploying. Many installation cases were considered and complete graphs of the Bending moment were developed to get control on the variation of the Bending moment at different steps along the Umbilical starting from the UTA interface flange.

After the interface being thoroughly investigated, the mitigation adopted to solve criticality of this interface at a late stage was to upgrade the STI and BR elements capacity. Capacity of STI was upgraded by either changing the bolts

or adopting welding at critical points as applicable. BR elements thickness was increased to cater for 240kNm bending moment instead of 100kNm. The lead time needed for both STI and BR elements did not impact termination activities and the overall schedule was successfully preserved.

Although bolted UTA-Mudmat system was reducing the number of installation activities, the bolting of the UTA frame to Mudmat proved to be complicated operation consuming a lot of offshore time and necessitating an extended weather window to avoid umbilical fatigue in sagebend. As a conclusion retrievable UTA designs were adopted for next phases for the purpose of decoupling the UTA-Mudmat system design from Umbilical and Installation details. With the same target, independent from whether the UTA

– UTAFB interface is bolted or retrievable UTA, a string of BR elements with different bending moment requirements shall be adopted allow for high bending moment capacity at the interface with UTA as a rule of thumb.

CONCLUSION AND RECOMMENDATIONS

As highlighted above, during the course of Zohr project there were solved challenges and achieved design improvements. This gained experience is worth to be considered in future projects for very long step-out Umbilical system FEED. Accordingly, a summary of interrelated design parameters is provided showing the scope of impact on other parameter. Following this list, Design capacity, interfaces decoupling and flexibility during project execution could be verified with overall schedule reduction.



Figure 1—Updated development Scheme

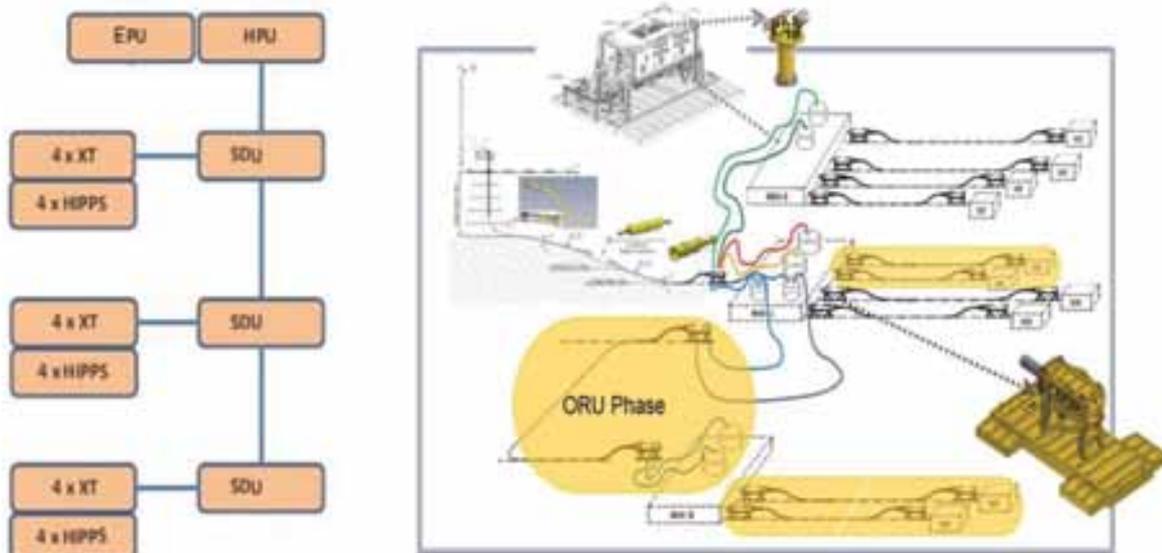


Figure 2—Subsea Control System ASU + ORU development



Figure 3—Umbilical Lay-up process

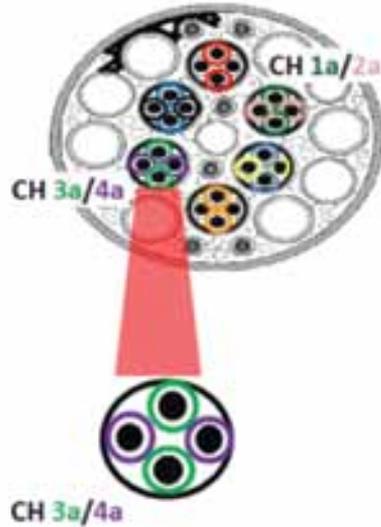


Figure 4—Cable configuration used in Zohr RUP phase allowing decrease of number of elements in the Main umbilical

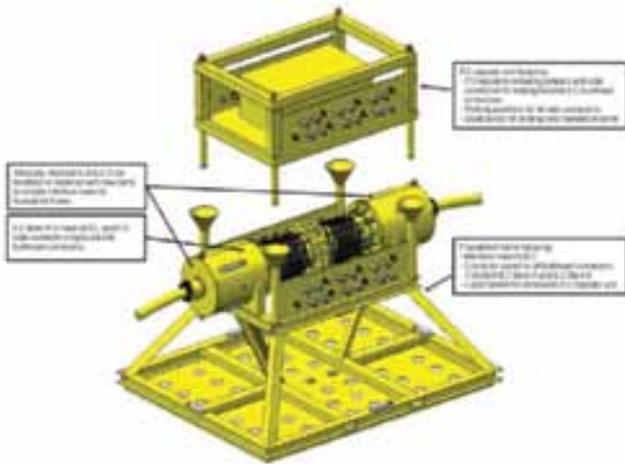


Figure 5—ILC needed modification for retrievable Midway repeater

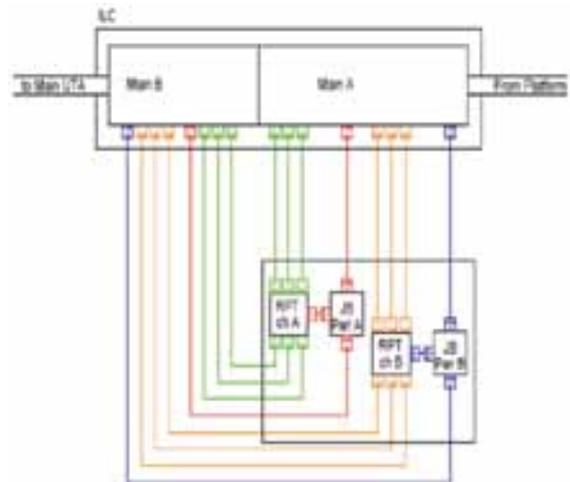


Figure 6—ILC midway repeater connectivity

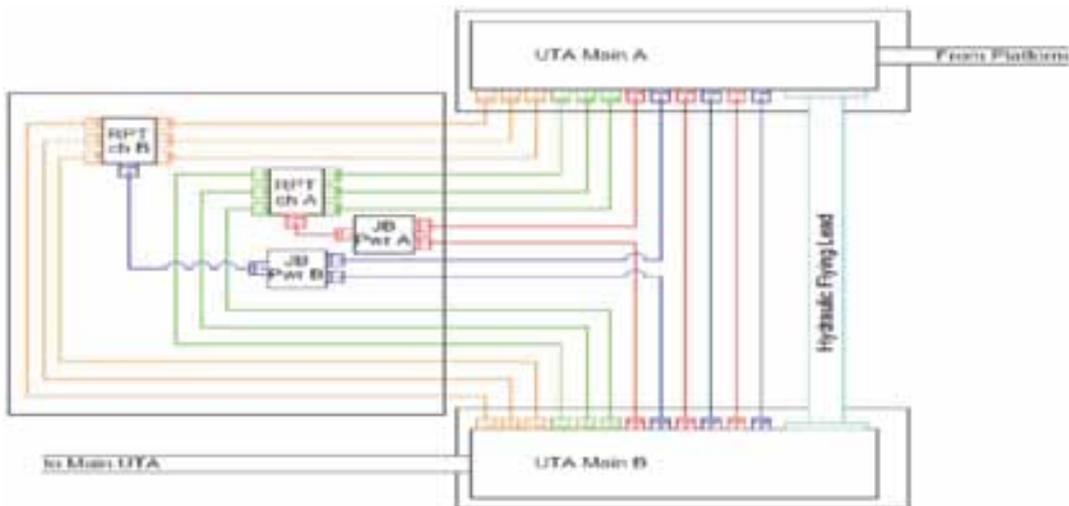


Figure 7—Midway repeater by changing over to Midway UTAs

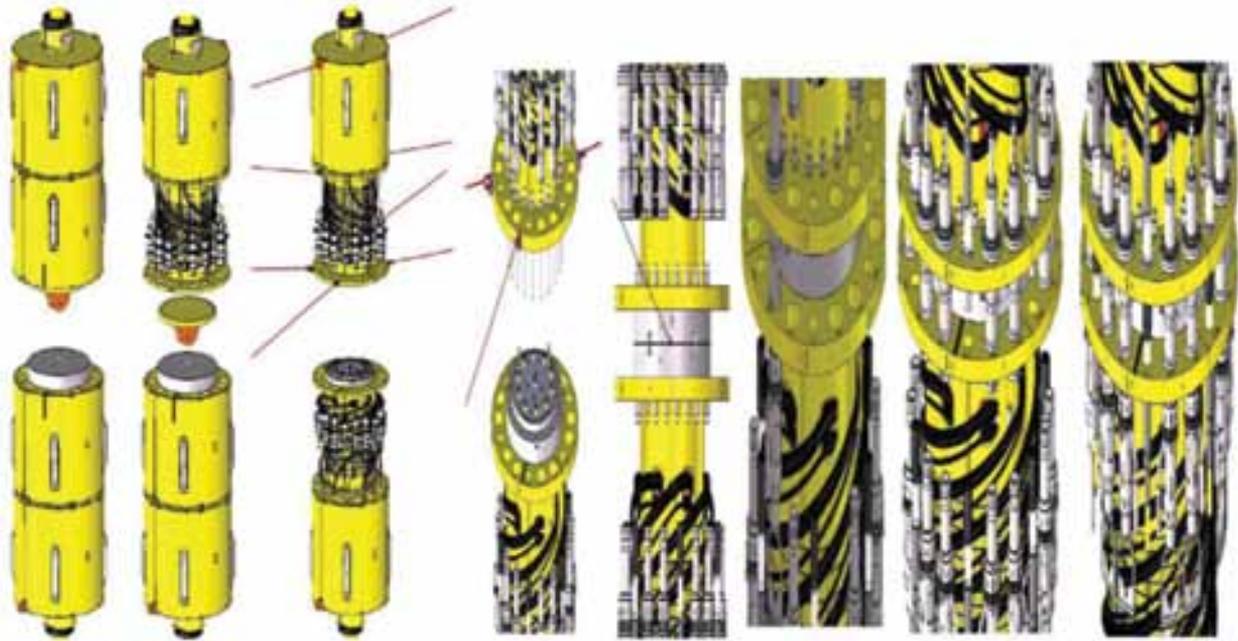


Figure 8—Steps of ILC ends connection offshore.

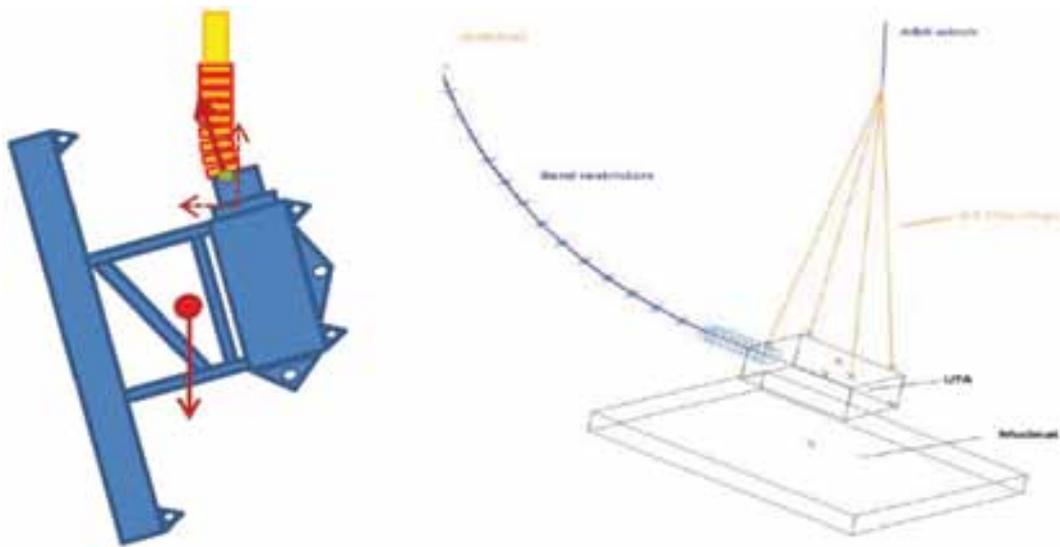


Figure 9—1st end UTA deployment with STI/BR elements subject to high moment due to misalignment of Center of gravity of Bolted UTA-Mudmat system with Rigging during Transfer/ Uprighting operation

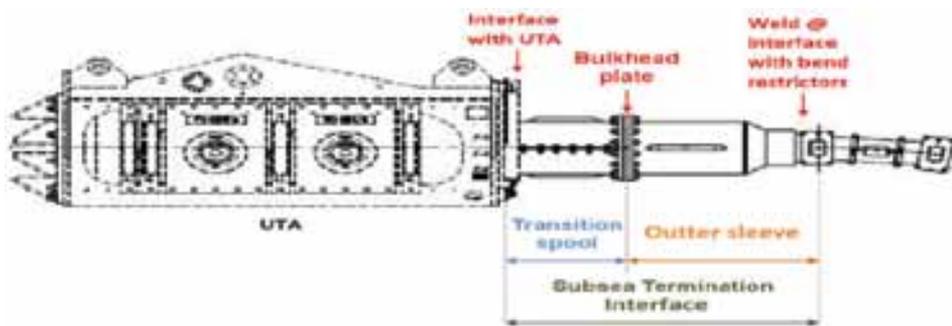


Table 1—Comparison between Capacity requirements for UTA bolted and Retrievable UTA designs

Analysis Results	UTA bolted to UTAFB				UTA frame retrievable			
	Subsea Termination Interface (STI)			Bend Restrictor (BR) elements	Subsea Termination Interface (STI)			Bend Restrictor (BR) elements
	UTA Flange	Bulkhead Plate	Weld @ Interface with BRs		UTA Flange	Bulkhead Plate	Weld @ Interface with BRs	
	kN.m	kN.m	kN.m	kN.m	kN.m	kN.m	kN.m	
1st end Overboarding	208	187	164	146	68	75	76	63
1st end Transfer	224	218	204	191	100	96	85	72
1st end Landing	192	164	131	116	170	96	85	72
2nd end Deployment	304	238	145	124	100	127	69	60
Overall	304	238	204	191	170	127	85	72

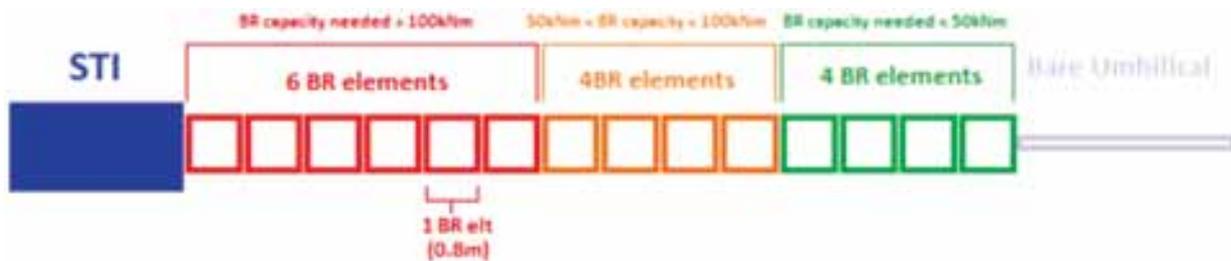


Figure 10—Scheme of the needed Capacity for BR elements.

Item	Interrelations	Notes
Fiber Optic Cable grade	Fiber optic power link budget	An essential parameter affecting both SPS and umbilical Contractor and shall have focus.
Number of umbilical elements	Redundance, Drill centers segregation and Electrical/ Fiber optic cable configurations.	Number of elements shall be reduced in order to be able to achieve single path layup/closing
Midway ILC versus Midway UTA	Number of failure points, Flexibility to add new midway equipment (e.g. midway –repeater) during detailed phase.	Midway UTAs demonstrate more flexibility and is preferable.
UTA – Mudmat Interface Design	Subsea Termination Interface (STI) and Bend Restrictors elements bending moment capacities and installation scheme.	Retrievable UTA design has more net advantage due to reduction of offshore time. STI/ Bend Restrictors shall have high bending moment capacities.
Hydraulic Line Sizing	Operational Requirements, Reel sizing, Availability/ Time window/ flexibility of Installation schedule, Reel weight and Loading crane capability.	It is recommended to achieve Hydraulic Line Sizing to verify Network Charging and Venting parameters as it is not related to any supplier equipment. Also, in case of long step-out umbilical the best sizing for hydraulic lines is 1-inch through the Main Umbilical.
Direction of Laying	Umbilical Manufacturing and related spooling, Reel spooling, Umbilical Marking, Umbilical Hardware Interface Stress Calculations (Tensile load, Bending Moment), Monitoring Connectors/ stabplates, Post-laying Test procedure/ equipment (Stabplates & shunt Connectors), Umbilical Displacement procedure/ equipment	For very long step-out umbilical, monitoring from Vessel is more advantageous and laying from platform to deepwater is the best approach.
Hardware Deployment method (Horizontal/ Vertical)	Umbilical Hardware Interface Stress Calculations (Tensile load, Bending Moment), Installation method and rigging.	It is recommended to define for Vertical Deployment method for subsea umbilical Termination equipment to relief any constraints on Umbilical while deployment.
JTube bend radius/ angle	Umbilical MBR for the load controlled case to assure compliance for the J-tube Pulling case	
Pulling head type		Flexible Pulling head assures flexibility to accommodate any geometrical changes for Platform design

Determinations of Engineers Turnover Working for National oil and gas Companies in Egypt

1. Introduction

Keaveney (1992) stated that Turnover as a phenomenon attracts a lot of scholars to understand the practical and theoretical aspects behind it. From theoretical viewpoints, knowing all affecting factors would help controlling this phenomenon. From practical point of view, minimizing turnover would reduce replacement cost.

Murthy (2003) pointed that to enhance productivity, corporations invest on their employees to develop their skills by providing training courses and more, but, however after gaining experience, knowledge and skills they leave. Such employees are invaluable to organizations and not easy to replace (Meaghan et al., 2002). Another result from turnover is discontinuing of knowledge, currently skilled employee is considered as an asset and a competitive advantage key (Urbancova & Linhartova, 2011).

Kevin et al. (2004) mentioned that although there is no standard guide lines and criteria to describe turnover as whole, a lot of variables have been used in understanding this notion.

1.1 Problem Definition

Egypt suffers from immigration of well educated and highly experienced people, this attracts a lot of scholars, organizations and government to understand and manage this notion. In

well-known originations experienced and skilled employee considered as an asset. Most of them occupies technical roles and recognized as a pillars of companies, by the time they become seniors and managers. Retaining such skilled asset employees ensures success and provide competitive edge for firms.

In Egypt, in the past 20-year national petroleum companies has been facing high turnover in experienced engineers who leave without enough notification period, this causes a lot of technical and managerial problems, and non-productive time.

The majority of Egyptian national petroleum companies are a joint venture between Egyptian General Petroleum Corporation -EGPC- and international companies like ENI, BP and Shell. All these companies are managed by Egyptian side and work according to national and local labor laws. The sector is facing a lot of problems e.g. shortage in human resources management system that appears in the lack of the vision, mission and objectives, passing by outdated policies and the inequity in apprise technical and non-technical employee, ending with weak plans in training, recruitment or retaining working staff.

1.2 The Purpose and the Objectives of the Study

The purpose of the study is to understand

the employees' behavior and intention to leave companies by investigating the factors led to turnover. Accordingly, we can overcome the drawbacks of this phenomenon.

The objectives of this study are:

1. Identify the type of employees and/or engineers who mostly tend to leave
2. Determine the average years of experience when employees leave
3. Explore all determinations that influence turnover
4. Examine job fit, the alternative employment opportunities and organizational factor effect on turnover phenomena.

This lead to the research question; what are the determinations of high turnover in engineers working for Egyptian national petroleum companies?

1.3 Conceptual Framework

The research main purpose is to introduce a turnover model as shown in Fig: 1. The model is consisting of dependent variable which is being measured in an experiment or evaluated in a mathematical equation. The dependant variable is turnover. The independent variable is defined as the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable. The independent variables are: the job fit, the alternative opportunities and organization factor.



Also there are a moderating variable that affects the direction and/or strength of the relation between dependent and independent variables. These moderating variables are as the following:

- Job stress is a moderating factor that affects the relation between job fit and turnover.
- Oil prices is a moderating factor that affects the relation between alternative opportunities and turnover
- Organization culture, rewarding and financial system, and supervisory level are a moderating factors affecting the relation between organization factor and turnover.

1.4 Hypotheses

The research is introducing three hypotheses as follows: H1: There is a reverse relationship between employee turnover and job fit. Job stress is a moderating factor.

H2: There is a direct relationship

between employee turnover and alternative opportunities. Oil prices is a moderating factor.

H3: There is a reverse relationship between employee turnover and organization factors. Organization culture, supervisory level, and rewarding and financial system are moderating factors.

2. Literature Review

2.1 Turnover Definition

Reggio (2003) simply defined employee turnover as leaving or moving out of firm. Another definition of turnover as a rotation of employee or workers between organizations and firms to occupy different and new jobs in labor market (Filpe, 2012). This behavior reflects problem in the organization not the opportunity in the new job (Holzer and Wissoker, 2001).

Price (1977) stated that turnover as a ratio: it's the percentage of the employees leaving a company divided

by the total employee number in the same company over a certain period.

2.2 Turnover Types

Flex (2012) stated two types of turnover, internal and external turnover, internal refers to occupying another job inside the firm while the external is related to move outside the organization. Another classification is voluntary and involuntary turnover (David, 2008). Voluntary is the employee choice to quit. On the other hand, in involuntary turnover employee does not interfere in this decision for example retirement and disability. Ulschak & Snowantle (1992) classified turnover in three categories, job-related, non-job-related, and lack of fit. Job related turnover happened due to employer decision to terminate low performance workers. Non-job-related the workers leaves because personal causes like relocation, family problems or health issues this causes must affect employee performance. Lastly,

lack of fit it's related to employee job satisfaction, so he gets less satisfaction due to work environment or facing difficulties due to low qualifications.

2.3 Turnover Models

Beach (1990) introduced The Image Theory, it deals with data processing during decision making. This model depends on understanding how people analyze reasons before quitting. It shows that individuals took decisions based on their experience and not have a clear result from processing all income information. The theory shows on three decisional arrangement aspects. First one is the «value image» and benefits expected from the job. Second is the personal goals that results from comparing the expected value with the actual findings «current values», this shall affect the personal job behavior. Third concept is the «strategic image» by reaching the job goals this happen by comparing the person's methods with value image.

Another important model is the Unfolding Model by Lee and Mitchell's (1994), the model describes paths or shocks that force an employee to re-evaluate their jobs and take a decision of quitting. These shocks may be negative or positive; however, the model represent five paths lead to leaving the jobs.

Path 1 script drive decision, the employee quits «Pre-programmed or automatic response» as a result of a certain situation like never promoting for five years, so it's not related to job satisfaction or not. Path 2, Push Factor, it linked to dissatisfaction, if the employee evaluates his well performance in comparing with supervisor bad evaluation, this give a negative impression and push the employee to resign. Path 3, Pull Factor, the employee compares his job with similar in market, it somehow related to other opportunities with more benefits and not related to satisfaction.

Path 4 and path 5 are almost the same and related to dissatisfaction, like not appreciating the extra effort, the difference is on the employee behavior toward the choking or triggering event. In Path 4, Quit job impulsively, the employee quit immediately. In path 5, Job search then quit, as it implies the employee search for a new job as an alternative then quits.

2.4 Turnover Model in Oil and Gas Sector

Harhara, Singh, Hussain (2015) introduced a conceptual model studying turnover intentions in oil and gas sector in UAE, the model shows the following independent factors: organizational commitment, individual factors, organizational factors and environmental factors. In the same time individual, organizational and environmental factors are affecting organization commitment.

The objectives of this research is to show the impacts of Shift-Work conditions, working in remote areas, supervisory/leadership behavior, alternative growth opportunities Also to highlight the retaining strategies for those who work in remote and harsh areas. Harhara, et al (2015) argue that this model will help managers and HR to reduce turnover, farther study and testing shall be done on this model.

Oluwafemi (2013) performed a research to study turnover intentions among workers in oil sector in Nigeria. Oluwafemi (2013) studied the relationship between turn over intentions and conscientiousness, agreeableness, emotional stability, perceived distributive justice, perceived procedural justice, perceived interactional justice, in additional to predicting turn over through contextual factors more significant than dispositional factors.

The results of hypothesis are as the following: firstly, significant negative

correlation between distributive justices, perceived procedural justice, perceived interactional justice and turnover. Secondly, no significant relation between conscientiousness, level of agreeableness and turnover. Thirdly, a significant relationship between emotional stability and turnover. Lastly, it was confirmed that contextual factors will predict turnover more than dispositional factors.

In the end of the study, Oluwafemi (2013) stated that to boost the performance organization must set policies and procedures that insure justice, fairness and equity system. On the other hand, managers should be fair, honest and ethical. When recruiting, HR should use modern psychological tools to select prober workers.

2.5 Turnover Factors

This section is devoted to show and explain the factors affecting turnover according to the research proposal model in Fig: 1.

2.5.1 Job Fit

O'Reilly et al (1991) refers to the matching between the applicant and the job requirement. Good fit between employee personality and the job result in satisfaction. Inadequate selection result in voluntarily quit. Another issues are the organization value, workers who are believe in these values usually stay longer. In other words, satisfied happy work, is a productive one.

Arnold and Feldman (1982) observed a direct relationship between the level of education and turnover, employee with highly educated levels are more likely to move. Kabungaidze et al., (2013) pointed than age have a negative relationship with turnover, hence, younger employees are more active and tend to leave.

HR function to create a talent pool to help firm select suitable workers that match the requirements. Steel (1984) Stated that companies work hard to

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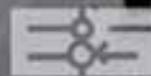
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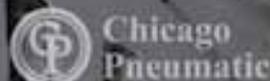
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match and attract those who match with their values and image. Beside that it's important to retain those with high experience.

2.5.2 Job Stress

Job stress is considered a modern phenomenon in current work that leads to employee quitting. Beside job duties, other internal and external factors cause job stress like work over load, role conflict and family work conflict. Firth et al. (2004) claimed that turnover is affected by stress feeling, dissatisfaction and low commitment.

2.5.3 Alternative Opportunities

Arokiasamy (2013) stated that the perceived opportunity is an external uncontrolled factor. He claimed that there is significant relation between perceived external opportunities and turnover. Karavardar, (2014) showed that alternative opportunities growth influence turnover.

2.5.4 Organization Factors

Abassi et al. (2000) mentioned that a lot of factors affecting turnover like, poor management, compensation system, recognition and inefficient hiring practices. All these left negative energy in work place.

In accordance Ongori (2007) stated that poor supervisors, recruitment policies, personal policies, grievance policies and lack in motivation lead to employee decision to quit. Starting from incorrect recruiting process, promotions not according to policies, and ending with improper management style.

Beech et al. (2003) studied mining industry – Closest industry to oil and gas-, He found that the way of treating employees, firm culture and policies that reflects health and safety, facilities and compensations; all these factors influence turn over. These factors have a close relation with job satisfaction, organizational commitment and loyalty.



2.5.5 Organization Culture

Organization culture is values, beliefs panted in organizational member. Organizational culture affected with internal communication, involvement, trust, social coherence and job challenge. Firms that adapt innovational culture are providing supporting environment, hence less intentions toward turnover (Jha, Shweta, 2009). Ongori (2007) stated that employee needs to be involved, those who participate in decision making and aware about issues related to workplace, feels comfortable and stay longer, this happens in firms with good communication system. In absence of openness and shared information, employee feels down. Addae et al. (2006) stressed that organization support is important to retain workers and increase commitment like providing psychological consultation.

2.5.6 Rewarding and Payment System
Shaw et al. (1998) showed that Payment is important for rewarding and retaining good employee. It's considered a good tool to monitor and control performance level. Cotton and Tuttle, (1986) stated that income have negative relationship with turnover. For example, employee tend to leave when paid less than their peers, on the other, those how paid well won't

leave. Griffeth et al. (2000) pointed that payment is the most significant effect on turnover in additional to the employee performance. In other words, if the employer provides adequate incentives and rewards, employee will be remaining. High performance employee is in need for sufficient rewards.

Arokiasamy (2013) mentioned Fringe benefits are other indirect methods for employees; it is not used only for rewarding but also as a motivation tool. In additional to that it designed to retain and attract experienced workers.

Muchinsky and Tuttle (1979) Ford – car manufacturer – faced high turnover percentage; it was nearly 400 percentages every year. After investigation, they solved this problem by increasing employee rate from 2.5 to 5-dollar per day.

2.5.7 Supervisory Level

Dailey and Kirk (1992) argue that employee work time in a company is determined by the atmosphere and the relations with supervisors. Andreetta (2011) indicate that leaders who adapt empowering and engaging styles enable conditions for employees to demonstrate affective commitment with less intent to leave the organization.

Miller and Wheeler (1992) showed that Good relation between staff and workers are important to sustain work force. Employees prefer those who understand their needs, supportive and fair. Managers, who show support, deliver warm sensitive emotions, increase employee's satisfaction. MELAKU (2014) stated that Employee turnover negatively affect all organization levels, leadership style influence employee to leave or intent to leave. Dealing with employees as assets and invest on them, raise spirits and the efficiency in accomplishing tasks.

3. Discussion

In this section a discussion is conducted to explore the turnover conceptual model (shown in Fig: 1). The purpose of this discussion is to prove the hypothesis mentioned above in section 1.4. It relies on identifying the direction and the relationship between the dependent variable (turnover) and the other three independent variables. The turnover model has three paths as follows:

- Path 1: Job fit is the independent variable, job stress is a moderating variable.
- Path 2: Alternative opportunities is the independent variables; Oil prices is a moderating variable.
- Path 3: Organization factor is the independent variables. The moderating variables are Organization culture, rewarding and financial system, and supervisory level.

Regarding path 1, i argue that job fit has a reverse relationship with turnover, in additional increasing job stress also lead to increasing turnover intentions. Oil and gas industry require applicants who can work in harsh environment and/or away from their families. They work long hours for at least 10 hours per day and with minimum two weeks a month. They work half of their shifts on night. Other work around the clock

or on phone calls to solve technical problems or to supervise and monitor critical situations. Beside this, they are facing dangerous and critical problems that require clear mind. One little mistake could lead to bad consequences. As a conclusion suitable applicants have to be chosen carefully using the latest scientific tools like psychometric assessments. Stresses as a phenomenon not only affecting the work performance itself, it also has a direct impact on employee health and life. Keeping employee in good work-family balance is paramount to increase worker outcome. Accumulation of stresses may lead to employee burnout which means a danger on his health, this appears in increasing nonproductive time, bad performance or meditation. So firms should continuously monitor employee behaviors and attitudes as they have to release work stresses on regular basses. For path2, i claim that alternative job has a direct relation with turnover. In the same time, as oil prices increase more jobs exist, hence increase turnover rate. Experienced employees have chances to move from public oil and gas sector to the private or multinational companies. The purpose of moving in most cases is to enhance their incomes, better working systems and policies, or satisfy their self-esteem in new powerful positions. Another factor is oil prices. When prices increase, new exploration and activities appear in relative oil and gas market such Gulf Area. Investor become more active and doesn't hesitate to pump money, this creates new opportunities and new job opening. Lastly Path3, i argue that organization factor has a reverse relation with turnover, in the same time adopting good culture, professional managers, and fair payment and awarding system exist, turnover decreases. Organization factor is an umbrella that contains various factors like polices, regulations, management, treating employees,

firm culture, organization structure, facilities and compensations. But the research is mainly focus on polices, laws and regulations. Other factors could be considered as moderators or mediating factors. Organization policies are principles, rules, and guidelines formulated or adopted by an organization to reach its long-term goals. It also defines employee rights and responsibilities and set boundaries for operations and daily activates. Any vague or misleading rules leads to work disorder and instability. Big firms always adapt new polices and update its systems to coup with latest workers and market demand. Companies with stable and fixable system attract and retain skilled employees. Organization culture is defined as the shared organization values or beliefs, or it's the shared mental assumptions between the same groups. Organization factors could be enhanced by communicating purpose and passion, and improving unity and team work. One of the most important parts of the system is the payment and awarding system. The rewarding system or the key performance indicators (KPIs) are not clear enough, this may lead to inequity system and turn employees down. Looking at payment system, the salary of the employee does not reflect his responsibility and duties, sometimes the income of non-technical divisions is the same or higher than the technical core divisions in the same company.

Supervisory level and management capabilities is important as it reflects the organization strenth. Managers should be leaders who have the ability to direct and manage labors. Lack of communication skills could lead to a gap between staff.

4. Conclusions and Recommendations

After the huge new gas discoveries in Mediterranean Sea -Zohr Gas Field-, oil and gas sector became a promising industry that will boost Egyptian economy. Investing in employee is

important to support and fasten the growth of this opportunity. There are a lot of models that studied employee behavior and turnover phenomenon, but few researches focused on oil and gas sector. The conceptual model proposed in this paper is considered as a seed to study worker behavior in oil and gas sector. It could be used as a role model -with minor modifications- to enhance

public organization policies that in turn will support employees and boost their performance. Despite there are a lot of factors influence turn over intentions, the few factors used in the proposed model was chosen carefully according to the current situation in Egypt. From this study, it can be concluded that organizational factor with its contingent companies' policies and labor law are

the most important factors that the governors should begin with to set rigid fair system for the sake of employees and employers. It's recommended to test this model practically and academically to identify the significance of these factors, such measuring will be beneficial to HR managers and decision makers to modify the current polices and retain professionals.

REFERENCES

- Adae, H.M., Parboteeah, K.P. and Davis, E.E. (2006), "Organizational commitment and intentions to quit: an examination of the moderating effects of psychological contract breach in Trinidad and Tobago", *International Journal of Organizational Analysis*, Vol. 14 No. 3, pp. 225 - 238.
- Abassi SM, Hollman KW (2000). «Turnover: the real bottom line», *Public Personnel Management*, 2 (3):333 - 342.
- Arnold, H.J. and Feldman, D.C. (1982), "A multivariate analysis of the determinants of job turnover", *Journal of Applied Psychology*, Vol. 67 No. 3, pp. 350 - 360.
- Arokiasamy, A.R.A, 2013. A Qualitative Study on Causes and Effects of Employee Turnover in the Private Sector in Malaysia. *Middle-East Journal of Scientific Research*, 16 (11): 1532 - 1541, 2013
- Beach LR (1990) *Image Theory: Decision Making in Personal and Organizational Contexts*, Wiley, Chichester, pp. 3 - 10
- Beach, R., Breerton, D., and Cliff, D. (2003), «Workforce Turnover in FIFO Mining Operations in Australia: An Exploratory Study», Research Report, Centre for Social Responsibility in Mining and Minerals Industry Safety and Health Centre, University of Queensland.
- Cotton, J. L., & J. M. Tuttle (1986), *Employee turnover: A meta-analysis and review with implications for research*. *Academy of Management Review*, 2, 55 - 70.
- David G. (2008). *Retaining Talent: A guide to Analyzing and Managing Employee Turnover*, SHRM Foundation's effective Practice Guidelines Series, USA 2008 P. 2
- Dailey, R.C. and D.J. Kirk, 1992. Distributive and procedural justice as antecedents of job dissatisfaction and intent to turnover. *Human Relations*, 45(3): 305 - 317.
- Filpe F. & Luis Borges. (2012). *Scientific Papers: Journal of Knowledge Management, Economics and Information Technology*, Vol: II, Issue 2, April 2012 (www.scientificpapers.org)
- Flex (2012). *International Journal of Humanities and Social Science*: Vol: 2 No. 14 (special issue -July 2012. www.flexecs.co
- Firth, L., Mellor, D.J., Moore, K.A., Loquet, C. (2004), „How Can Managers Reduce Employee Intention to Quit, *Journal of Managerial Psychology*, Vol 19, No 2, pp 170 - 187.
- Griffith RW, Hom PW, Gaertner S (2000). «A meta-analysis of antecedents and correlates of employee turnover: update, moderator tests, and research implications for the next millennium», *J. Manage.* 26 (3): 463 - 88.
- Harhara, A.S., Singh S.K., Hussain M. (2015). Correlates of employee turnover intentions in oil and gas industry in the UAE, *International Journal of Organizational Analysis* Vol. 23 No. 3, 2015 pp. 493 - 504
- Henry Ongori (2007), A review of the literature on employee turnover. *African Journal of Business Management* pp. 049 - 054, June 2007.
- Holzer, H. J. and Wissoker, D. (2001). *How Can We Encourage Job Retention for Welfare Recipients*. The Urban Institute Series No. A-49, October. Available from www.urban.org/UploadedPDF/310360_anf_a49.pdf
- Jha, Shweta. (2009). Determinants of employee turnover intentions: A review. *Management Today*, Vo. 9, No. 2, pp. 26 - 33.
- Karavardar, G. (2014), "Organizational career growth and turnover intention: an application in audit firms in Turkey", *International Business Research*, Vol. 7 No. 9, pp. 67 - 76.
- Kabungaidze, T., Mahlatshana, N. and Ngirande, H. (2013), "The impact of job satisfaction and some demographic variables on employee turnover intentions", *International Journal of Business Administration*, Vol. 4 No. 1, pp. 53 - 65
- Keaveney, S.M., (1992). An empirical investigation of dysfunctional organizational turnover among chain and non-chain retail store buyers. *Journal of Retailing*, 68, 145 - 174. Kevin MM, Joan LC, Adrian JW (2004). "Organizational change and employee turnover" *Personnel Rev.* 33 (2):161 - 166.
- Lee T. W. & Mitchell T. R. 1994. An Alternative Approach: The Unfolding Model of Voluntary Employee Turnover. *Academy of Management Review*, 19 (1): 51 - 89.
- Murthy D.B.N. (2003). *Managing human resource: A practical guide and mobilizing manpower*, Ram printography Delhi. Meaghan Stovel, Nick Bontis (2002), Voluntary turnover: knowledge management-friend or foe? *J. intellect. Cap.* 3 (3): 303 - 322
- Miller, J.G. and K.G. Wheeler, 1992. Unraveling the mysteries of gender differences in intentions to leave the organization. *Journal of Organizational Behaviour*, 13(5): 465 - 478.
- Oluwafemi, O. J. (2013). Predictors of Turnover Intention among Employees in Nigeria's Oil Industry, *Online Issn 2345 - 0037. Organizations and Markets in Emerging Economies*, 2013, Vol. 4, No. 2(8)
- O'Reilly, C.A., J. Chatman and D.F. Caldwell, 1991. People and organizational culture. A profile comparison approach to assessing person organization fit. *Academy of Management Journal*, 34: 487-516.
- Price, J.L (1977). *The study of turnover*, 1st edition, Iowa state university press, IA pp10 - 25.
- Reggio, E. A. (2003). *Introduction to Industrial/Organizational Psychology* (4th Ed.). Prentice Hall, New Jersey.
- Steel, R.P. and N.K. Ovalle II. 1984. A review and meta-analysis of research on the relationship between behavioral intentions and employee turnover. *Journal of Applied Psychology*, 69: 673 - 86.
- Shaw, J.D., J.E. Delery, G.D. Jenkins and N. Gupta, 1998. An Organization-Level Analysis of Voluntary and Involuntary Turnover, *the Academy of Management Journal*, 41(5): 511 - 525.
- Urbancova H., Linhartova L. (2011). Staff Turnover as a Possible Threat to Knowledge Loss: *Journal of Competitiveness*, Issue 32011/ p 84
- Ulschak, F.L., & Snowantle, S.M. (1992). *Managing Employee Turnover; a Guide for Health Care Executives*. Chicago, Illinois: American Hospital Publishing.
- Yohannes Melaku. *Factors Affecting Employee Turnover and Its Impact On Ethiopian Evangelical Church Mekane Yesus*, May 2014, Addis Ababa, Ethiopia.

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A New Approach to Operational Excellence for Oil and Gas

By: Marco Buzzo and Marco Mazzoni, Baker Hughes, a GE Company

Abstract
Organizations generally run several improvement initiatives simultaneously targeting different aspects of their operations. These initiatives will improve the specific operation efficiency, but due to the fragmented approach don't necessarily lead the organization to lasting results. The overall effectiveness can be improved by an all-embracing program allowing all initiatives to align, leverage one another and succeed – approach commonly identified as Operational Excellence (OE) [1]. Even if a standard definition of OE is not specified, its concept has been developed around 2000 in the Quality circles [2] and rapidly spread as an evolution of the total quality management [3]. OE - due to its amplitude, requires a long-term sustained commitment from executives, senior leaders and employees. In the past this approach would have made little sense for most operations in the Oil and Gas industry due to their predictability and stability. In the last decade this industry has been under a continuous pressure due to a constant decline in the oil barrel price coupled with rising exploration, development and production costs, putting margins under significant pressure. Furthermore, the market push for risk reduction even when the industry is taking new challenges like drilling in ultra-deepwater or in the Arctic, intensive onshore operations in populated areas (like shale gas in the northeastern US) and pioneering technologies like floating liquefied natural gas terminals. Industry executives are working to define and deliver OE at such frontiers, where few benchmarks exist.

The need of enterprise-wide operational effectiveness and to achieve consistently better results in the Oil and Gas industry has been also seen as market evolution from the top consulting firms that offer such dedicated services. It has been estimated that a 10% production capacity is locked up in complexity and inefficiency—a valuable opportunity for improvement [4]. Despite these opportunities, OE implementation literature in Oil and Gas is marginal and experiences have been mainly reported limited to the field of health, safety and environment [5], [6], [7].

This work presents a novel approach to OE in the Oil and Gas industry, carried out at Baker Hughes, a GE Company in its Turbomachinery & Process Solutions division. This part of the organization represents a common complex case study in this industry, due its global footprint where a constellation of more than 100 manufacturing, engineering and service sites hosting more than 12000 employees. The next chapters present the assessment, selection and adoption of a standard OE model, the evaluation of current operations with respect to the model and the development of initiatives supporting it.

Introduction

Organizations generally run several improvement initiatives simultaneously targeting different aspects of their operations. These initiatives will improve the specific operation efficiency, but due to the fragmented approach don't necessarily lead the organization to lasting results. The overall effectiveness can be improved by an all-embracing program allowing all initiatives to align, leverage one another

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Materials and Methods

The landscape of OE experiences shows a variety of approaches that have been developed for the specific organization needs with strong focus in the field of health, safety and environment like in the cases of the Oil and Gas industry [5], [6], [7]. In other industries the OE experiences led to the development of models and the subsequent rise of consulting services around it [8]. A well-documented and internationally recognized OE model is the Shingo one [9],

which is the reference for the Shingo prize for Operational Excellence established in 1988 [10]. Shigeo Shingo has been one of the most influential consultants on Japan's manufacturing industries in the 50s [11], who worked with the industry leader Taiichi Ohno on the development of Toyota Production System [12], [13], [14]. In his work the path to OE is presented as the need for a comprehensive approach to improvement, which goes beyond than the application of new tools or enhancement of single processes. Sustainable excellent results require to nurture an organization's culture aligned to specific guiding principles rather than depending solely on tools, programs or initiatives. Shingo defined the model that takes his name providing a framework for transforming an organization's culture to achieve ideal results.

He focuses on the individual in the organization who has a set of values and beliefs influencing the way he behaves. Ultimately, the aggregate of people's behaviors makes up the organizational culture, that in turn influences the organization's results. This lead to the definition of ten guiding principles, known as the Shingo Guiding Principles, that are the basis for building a lasting culture and achieving enterprise excellence. The principles are divided into four dimensions as depicted in Figure 1: Cultural Enablers, Continuous Improvement, Enterprise Alignment and Results [15].

Firstly, we evaluated and confirmed the compatibility of the principles behind this model with the pillars of the organizational culture [16]. After that we decided to assess how the organization subject to the study would compare with respect to the behaviors identified in model. The next paragraphs describe clarify how the organization has been evaluated and what initiatives have been designed to secure improvements in each of the model dimensions.

Survey

An in-depth assessment of the organization would require an extensive audit program in several sites, rising doubts on the global validity of those findings and its timely feasibility. We decided to conduct a survey to get swift results even if with limited accuracy. The survey has been developed along the principles of the Shingo model identifying 19 ideal behaviors distributed according to the four dimensions: cultural enablers (4 behaviors), continuous improvement (9 behaviors), enterprise alignment (3 behaviors), results (3 behaviors).

For each of the ideal behaviors the survey participants have been requested to provide a rating for frequency (how often a certain behavior is adopted) and intensity (how strong the behavior is observed).

The rating has been defined according the Likert scale [17] to ensure consistency of feedback. Each behavior contributes to determine a score associated to the dimension where it belongs, whose weight – as summarized in Table 1 – is used to calculate the overall Shingo score [15].

The score enables the classification according to levels as presented in Table 2, ranging from level #1 – the lowest score, to level #5 which indicates the maximum score and the operational excellence level.

Considering the dimension of the target population for the division under study (12000 employees), its global footprint and the consequent challenge to activate the study, it has been considered of outmost importance to understand the minimum set of survey participants required to validate the study. The statistical significance of the survey the sample population has been calculated according the following formula

$$S = \frac{\frac{z^2 \cdot p(1-p)}{e^2}}{1 + \frac{z^2 \cdot p(1-p)}{e^2 N}}$$

where N is the target population size e is margin of error and z the z-score [18]. For the case study under discussion the confidence level has been placed at 95% and the margin of error ± 2 . This lead to a sample size of 2001 employees, as the minimum set of completed surveys required to ensure validity of the analysis. To achieve the reach of such population size, a global communication campaign has been designed involving the top executive roles in email and internal social media communication as depicted in Table 3. Furthermore, the risk of a biased survey due to cross contamination has been mitigated by limiting the time for the survey to 7 days.

Dimension Enterprise Alignment – Vision

Achieving OE requires that an organization aligns every value stream. This starts providing clarity on the organization purpose, where it is going, and how it will get there such that it can enable people to align their actions, innovate, adapt and take risks with greater confidence. The starting point is to generate value for customers, society and the economy with long-term focus from the executive level to provide a foundation of stability [19]. When an organization creates a long-term focus, it is more likely that decisions will in fact pursue safety, quality, delivery and cost rather than just periodical financial targets. In conjunction with taking care of the short- and medium-term priorities, thinking in terms of long term goals significantly reduces the tendencies for knee-jerk reactions to urgent pressures.

Organizations working according to the total quality management principles have strategic plans based on vision, mission and objectives [20]. For the case of BHGE, purpose and mission have been defined at corporate level; for the division in the scope of this work we needed the definition of a vision capable to provide an OE long term focus. We decided to engage with the organization's president to align a OE vision for the organization, that should be based on the concept of risk management, relationship with external providers (customers and suppliers) and daily long-term focus.

Dimension Results - Leadership Workshop

According to the Shingo model great results can only be achieved following the principles that govern the results. The closer an organization emulates ideal behaviors, the closer it can achieve OE – consistently delivering ideal results to all stakeholders. The organization under study has established a solid performance measurement system to monitor financial and operational indicators. The attention to behaviors has been mainly focused to those that are the foundations for an environment of inclusion like gender diversity, disability or sexual orientation [21], opening the opportunity to extend the focus also to the ideal behaviors of the Shingo model. Expanding this approach to promote ideal behaviors on the whole dimensions spectrum can be effectively done by transformational leaders capable to inspire, energize and intellectually stimulate the employees [21]. Past literature shows that transformational leadership can be stimulated by opportune training [22]. A transformational leadership workshop has been designed to engage the senior leadership on the critical role played by the organizational culture to achieve OE, share the OE vision (as earlier defined) and promote the ideal behaviors (already used for the survey). The workshop has been defined to target the c-suite of the organization and two layers below (~250 employees).

The workshop has been designed as an interactive full-day in-class experience with group exercises, knowledge sharing session and simulations. For a timely assessment of the initiative effectiveness we decided to evaluate it by surveying the participants with the net promoter score (NPS) [23]. The survey asked the participants if he would recommend to a colleague to participate to the workshop using a rating with a (0 – 10) scale which enables to identify detractors (0 - 6), neutrals (7 - 8) and promoters (9 – 10). The overall score is calculated a

$$NPS = \frac{P - D}{N} \times 100$$

where P is the total number of promoters, D the total number of detractors and N the total numbers of survey received.

Dimension *Continual Improvement* - NO defect passed forward

The history of the Toyota Production System shows how Taiichi Ohno visiting the most efficient Ford plant in Detroit in the 50s was surprised by the approach to keep the line running continuously at the cost to pass on any defect that might have been generated, counting on the inspection at the following level to avoid the issue propagation [24]. The practice of passing defects forward, not only impacted the cost to rectify the issue (which is higher as higher is the complexity level of the process step where it is found), it also had a demoralizing effect on employees because it reduced the likelihood of zero defects. This led to the definition of the «andon cord» approach that is to put the manufacturing line «on hold» when a defect is identified until it is rectified or removed from the process [25]. This approach is widely adopted in modern manufacturing organizations [26] and often defined as «stop the line» or «stop the work». With the focus to enhance the dimension of Continual Improvement we decided to expand this approach from the pure operational arena to the whole organization, covering also the traditionally transactional processes. This led to the «No defect passed forward» initiative, aimed to promote with employees the approach to:

- Assess the incoming work to ensure to have all required inputs prior starting to work
- Verify and ensure that the completed work is free of defects
- Never knowingly pass defects to the following operation

The project has been discussed with the organization leaders in the OE workshop and it has been coupled with a cultural initiative aimed to foster an open reporting of defects -a prerequisite to ensure the success with in the whole organization.

The «No defect passed forward» concept is essential for OE from different points of view. From a leader's perspective, it requires great courage to stop the process long enough to understand the root cause and take counter-measures that prevent the issues from reoccurring. This often means trading any short-term loss for substantial long-term gain and requires putting in place system to ensure that any result that varies from the standard creates an expectation of immediate action. From the employee perspective, it requires a mind-set of ownership and accountability: if standards are clearly defined every employee can discriminate between proper work and defects. Leaders should role-model and create the conditions for employees to ensure that no one would ever knowingly or willingly forward the outcome of their value contribution to someone else if it contained the slightest variation from the standard. This concept feeds the mind-set of continuous improvement and creates the conditions for seeking perfection.

Dimension *Cultural Enablers* - Quality Network

Cultural Enablers focus on people as the foundation of each organization, aiming to empower and involve everyone. Market competitiveness requires to exploit the full potential of every single individual, which is the only organizational asset with a potential infinite capacity to appreciate in value. Excellence can only be achieved when every individual in the organization is able to continuously innovate and improve. The management responsibility is to eliminate the barriers to such innovation. The Shingo model prescribes instilling to the employees the key principles behind the activities they do so that – when they understand the «why», they become empowered to take personal initiative. Managing a team of people who share a deep understanding and commitment to the key concepts and principles is much easier than managing those who are only doing what they are told.

For engaging the whole workforce population, we designed a benchmarking program during which we hosted internationally recognized companies in conference-like sessions open to all employees. The program has been branded as Quality Network, where organizations belonging to different industries share their approaches to OE with focus on selected topics (data analysis, employees training, ...). Speakers affiliated with those companies have been invited for a talk on their interpretation of OE culture followed by a question and answer session. It has been demonstrated that benchmarking is an external focus on internal activities, functions and operations that can boost continuous improvement. It is the process of judging a company's processes or products by comparing them to the world's best, including those in other industries.

Benchmarking is emerging in leading-edge companies as a tool for obtaining the information needed to support continuous improvement and gain competitive advantage [27].

The events have been organized in the division headquarter in the Florence Learning Center auditorium which can host around 250 participants. The engagement of employees also located in different countries requires that the events should be broadcasted in live streaming. Considering that the use of instant communication technology enhance the engagement of participants in conference environment [28], [29], we decided to adopt an *audience response system* to give the chance to each participant (in the venue or online) to actively participate by asking questions [30] and also vote for questions asked by their colleagues in real time. The question and answers session has been then structured such that the host presenter would answer the highest ranked questions in the allotted time.

Results and Discussion

The initiative earlier described have been designed and conducted over the span of 12 months. The survey has been launched in November 2017 and the employees participating to the study have been 3290, well above the threshold required to ensure statistical relevance of the analysis. It is interesting to consider that such survey response would ensure a confidence level of 99% with a margin of error ± 2 , well above the planned one.

Figure 2 represent the regional distribution of the division employees compared with the participants to the survey. The delta between the two sets is $\pm 4\%$ except for the region Europe, where the difference accounts for $\sim 10\%$ in favor of the survey participation. The significant higher participation to the survey in this region can be explained by the higher density of employees, which accounts for more than half of the workforce and enabled a higher cross-engagement in the initiative.

Figure 3 shows the final survey score of 77.2% that once compared with data in Table 2 indicates how the self-evaluation placed the organization one level below the OE. Furthermore, splitting the survey participants in people leaders (with at least one direct report) and employees, the latter provided generally higher scores ($\sim 5\%$).

Data indicates that this difference is mainly related to Cultural Enabler dimension where people leaders scored in general lower when surveying the engagement of the workforce. This highlighted the need to enhance the employee participation in daily improvements.

In term of the Enterprise Alignment dimension we worked on the definition of the OE vision together with the organization's president. The statement has been released as follows: *«Quality is our commitment to eliminate any risk of mistakes by working together and developing the best relationships with our customers and suppliers, every time, every day. Integrity, safety and quality are the essential core pillars of our organization, without which we would not be able to do business»*. The vision has been presented in January 2018 to the Global Leadership Meeting event, during which all the people leaders in the organization gather every year in Florence, Italy to review the past year business and plan the following year activities. The vision has been then shared with the whole workforce via internal communication channel and the internal social media.

The OE workshop has been defined as the main initiative to enhance the Results dimension. It has been conducted with 20% of the target population and the participants perception has been positive with a 73% NPS score. The participating leaders defined and shared a mission statement tailored to their specific scope supporting the OE vision and

championed the «No defect passed forward initiative».

In term of Cultural Enablers, the Quality Network program has been launched in the summer 2018. The overall events reach has been assessed as 2500 participants (in person or live streaming) during the 6 months of activities. The events have been made available in a streaming platform to maximize the visibility to those located in different time zones or unable to attend due to critical assignment. The participants have been surveyed with NPS and the events scored between 60% and 92%, indicating a growing interest in the working population.

The basis of value creation and success of organizations depends on the leverage of knowledge available internally therefore corporate portals present the potential of providing organizations with a rich and complex shared information workspace for the generation, exchange, and use of knowledge [31]. A portal has been developed to share information with the employees and support all the initiatives presented in this work: it has been used as reference to provide information to the OE survey, to support the OE vision communication and the «no defects passed forward» campaign, and as point of contact for the Quality Network program. The effectiveness of the portal has been evaluated using Google analytics as conventional web reporting system [32]. For the portal 64 pages have been created and it got 5344 unique views in its first 6 months with an average spent time on page of 2:38 minutes.

Conclusions

This work presents a novel approach to nurture Operational Excellence in the Oil and Gas industry, based on the adoption of the Shingo model and its progressive integration in the organization from the senior leadership down to the operative levels. An assessment that uses such model as reference can be used to identify areas of improvement, once ensured the compatibility of the model with existing organization culture. The initiatives presented in this paper span from top-down programs like the workshop dedicated to the senior leadership, to bottom-up projects like the Quality Network benchmarking program aimed to engage each employee in the operative layers.

The preliminary results are very promising such that in the coming months, the initiatives drafted in the previous paragraphs will be expanded. We recognize that a complete evaluation of the results requires a longer -term observation and the organization leadership is committed to embrace the initiative on such time scale. Over a longer period, we will assess the results to consider the extension of the model to the whole BHGE organization.

Enterprises willing to embrace OE initiatives may leverage on this work to optimize their OE efforts. Top executive

sponsorship and support are critical enablers to take advantage of the adoption of the OE model described; conversely limiting the reach to the management without focusing on the whole workforce put at risk any OE initiative.

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REFERENCES

1. J. S. Oakland, *Total Quality Management and Operational Excellence*, New York, NY: Routledge, 2014.
2. M. Bigelow, «How to achieve operational excellence,» *Quality Progress*, vol. 35, no. 10, pp. 70–75, 2002.
3. A. Martinez Lorente, F. Dewhurst and B. Dale, «Total quality management: origins and evolution of the term,» *The TQM Magazine*, vol. 10, no. 5, pp. 378–386, 1998.
4. John McCreery; Ethan Phillips; Francesco Cigala, «Operational excellence: The imperative for oil and gas companies,» 25 February 2013. [Online]. Available: <https://www.bain.com/insights/operational-excellence-the-imperative-for-oil-and-gas-companies/>. [Accessed 27 December 2018].
5. «Operational excellence management system,» *Chevron*, 2018. [Online]. Available: <https://www.chevron.com/about/operational-excellence>. [Accessed 27 December 2018].
6. «Operational excellence,» *ExxonMobil*, [Online]. Available: <https://www.esso.it/en/wholesaleefuels/health-safety-and-environment>. [Accessed 27 December 2018].
7. «HSE & Operational Excellence,» *Halliburton*, 2018. [Online]. Available: <https://www.halliburton.com/en-US/ps/solutions/heavy-oil/environmental-benefits/default.html>. [Accessed 27 December 2018].
8. «Operations Excellence Overview: A Continuous Journey of Improvement,» *DuPont*, [Online]. Available: <http://www.dupont.com/products-and-services/consulting-services-processtechnologies/articles/operations-excellence-overview.html>. [Accessed 28 December 2018].
9. S. J. Rusev and K. Salonitis, «Operational excellence assessment framework for manufacturing,» in 5th CIRP Global Web Conference Research and Innovation for Future Production, Patras, Greece, 2016.
10. C. SS, A. JB and H. JI, «The Shingo Prize for operational excellence: rewarding world-class practices,» *International Journal of Business Excellence*, vol. 1, no. 4, pp. 418–433, 2008.
11. A. R. Shigeo Shingo, *Modern Approaches to Manufacturing Improvement: The Shingo System*, Taylor & Francis, 1990.
12. S. S. Andrew P. Dillon, *A Revolution in Manufacturing: The SMED System*, CRC Press, 1985.
13. S. Shingo, *Zero Quality Control: Source Inspection and the Poka-Yoke System*, CRC Press, 1986.
14. S. Shingo, *Non-Stock Production: The Shingo System for Continuous Improvement*, CRC Press, 1988.
15. «The Shingo Prize for Operational Excellence, Principles of operational excellence & Assessment workbook, version 1.2,» 2011.
16. «Our Culture #We are BHGE,» BHGE, [Online]. Available: <https://www.bhge.com/annualreport/our-culture.html>. [Accessed 27 December 2018].
17. R. Likert, «A Technique for the Measurement of Attitudes,» *Archives of Psychology*, vol. 140, p.1–55, 1932.
18. C. D. Florey, «Sample size for beginners,» *The BMJ*, vol. 306, no. 6886, p. 1181–1184, 1993.
19. J. K. Liker, *The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer*, McGraw-Hill, 2004.
20. S.D. David L. Goetsch, *Quality Management for Organizational Excellence: Introduction to Total Quality Management*, Prentice Hall, 2008.
21. T. Dvir, D. Eden, B. J. Avolio and B. Shamir, «Impact of Transformational Leadership on Follower Development and Performance: A Field Experiment,» *Academy of Management Journal*, vol. 45, no. 4, 2017.
22. B. M. Bass, «From transactional to transformational leadership: Learning to share the vision,» *Organizational Dynamics*, vol. 18, no. 3, pp. 19–31, 1990.
23. F. F. Reichheld, «The One Number You Need to Grow,» *Harvard Business Review*, December 2003.
24. J. P. Womack, D. T. Jones and D. Roos, *The machine that changed the world: the story of lean production.*, Harper Collins, 1991.
25. T. Ohno, *Toyota Production System: Beyond Large-Scale Production*, CRC Press, 1988.
26. J. Li and D. E. Blumenfeld, «Quantitative analysis of a transfer production line with Andon,» *IIE Transactions*, vol. 38, no. 10, pp. 837–846, 2006.
27. Y. K. Dean Elmuti, «An overview of benchmarking process: a tool for continuous improvement and competitive advantage,» *Benchmarking for Quality Management & Technology*, vol. 4, no. 4, pp. 229–243, 1997.
28. S. Morales, C. Millares, T. Brashears and B. Brenes, «Engaging Participation in the Instant Communication Era,» in Southern Region Conference of the American Association for Agricultural Education, San Antonio, TX, 2016.
29. V. Konkolová and J. Paralič, «Active Learning in Data Science Education,» in 16th International Conference on Emerging eLearning Technologies and Applications (ICETA), Košice, 2018.
30. «Sli.Do,» sli.do s. r. o., [Online]. Available: <https://www.sli.do/>. [Accessed 27 December 2018].
31. H. Benbya, N. A. Belbaly and G. Passiante, «Corporate portal: a tool for knowledge management synchronization,» *International Journal of Information Management*, vol. 24, no. 3, pp. 201–220, 2004.
32. B. Clifton, *Advanced web metrics with Google Analytics*, Indianapolis: John Wiley & Sons, 2012.
33. A. P. D. Shigeo Shingo, *A Study of the Toyota Production System: From an Industrial Engineering Viewpoint*, CRC Press, 1989.
34. Bjoern Ewers, Jean-Christophe Bernardini, «A new era for operations excellence in E&P,» *Pipeline Oil & Gas Magazine*, 16 August 2018.
35. J. S. Mitchell, *Operational Excellence: Journey to Creating Sustainable Value*, John Wiley & Sons, 2015.
36. A. P. D. Shigeo Shingo, *A Study of the Toyota Production System: From an Industrial Engineering Viewpoint*, CRC Press, 1989.
37. «Diversity & Inclusion,» BHGE, [Online]. Available: <https://www.bhge.com/diversity-inclusion>. [Accessed 27 December 2018].
38. R. D. Miller, J. Raymer, R. Cook and S. Barker, *The Shingo model for operational excellence*, Logan, Utah, 2013.
39. S. E. Edal and M. v. d. Hoek, «Building a high performance oil & gas business,» *Deloitte Oil & Gas Consulting*, 2014.
40. C. Laurens and O. Van Der Molen, «This is the time to deliver on upstream operational excellence,» *mckinsey*, February 2010. [Online]. Available: <https://www.mckinsey.com/industries/oil-and-gas/our-insights/this-is-the-time-to-deliver-on-upstream-operational-excellence>. [Accessed 27 December 2018].

Cultural Enablers	Continuous Improvement	Enterprise Alignment	Results
Lead with humility Respect every individual	<i>Flow & Pull value</i> <i>Assure quality at the source</i> <i>Focus on processes</i> <i>Embrace scientific thinking</i> <i>Seek perfection</i>	<i>Create constancy of purpose</i> <i>Think systematically</i>	<i>Create value for the customer</i>

Bold: dimensions
Italic: guiding principles

Figure 1—dimensions and guiding principles according the Shingo model

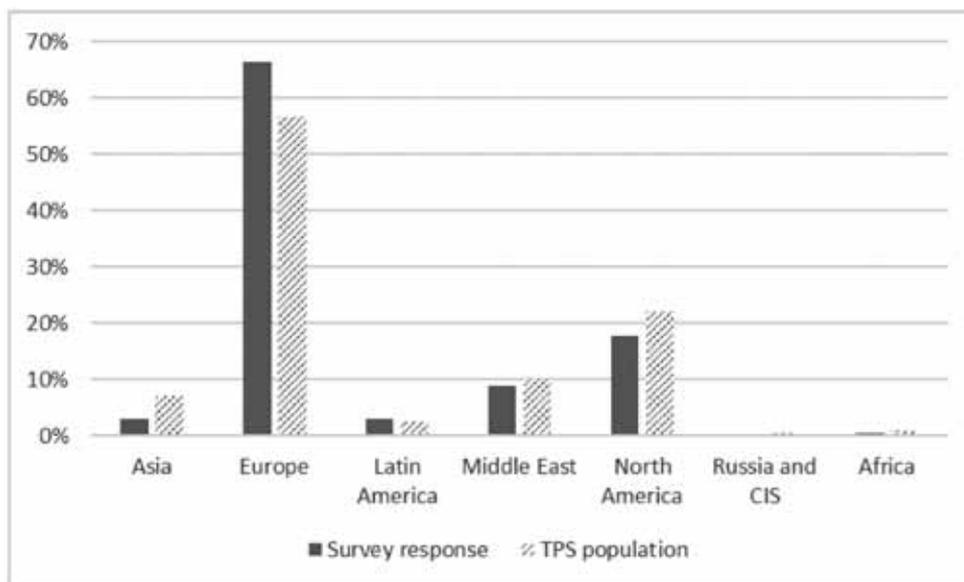


Figure 2—Relationship between TPS population and survey responses



Figure 3—Overall results of the survey and split between people leader and employee results.

Table 1—Assessment area and score.

Assessment Dimensions	#Sampled behaviors	Score (weight)
Cultural enablers	4	15%
Continuous Improvement	9	40%
Enterprise alignment	3	20%
Results	3	25%

Table 2—Score levels; the level #5 indicates the operational excellence level.

Level	Score (%)
#1	0 – 20%
#2	21% – 40%
#3	41% – 60%
#4	61% – 80%
#5	(OE) 81% – 100%

Table 3—Summary of scheduled communication.

Day	Communication	Owner
# 1	Survey kick-off. Social media communication to all employees	President and CEO
# 2	Communication to all employees	Quality Executive
# 3	--	
# 4	communication to sub business employees	Quality Executive
# 5	--	
# 6	last call to all employees	President and CEO
# 7	Survey closure	

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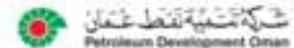
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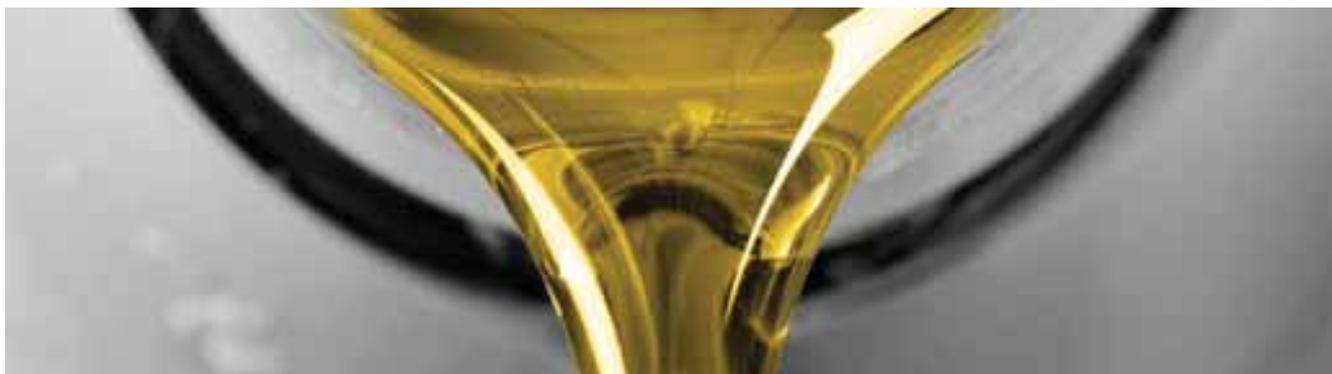
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PIMS-ATTRIBUTES OF CHAMPION LUBRICANT PLANTS

Introduction

Lubricant manufacturers worldwide are facing a multitude of challenges. Mature markets, volatile raw material prices, tariff changes, difficulty of inventory management, suboptimal productivity, and poor utilization rates of equipment, high downtime and associated production capacity loss, energy inefficiency, high maintenance spend and turnover of critical employees are amongst the growing obstacles for global majors as well as independent players.

There is an increased emphasis on understanding the drivers of performance that show the largest gap to best practice

Some companies have a policy to aim for “best quartile” performance. However, this immediately raises difficulties:

- a. What should be the appropriate measure of success? Should operating expenditure be the sole barometer of success, or should losses, labor productivity, asset efficiency and safety performance be considered?
- b. What comparison sets to use? Should this be a country, a region or a global comparison? Should this be versus

global majors, independent players or both?

- c. Since labor represents the biggest portion of operating expenditure, and pay rates are location dependent, should pay rates be normalized, since a plant cannot change its location.
- d. Since complexity is the biggest driver of operating expenditure after labor, and generally intrinsic to a plant has mission, how to correct for differences in that?
- e. Since scale of operation is also a key cost driver, should the performance evaluation correct for that?
- f. What about other “givens” such as proximity to suppliers, order sizes, lead times, access to Secondary warehouses, etc.

Over the last 25 years, PIMS has provided lubricants and greases manufacturers with concrete recommendations to improve their competitive position based on objective evidence. Based on our research and experience, some plants consistently and substantially outperform their regional peers.

These regional champion plants have a significant cost advantage versus peers, operate substantially below their expected

cost thresholds and attain a superior productivity position.

In this paper, we will explore the profile and key attributes of the champion plants that enable them to have the upper hand versus competition.

Overview: Americas

In the 20162017- cycle of the PIMS Lubricants and Greases Benchmarking, the average volume of finished lubricants produced by a plant in the Americas region was 77,700 tons. Although the median volume in Latin America has remained, stable at around 32,000 tons per annum, the North

American median has fallen from 92,000 tons in 20102011- to 80,000 tons in 2016-2017.

The aggregated complexity index² of 45% for the region is 5 percentage points below the global average. Whilst the median complexity for Latin America sits around 49%, a median complexity of 38% for North America brings down the aggregated average. The median unit cost in Latin America has increased by 8% from 2010-2011 to \$67/ton and North America saw a similar increment to \$67/ton.

Profile: Champions versus regional peers

The average annual throughput of the champion lubricants manufacturers in Americas is 128,500 tons, whilst other plants in the region (the “peers”) have a significant scale disadvantage with an average throughput of 66,000 tons.

In Figure-1 we see that the product portfolio of the champions aligns with that of the peers, with motor and hydraulic oil accounting for almost 90% of the portfolio. For the champions, 65% of the volume is produced using an in-line blender and the remaining via automatic batch blending. In contrast, although 83% of the peers’ throughput is produced via in-line blending, the remaining 17% is carried out by manual batch blending.

Despite an almost double annual throughput, the average volume packed by the champion plants is 50,300 tons whilst the peers are packing 37,000 annually. This higher proportion of bulk is one aspect that enables the champions to have a less complex operation. Figure 2 below shows the packing distribution of the champions and the peers. Although the large pack (i.e. greater than 10 litres) to small pack (i.e. less than 10 litres) ratio is similar between the two groups, the champion plants are filling less into drums and more into pails and 310- liter packs. It must be noted that kegs and <0.9 litre packs are not prevalent in this region. The average automation index³ for the small pack and large pack filling lines are identical for both groups at 100% and 50% respectively.

So what enables these champion plants to have a competitive advantage versus peers in the region?

Productivity and batch sizes: Champions versus the rest Table 1 below shows the productivity (FTE = Full Time Equivalent) of the champion plants versus the peers in Americas across all core activity areas of the plant.

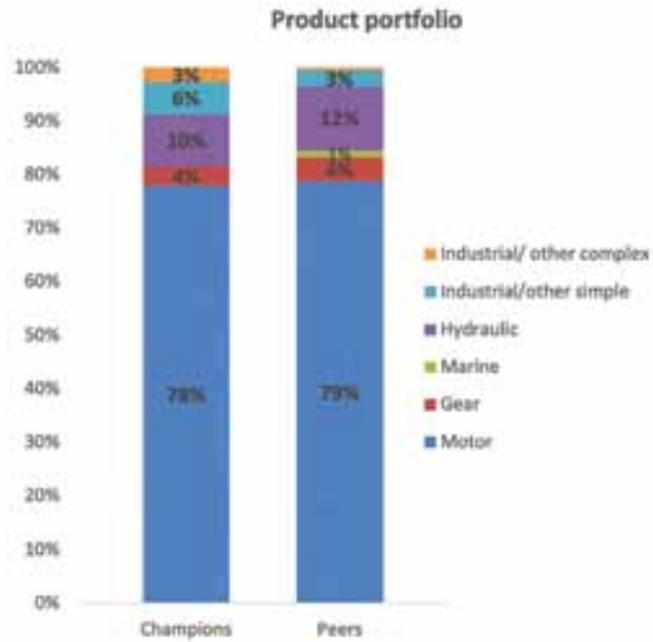


Figure 1. Showing the product portfolio of the champions and peers in Americas.

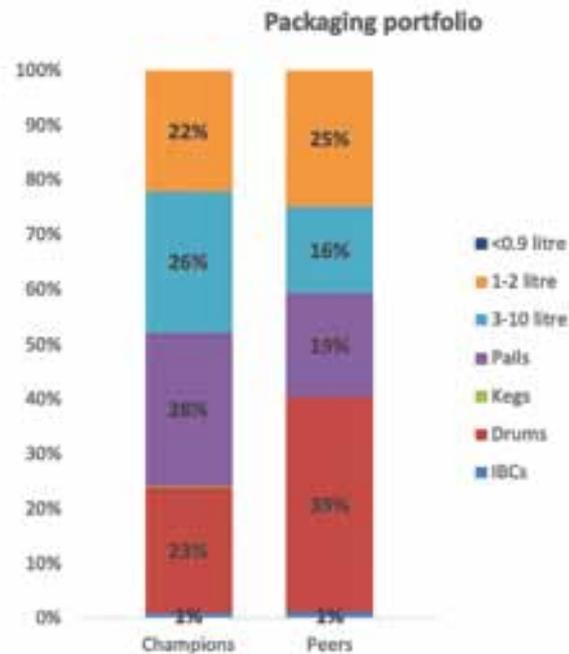


Figure 2. Showing the packing portfolio of the champions and peers in Americas.

Activity area	Unit	Champions	Peers
Raw material receipt	FTE/ kTons received in bulk	0.02	0.01
Blending	FTE/ kTons produced	0.04	0.10
Small pack filling	FTE/ kTons filled in small packs	0.36	0.91
Large pack filling	FTE/ kTons filled in large packs	0.26	0.43
Laboratory	FTE/ kTons produced	0.03	0.06
Bulk filling	FTE/ kTons filled in bulk	0.05	0.09
Warehousing	FTE/ kTons dispatched	0.19	0.29
General & Admin	FTE/ kTons produced	0.07	0.14

Table 1 showing the labour productivity of the Champions and peers across core activity areas of a lubricant manufacturing facility.

The champion plants in Americas have a better productivity position across the board. In labor-intensive departments such as small pack filling, the champions require 60% fewer people in comparison to the champions, whilst in large pack filling they use 40% fewer. In addition, the in-plant general & Administrative operations are significantly more streamlined. In the Americas, 60% of the plant OPEX arises from personnel related costs such as salaries, benefits, social costs, etc. Streamlining this effort enables the champions to gain a competitive advantage versus the peers. Of course, part of the equation is the overall size of the plant – champion

Plants fill 36% more in comparison to their peers. However, the differences are such that mere scale effects do not fully explain the advantages the champions manage to have. What is it about the processes of the champions that promote productivity over and above simple scale effects?

Figure 3 below shows the average batch size by blending equipment of the champions versus the peers. Although over 80% of the peers' throughput is produced via in-line blending, their much smaller manual batches drag down their overall average. When evaluated on a product type basis (see Figure 4), champion plants' batch size for motor and hydraulic oil (which accounts for ~90% of the portfolio) is 32% and 13% larger respectively. Despite the larger batches, the average blending time per batch for the champions require approximately 30 minutes less in comparison to peers (2.96 hours per run for the champions versus 3.36 for the peers). The economies of scale in conjunction with faster utilization rates boost productivity in the production department.

In the large pack filling department (see Figure 5), the regional peers have a 2.5-ton run size advantage in Drums in comparison to the champions. However, champions fill almost 30% of their throughput into Pails, and here there is a ~3 ton per run advantage versus the regional peers. For less than 10 liter packs (see Figure 6), the average

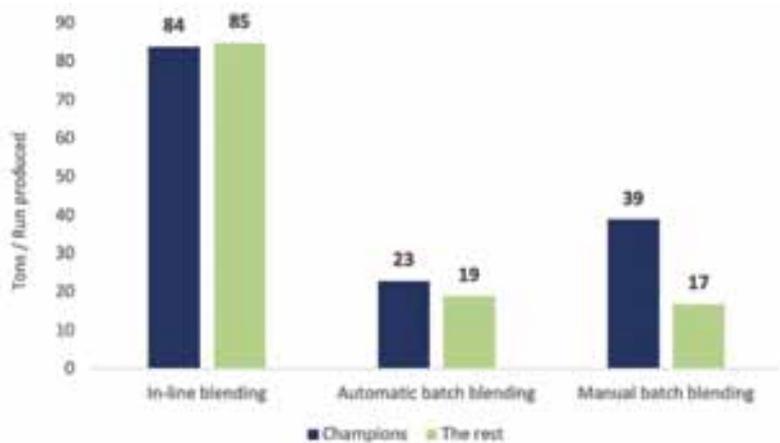


Figure 3. Showing the batch size by blending equipment.

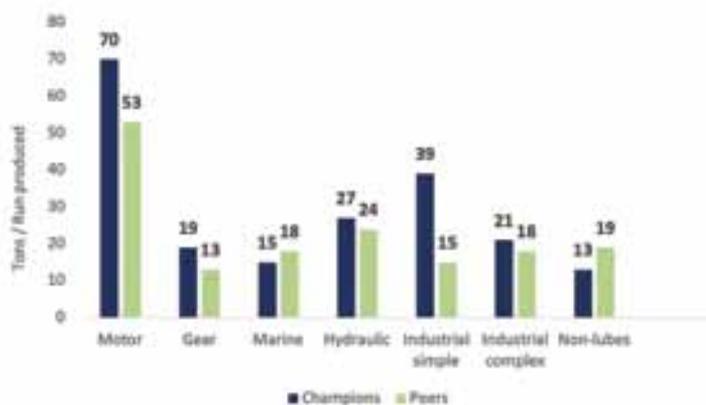


Figure 4. Showing the batch size by product type.



run size for the 3 - 10 liter packs for the champions is more than double the peers.

Table 2 above shows the aggregated OEE4 and component scores for the large pack and small pack filling lines for the champions and the regional peers. The champion plants manage their filling operation with fewer unplanned stoppages, are better at managing the planned downtime, and thus outperform their peers on Availability. The utilization rates of the champions (as indicated by the Performance aspect) for the large packs lines are significantly higher than the peers are, although there is significant spare capacity for the < 10 liter lines. Thus, bigger batches, higher utilization rates (for large pack lines) and well managed downtime boosts productivity in the packaging department. The quality component of OEE is very well managed in Americas. The OEE results indicate that significant investment in newer equipment is beneficial providing the labor productivity improves significantly.

Summary

The champion plants in Americas are exploiting economies of scale by producing and filling the finished lubricants in bigger batches in comparison to their peers. This, in conjunction with better utilization rates, lower complexity and well-managed downtime boosts productivity. Ultimately, this streamlined effort enables the champions to have a significant competitive advantage versus regional

peers. Champions are to the top by being better managed and more aligned with the rest of the supply chain – not by having more or newer equipment. There is a significant time delay between the installation of new equipment and the reaping of the benefits – which in turn also depends on how well managed the plant is. Champion plants typically invest modestly and focus on few but important goals. This is not the result of magic or coincidence but hard work and Professionalism.

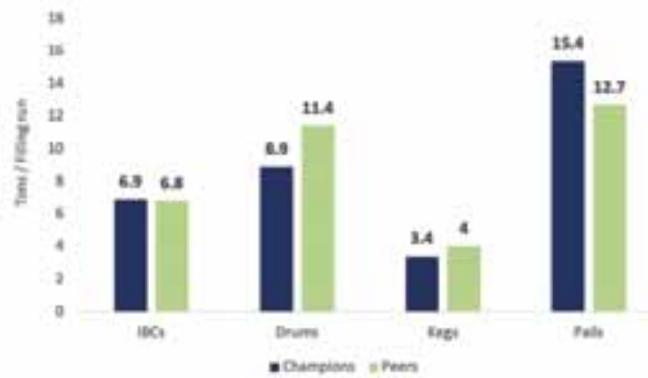


Figure 5. Showing the average run size for large packs (greater than 10 liters)

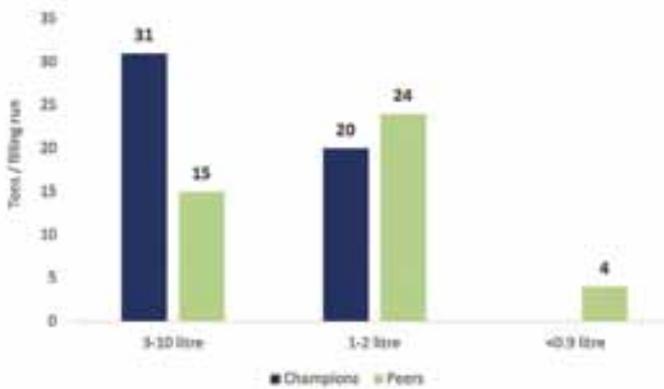


Figure 6. Showing the average run size for small packs (less than 10 liters).

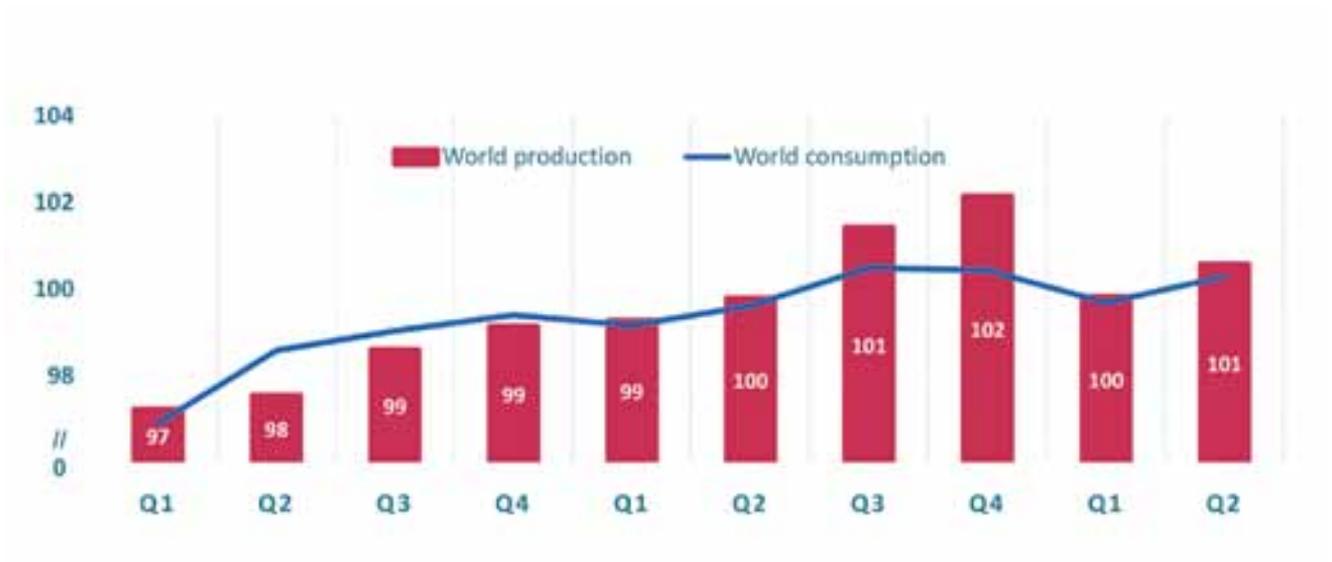


Overall Equipment Effectiveness	Large packs (> 10 litres)		Small packs (< 10 litres)	
	Champions	Peers	Champions	Peers
OEE (%)	50	30	36	57
Availability (%)	94	98	97	89
Performance (%)	54	33	38	65
Quality (%)	99	99	99	99

Table 2. Showing the OEE and component scores for large and small pack lines.

World liquid fuels production and consumption balance

Million barrels per day



Annual change in world liquid fuels consumption

Million barrels per day



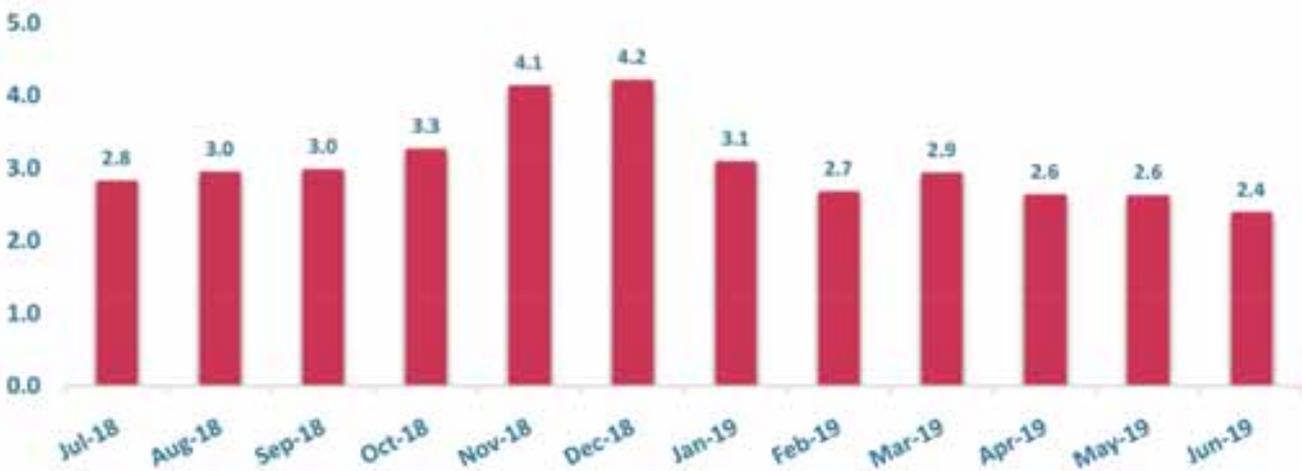
OPEC Crude Oil Production



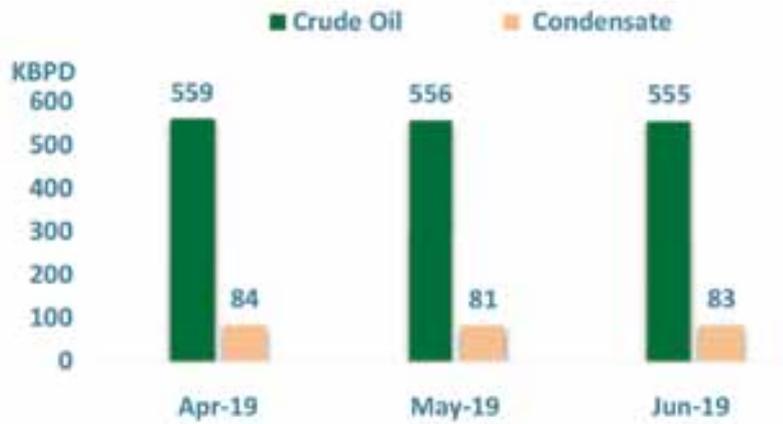
Crude Oil Prices



NYMEX Natural Gas Prices USD/Million BTU



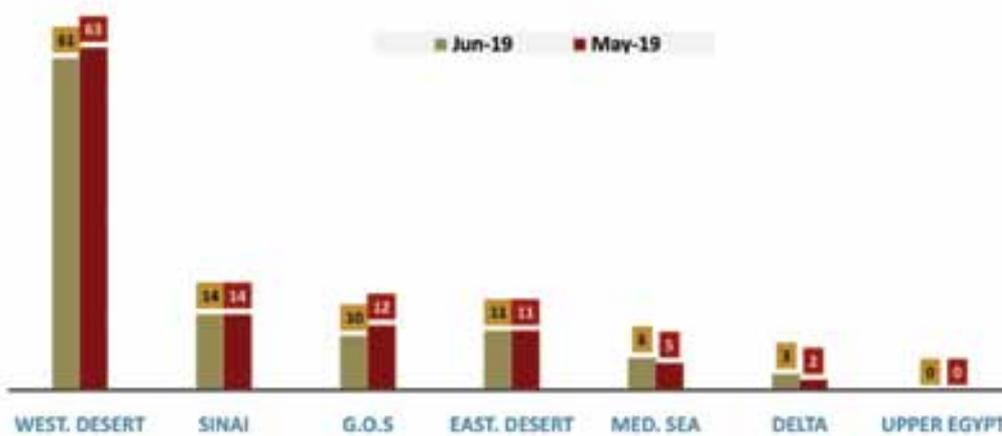
Month On Month Egypt's Production



Egypt's Gas Production



Egypt's Geographical Rig Count



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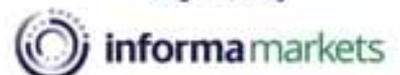
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PROJECTS HIGHLIGHTS

- /// **ZOHR Development Project:** Our Clients were awarded in both phases the supply of piping bulk material (fittings, valves, carbon steel and stainless pipes, and flanges).
- /// **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.

OUR PRODUCTS RANGE

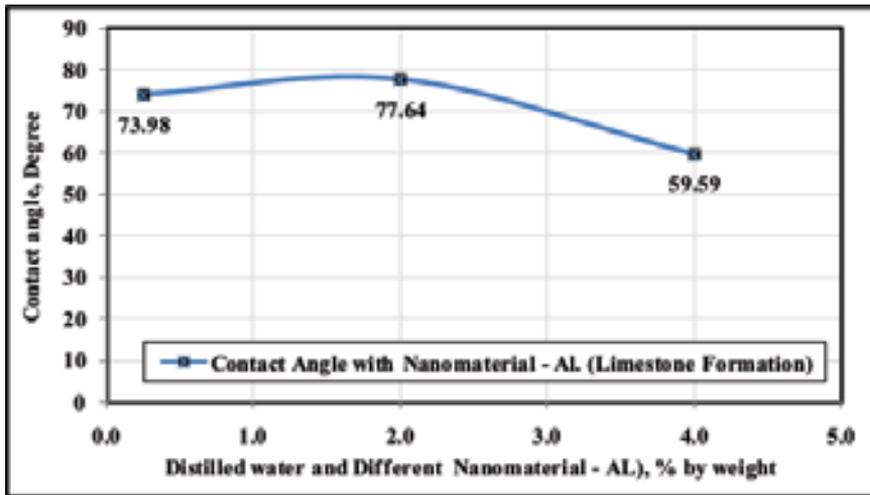
- /// Pipes and Tubes
- /// Piping Bulk
- /// Valves
- /// Inner-lining and Coating Prefabricated Piping Systems
- /// Oil Desalters and Dehydrators



OUR INTERNATIONAL CLIENTS



Contact angle measurement by Optical Tensiometer in Limestone Formation



Nano-materials



ball mill device



زاوية الاتصال في متكون الحجر الجيري من 125° إلى 70.02° بإضافه المحاليل النانوية المختلفة من النانو أومنيوم من ١ إلى ٤ جم/ لتر.

٢. باستخدام Optical Tensiometer device حيث قلت زاوية الاتصال في متكون الحجر الرملي من 135° إلى 59.59° بإضافه المحاليل النانوية المختلفة من النانو سليكا من ١ إلى ٤ جم/ لتر. بينما قلت زاوية الاتصال في متكون الحجر الرملي من 129.85° إلى 55.50° بإضافه المحاليل النانوية المختلفة من النانو أومنيوم من ١ إلى ٤ جم/ لتر. وباستخدام المحاليل النانوية المختلفة من النانو سليكا من ١ إلى ٤ جم/ لتر قلت زاوية الاتصال في متكون الحجر الجيري من 121.25° إلى 61.82° . بينما قلت زاوية الاتصال في متكون الحجر الجيري من 125° إلى 69.52° بإضافه المحاليل النانوية المختلفة من النانو أومنيوم من ١ إلى ٤ جم/ لتر.

ونستنتج من جميع الخطوات السابقة أن نانو السيليكات والألومنيوم كان أفضل تركيز نانو من ١,٠ إلى ٤,٠ جم / لتر ومقياس النانو من ٢٨ إلى ٣٢ نانومتر لتغيير خصائص الصخر النفطي إلى الصخر المشبع بالماء. وينعكس ذلك على كمية البترول المنتجة.

لذلك يمكننا زيادة إنتاج البترول بتغيير بلل الصخر من بلل نفطي إلى بلل مشبع بالماء حتي يصبح النفط حراً وإنتاجه بكميات كثيرة وكان هذا هو الهدف من هذه الدراسة.

وهو ماسيعود علي وطننا الغالي بالرخاء والنفعة.



Force Tensiometer Device

المختلفة من النانوسليكا من ١ إلى ٤ جم/ لتر. بينما قلت زاوية الاتصال في متكون الحجر الرملي من ٢٤, ١٣٣° إلى ٦٦, ٧٥° بإضافه المحاليل النانوية المختلفة من النانو ألومنيوم من ١ إلى ٤ جم/ لتر. وباستخدام المحاليل النانوية المختلفة من النانوسليكا من ١ إلى ٤ جم/ لتر قلت زاوية الاتصال في متكون الحجر الجيري من ٢٥, ١٢١° إلى ٧٩, ٥٥° بينما قلت

التوتر البيني من ٨٩, ٣٥ إلى ٢٨, ٠٢ دابن / سم بالنسبة لمتكون الحجر الرملي باستخدام Force Tensiometer device .

■ زاوية الأتصال

١. باستخدام Force Tensiometer device حيث قلت زاوية الاتصال في متكون الحجر الرملي من ١١٨° إلى ٧٦, ٧٧° بإضافه المحاليل النانوية



Optical Tensiometer device

٥. إضافة ٥٠ مل من المياه المقطرة علي كل تركيز من هذه التركيزات ومزجها بواسطة جهاز Magnetic Stirrer.

وتمت هذه الخطوات في معامل كلية الهندسة والعلوم بالجامعة الأمريكية بالقاهرة.

٦. قياس التوتر السطحي والتوتر البيني وزاوية الاتصال بأستخدام جهازين الجهاز الاول وهو Force Tensiometer device في الجامعة الأمريكية بالقاهرة والجهاز الثاني وهو Optical Tensiometer device في المركز المصري لتقنيات النانوتكنولوجي بجامعة القاهرة فرع الشيخ زايد .

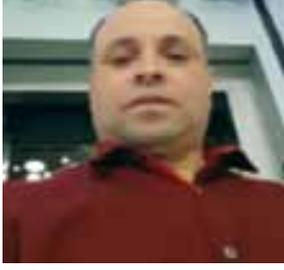
يتضمن الباب أهم النتائج التي تم التوصل إليها في كل مرحلة من مراحل البحث المختلفة، وأهم التوصيات عن ما تم إنجازها. ويقع هذا الباب في ٩ صفحات (صفحات من ٦٨ إلى ٧٦) والتوصل إلي أفضل النتائج وهي كالتالي :

■ التوتر السطحي

حيث تم استخدام المحاليل النانوية المختلفة من النانوسليكا من ١ إلى ٤ جم لتر بالنسبة إلي متكون الحجر الرملي حيث قل التوتر السطحي من ٣٥, ٧٥ إلى ٥٤, ٦٣ دابن/سم باستخدام Force Tensiometer device . بينما باستخدام المحاليل النانوية المختلفة من النانو ألومنيوم من ١ إلى ٤ جم | لتر قل التوتر السطحي من ٣٥, ٧٦ إلى ٦٩, ٦ دابن | سم بالنسبة لمتكون الحجر الرملي باستخدام Optical Tensiometer device .

■ التوتر البيني بين سطحين سائلين (المحاليل النانوية و الزيت الخام)

وأيضاً استخدام المحاليل النانوية المختلفة من النانوسليكا من ١ إلى ٤ جم لتر بالنسبة إلي متكون الحجر الرملي حيث قل التوتر البيني من ٧٦, ٣٧ إلى ٥٤, ٤٥ دابن/سم باستخدام Optical Tensiometer device . بينما باستخدام المحاليل النانوية المختلفة من النانو ألومنيوم من ١ إلى ٤ جم/ لتر قل



أ.د/ أحمد زكريا نوح
معهد بحوث البترول

تطبيقات النانوتكنولوجي في مجال البترول

تغيير درجة بلل الصخر

السائل، وتقاس زاوية الاتصال بعدة طرق من أهم هذه الطرق Sessile drop وهي عبارة عن سقوط بعض القطرات من السائل على السطح الصلب وقياس زاوية الإتصال .

ويتضمن هذا الجزء خطوات العمل التي تمت للفرض من هذه الدراسة . حيث تتغير درجة بلل الصخر بإستخدام تقنية النانوتكنولوجي عن طريق قياس زاوية الإتصال . وتم ذلك بعدة خطوات وهي كالتالي:

١. إختيار مواد ومقياس النانو المستخدمة في هذه الدراسة وهي ٢٨ نانومتر من النانو سليكا ، ٣٢ نانومتر من النانو ألومنيوم وتم الحصول عليها من معهد بحوث البترول المصري.
٢. تجهيز العينات الصخرية المستخدمة في الدراسة من متكون أبو رواش D و C حيث كان قطر العينة الصخرية في الحجر الرملي لعضو (C) ٢٨, ١٠ مم ويتراوح طولها من ٢٨, ٢٠ إلى ٢٨, ١٢ مم . بينما كان قطر العينة الصخرية في الحجر الجيري لعضو (D) ٣٥, ١٢ مم ويتراوح طولها من ٢٥, ١٨ إلى ٣٣, ١٤ مم.
٣. القياسات الروتينية للعينات الصخرية وهي قياس المسامية والنفاذية وتشبع العينات بالزيت.
٤. تجهيز تركيزات المحاليل النانوية المستخدمة من النانوسليكا والنانو ألومنيوم وكانت هذه التركيزات (٢٥) - (٠,٥) - (١,٠) - (٢,٠) - (٤,٠) جم/لتر.

تستخدم تقنية النانوتكنولوجي في مجالات كثيرة من أهمها مجال البترول ويستخدم فيها علي نطاقات واسعة من هذه النطاقات دراسة بلل الصخر وتطبيق تقنية النانوتكنولوجي في هذه الدراسة . في هذه الدراسة سوف يتم دراسة درجة بلل الصخر لمتكون أبو رواش <C> و <D> في حقل بدر الدين ١٥ شمال الصحراء الغربية في جمهورية مصر العربية وتأثيرها علي زيادة إنتاج البترول بإستخدام تقنية النانوتكنولوجي عن طريق تغيير خصائص الصخر من بلل نفطي إلي بلل مشبع بالماء حتي يصبح النفط حراً ويتم إنتاج كميات كثيرة.

معالجة المادة على المقياس الذري والجزيئي . وتهتم تقنية النانو بإبتكار تقنيات وسائل جديدة تقاس أبعادها بالنانومتر وهو جزء من الألف من الميكرومتر أي جزء من المليون من المليمتر. عادة تتعامل تقنية النانو مع قياسات بين ١, ٠ إلى ١٠٠ نانومتر أي تتعامل مع تجمعات ذرية تتراوح بين خمس ذرات إلى ألف ذرة. ثم تناول مراحل تطور تقنية النانوتكنولوجي وأيضاً تصنيف المواد النانوية ونبذة عن بعض تطبيقات النانوتكنولوجي في بعض المجالات مثل (الطب - الزراعة - الهندسة - المياه - البترول) . وشمل أيضاً بعض مشاكل النانوتكنولوجي.

تغيير درجة بلل الصخر بإستخدام تقنية النانوتكنولوجي في التجارب العملية.

يتضمن هذا الجزء ملخصاً وافياً عن درجة بلل الصخر وقدرة السائل على الحفاظ على التلامس مع سطح صلب والناتج عن التفاعلات بين الجزيئات، ويوجد عدة طرق تقيس بها درجة بلل الصخر من أهم هذه الطرق (زاوية الإتصال) بين السطح الصلب والسائل . وزاوية الاتصال هي الزاوية المحصورة بين السطح الصلب وقطره

منطقة الدراسة تقع شمال الصحراء الغربية في حقل بدر الدين ١٥ في متكون أبو رواش D و C. ويقع حقل بدر علي بعد حوالي ٣٠٠ كم غرب القاهرة وحوالي ١٠٠ كم من حقل إنتاج BED-1. أظهرت الدراسة الجيولوجية التابع الأستراتيجي للطبقية للمنطقة المدروسة حيث يقع متكون أبو رواش D و C في عصر الطباشيري العلوي. ويقع أيضاً داخل حوض أبو غراديق ٢ ويحتوي علي عدد من المناطق المنتجة للنفط . ويتميز بأنه يتكون من الأحجار الرملية والأحجار الجيرية ويبلغ سمكه حوالي ٧٠٠م وينقسم إلي سبعة أعضاء (من A إلي G) . وإستخدام تحليل سجلات الآبار تم تحديد مكان للنفط في متكون أبو رواش D و C لأنه يحتوي علي الأحجار الرملية والأحجار الجيرية لذلك يوصي بالتقيب والأستكشاف لتقييم خزان أبو رواش D و C . ويعتبر هذا التقييم واحد من أهم الطرق الرئيسية لتعزيز إنتاج النفط.

مقدمة عن تقنية النانوتكنولوجي

يتضمن هذا الجزء ملخصاً وافياً عن مقدمة تقنية النانوتكنولوجي . وهو العلم الذي يهتم بدراسة

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العراق والكويت يوقعان عقدا مع شركة بريطانية لإعداد دراسة لتطوير حقول نفط مشتركة

قالت وكالة الأنباء الكويتية (كونا) إن العراق والكويت وقعا عقدا مع شركة استشارات الطاقة البريطانية إي.آر.سي اكويبيوز لإعداد دراسة لتطوير حقول النفط الحدودية المشتركة. وأضافت الوكالة أن العقد، الذي سيدرس تحديد أفضل السبل لاستثمار واستغلال هذه الحقول، وقعه مسؤولون من البلدين الخليجين في العاصمة الأردنية ومن المتوقع أن يستمر لما يصل إلى عامين ونصف العام. وتوجد بضعة حقول نفطية في المنطقة الحدودية بين العراق والكويت، من بينها الرتقة، وهو امتداد جنوبي لحقل الرميلة العراقي العملاق. ولطالما كان الإنتاج في حقول النفط عبر الحدود مصدرا للتوتر بين العراق والكويت العضوين في منظمة البلدان المصدرة للبترول (أوبك).



أرباح إكسون موبيل الفصلية تهبط ٢١٪ مع انخفاض أسعار الغاز وارتفاع التكاليف

أعلنت شركة إكسون موبيل انخفاض أرباحها الفصلية ٢١ بالمائة بفعل تراجع أسعار الغاز الطبيعي وارتفاع تكاليف الصيانة. وانخفض صافي ربح أكبر شركة أمريكية منتجة للنفط إلى ١٣, ٢ مليار دولار أو ٧٢ سنتا للسهم في الربع الثاني، مقارنة مع ٣, ٩٥ مليار دولار أو ٩٢ سنتا للسهم قبل عام. وزاد إنتاج إكسون من المكافئ النفطي سبعة بالمائة إلى ٣, ٩ مليون برميل يوميا.

جازبروم نفط: إنتاج حقل بدرة النفطي بالعراق ١,٨ مليون طن

قالت جازبروم نفط، ذراع إنتاج النفط التابعة لشركة الغاز الروسية العملاقة جازبروم، إن حقل بدرة النفطي بالعراق أنتج ١,٨ مليون طن من النفط منذ بداية ٢٠١٩. وتملك جازبروم حصة ٣٠ بالمائة من المشروع الذي تقوم بتشغيله. وتسيطر شركة الاستكشافات النفطية العراقية على ٢٥ بالمائة وتملك كوجاس الكورية الجنوبية ٢٢, ٥ بالمائة فيما تملك بتروناس الماليزية ١٥ بالمائة وتباو التركية ٧, ٥ بالمائة.

أدنوك تستكمل اتفاقيات شراكة استراتيجية مع إيني وأو.أم. في قطاعي التكرير والتجارة

شركة بترول أبوظبي الوطنية (أدنوك) تستكمل اتفاقيات شراكة استراتيجية مع إيني وأو.أم. في مجال التكرير والتجارة. - شراكة أدنوك تتضمن استحواد إيني وأو.أم. في على ٢٠ بالمائة و١٥ بالمائة على الترتيب في أدنوك للتكرير. - أدنوك تقول إن من المتوقع أن تبدأ تجارة السلع المشتقات في ٢٠٢٠ بعد إتمام كل العمليات والإجراءات والأنظمة الضرورية.

بي.بي ترباح ٢,٨ مليار دولار في الربع الثاني وتتجاوز التوقعات

وارتفع إنتاج الربع الثاني إلى ٣,٨ مليون برميل من المكافئ النفطي يوميا، بزيادة أربعة بالمائة عنها قبل عام. وقالت بي.بي إنها تتوقع انخفاض الإنتاج في الربع الثالث من ٢٠١٩ عن الربع الثاني، في ما يرجع إلى أعمال الصيانة وكذلك تأثير الإحصار باري على العمليات في خليج المكسيك بالولايات المتحدة.

أعلنت بي.بي تحقيق أرباح بلغت ٢,٨ مليار دولار في الربع الثاني من العام، دون تغير عن الفترة ذاتها من العام الماضي، إذ أعاقها تراجع أسعار النفط. وتجاوز صافي الربح التوقعات البالغة ٢,٤٦ مليار دولار، وفقا لاستطلاع لآراء المحللين أجرته الشركة نفسها.



بتروبل تحقق كشافاً للغاز بدلتا النيل

الماضى وتم انجازها بأقل تكلفة اقتصادية ممكنة ، لافتا الى ان الاختبارات التي اجريت للبئر المكتشفة اسفرت عن معدلات انتاج مبدئية ١٧ مليون قدم مكعب يوميا من الغاز من خلال ربط البئر بتسهيلات الانتاج القائمة بالمنطقة ومحطة معالجة الغاز بحقول ابوماضى فى اطار الاستغلال الأمثل للبنية التحتية والتسهيلات المتاحة لزيادة الجدوى الاقتصادية وذلك تمهيدا لنقل الغاز وتدفيعه عبر الشبكة القومية للغاز الطبيعي .

واوضح رئيس بتروبل انه جارى الاسراع بوضع البئر على الانتاج فور الانتهاء من ربطها بالتسهيلات الانتاجية.



تراكيب جيولوجية بدلتا النيل ان عملية حفر البئر الاستكشافية القرعة - شمال شرق ١ اسفرت عن اكتشاف الطبقات الحاملة للغاز الطبيعي خلال عمليات حفر البئر التي بدأت اعمالها فى مايو

فى اطار جهود قطاع البترول لدعم انتاج الغاز الطبيعي والحفاظ على الطاقة الانتاجية لحقول غاز دلتا النيل تمكنت شركة بتروبل بلاعيم « بتروبل » من تحقيق كشف للغاز الطبيعي بمنطقة امتياز القرعة بدلتا النيل والذي يجرى حاليا العمل على وضعه على الانتاج بمعدلات تصل الى ٢٠ مليون قدم مكعب غاز يوميا.

واوضح التقرير الذى تلقاه المهندس طارق الملا وزير البترول والثروة المعدنية من رئيس الشركة المهندس عاطف حسن حول نتائج الحفر الاستكشافية بمنطقة امتياز القرعة لاستكشاف

ارتفاع إنتاج الغاز في حقل ظهر بمصر إلى ١١,٣ مليار متر مكعب في النصف الأول من العام



قالت شركة الطاقة الروسية العملاقة روسنفت إن إنتاج الغاز الطبيعي في حقل ظهر، أكبر حقل غاز في البحر المتوسط، بمصر زاد أكثر من ثلاثة أمثاله في النصف الأول من العام الجاري ليبلغ ١١,٣ مليار متر مكعب.

والحقل أحد الأصول الهامة لشركة روسنفت التي يسيطر عليها الكرملين في إطار استراتيجيتها للتوسع عالميا وبرنامجهما للغاز الطبيعي.

واشترت روسنفت حصة ٣٠ بالمائة في المشروع من إيني الإيطالية في عام ٢٠١٧.

وقالت الشركة إن إنتاج الغاز من المشروع البحري سيبلغ ٧٦ مليون متر مكعب (٢,٧ مليار قدم مكعب) يوميا بحلول نهاية العام الجاري مقارنة مع ٦٨ مليون متر مكعب في الوقت الراهن.

وقالت روسنفت في بيان " بعد بدء إنتاج الحقل

في ديسمبر عام ٢٠١٧، يمضي تطويره بأسرع من الجدول الزمني المحدد".

وتسيطر إيني على ٥٠ بالمائة من المشروع بينما تملك بي.بي ومبادلة للبترول حصة عشرة بالمائة لكل منهما في ظهر.

وزير: من المتوقع وصول الغاز القبرصي لمصر في ٢٠٢٤-٢٠٢٥

توقع وزير الطاقة القبرصي وصول الغاز الطبيعي من بلاده إلى مصر في ٢٠٢٤-٢٠٢٥. وأضاف الوزير يورجوس لاکوتريبيس خلال مؤتمر صحفي في القاهرة على هامش لقاء منتدى غاز شرق المتوسط "نحن في المراحل النهائية للاتفاق على تطوير حقل أفروديت... نتوقع وصول الغاز القبرصي لمصر في ٢٠٢٤-٢٠٢٥".

كانت مصر وقعت في سبتمبر الماضي اتفاقا مع قبرص لنقل غاز حقل أفروديت إلى مصانع الإسالة في مصر من أجل إعادة تصديره.

يأتي الاتفاق في إطار سعي مصر للتحويل إلى مركز إقليمي للطاقة، وتقدر احتياجات حقل أفروديت القبرصي من الغاز بما بين ٦,٢ تريليون وستة تريليونات قدم مكعب.



انشاء منتدى غاز شرق المتوسط فى القاهرة EMGF

موارد المنطقة وإتاحة المجال أمام سوق غاز اقليمية مستدامة ، حيث ناقش الوزراء المؤسسون سبل التعاون لتطوير مسارات البنية التحتية للغاز، تدريجياً، لتسريع فى تحقيق الاستغلال الاقتصادى الامثل من الإحتياجات الحالية من الغاز والاستفادة من البنية التحتية القائمة وتنمية المزيد منها لتسهيل استغلال الاكتشافات المستقبلية للغاز ، و الاستفادة من خبرات القطاع الخاص فى هذا الصدد.

ومن أجل السماح بمشاركة القطاع الخاص ، وافق الوزراء المؤسسون أيضاً على انشاء اللجنة الاستشارية لصناعة الغاز وإبراز أهمية دورها فى المساهمة فى أنشطة المنتدى .

وبناء على نتائج الاجتماع الوزارى الاول ، اوضح الوزراء المؤسسون التزامهم مواصلة التعاون لتحقيق اهداف منتدى غاز شرق المتوسط، من أجل تعزيز التعاون الاقليمى فى مجال الطاقة، بما يتماشى مع القانون الدولى ، لاستغلال

بناء على دعوة معالى المهندس طارق الملا وزير البترول والثروة المعدنية لجمهورية مصر العربية، انعقد الاجتماع الوزارى الثانى لمنتدى غاز شرق المتوسط فى القاهرة ، الخميس الموافق ٢٥ يوليو ٢٠١٩ ، للنظر فى تأسيس منتدى الغاز .

حضر الاجتماع وزراء الطاقة القبرصى واليونانى والاسرائيلى والىطالى والفلسطينى وممثل وزيرة الطاقة الأردنية بصفتهم الوزراء المؤسسين للمنتدى ، كما حضر الاجتماع وزير الطاقة الامريكى كضيف شرف مميز ومدير عام الطاقة فى الاتحاد الاوروبى وممثل كل من فرنسا والبنك الدولى.

قرر الوزراء من الأعضاء المؤسسين انشاء منتدى غاز شرق المتوسط فى القاهرة ، ولهذا تم اقرار القواعد والاجراءات الحاكمة لفريق العمل رفيع المستوى المكلف بتنفيذ فعاليات المنتدى . كما أكدوا التزامهم بالارتقاء بالمنتدى الى مستوى منظمة دولية تحترم حقوق الاعضاء بالكامل فى مواردهم الطبيعية وفقاً للقانون الدولى ، والعمل باجتهد على مناقشة وتشكيل المفاهيم العامة لوضعها فى صيغتها النهائية وفقاً للاطار المتفق عليه .



وينترشال ديا الالمانية تعلن زيادة استثماراتها فى مصر بعد الاندماج

وتحقيق نتائج إيجابية فى مختلف الأنشطة البترولية ، لافتاً إلى الجهود المصرية لإنشاء منتدى غاز شرق المتوسط والمكاسب التى ستحقق منه على المستويين التجارى والسياسى ، مشيراً إلى أن احتياجات دول الاتحاد الأوروبى تبلغ حوالى ٤٠٠ مليار متر مكعب من الغاز الطبيعى وتمثل سوقاً كبيراً لمصر ودول المنطقة التى تتمتع باحتياطيات ضخمة من الغاز الطبيعى وأن مصر مؤهلة كلياً لتلعب دور المركز المحورى للغاز بشرق المتوسط لما تمتلكه من بنية تحتية قوية وموقع جغرافى مميز.

وأكد المهندس سامح صبرى المدير التنفيذى للشركة فى مصر أن ديا تمتلك تاريخاً طويلاً مع مصر وشراكة ممتدة لنحو ٤٥ عاماً وأن اندماج الشركتين جاء بهدف توسيع نطاق أعمالها فى مصر بمقدار ثلاثة أضعاف ووضخ استثمارات كبيرة فى صناعة البترول المصرية.

أعدت خطط كبيرة لتوسيع نطاق أعمالها فى مصر فى إطار خطتها للوصول بإنتاجها على مستوى العالم إلى حوالى ٨٠٠ ألف برميل مكافئ يومياً من الزيت الخام والغاز ، وأشاد ماريو بما شهدته صناعة البترول المصرية من تغيرات جذرية وتحسن كبير فى مناخ الاستثمار

أعلنت شركة شركة وينترشال ديا انها تستهدف ضخ استثمارات فى مصر بقيمة حوالى ٨٠٠ مليون دولار خلال العامين الحالى والقادم أكد ماريو ميرين رئيس شركة وينترشال ديا ثقة الشركة فى قطاع البترول المصرى والفرص الاستثمارية المتاحة ، مشيراً إلى أن الشركة



شراكة مصرية أمريكية في قطاع الطاقة



وتوسيع الروابط التجارية وزيادة الاستثمارات الأجنبية المباشرة وضمان الاستقرار في المنطقة ، مشيراً إلى أن زيارة الوزير الأمريكي ريك بيرى لمصر لأول مرة ومشاركته في الاجتماع الوزاري الثاني لمنتدى غاز دول شرق المتوسط يعد دليلاً على أن البلدين يشهدان حقبة من العلاقات القوية المشتركة خاصة في مجال الطاقة ، وثمن الملا دعم الولايات المتحدة لجهود المنتدى ودوره الحيوي في مشهد الطاقة العالمي ، مؤكداً أن مذكرة التفاهم ستمهد الطريق لمزيد من التعاون المشترك في مجال الطاقة بين البلدين.

الذكية ، وتتضمن الاتفاقية تشجيع مشاركة الخبراء الفنيين بالأقسام البحثية التابعة للوزارات المشاركة من الجانبين في تحقيق المنفعة المتبادلة وتداول الأبحاث والمعلومات الفنية في مجال الطاقة وإقامة ورش عمل واجتماعات وبعثات دراسية وفرص تدريب وفرص العمل في كلا البلدين. وفي كلمته عقب التوقيع أكد المهندس طارق الملا وزير البترول أن الشراكة الاقتصادية والاستراتيجية بين مصر والولايات المتحدة ممتدة منذ عقود وأن الجهود مستمرة من الجانبين لدفع

وقع المهندس طارق الملا وزير البترول والثروة المعدنية مع ريك بيرى وزير الطاقة الأمريكي مذكرة تفاهم للتعاون الثنائي في قطاع الطاقة من خلال دعم وتعزيز التعاون بين وزارتي البترول والكهرباء مع وزارة الطاقة الأمريكية في المجالات المختلفة للطاقة وتوثيق العلاقات المشتركة ودعم التقدم في العلاقات الثنائية بين البلدين ، حضر مراسم التوقيع الذي نظمته غرفة التجارة الأمريكية بالقاهرة عدد من قيادات وزارتي البترول والكهرباء ورؤساء الهيئات والشركات القابضة وشركات البترول المصرية والعالمية العاملة في مصر.

وتشمل مذكرة التفاهم عدداً من مجالات التعاون من أهمها تسهيل عملية تبادل المعلومات الفنية والمهارات والمشورة والتجارب ونقل التكنولوجيا والتعاون في مجالات صناعة البترول والغاز من مصادره التقليدية وغير التقليدية خاصة البحث والاستكشاف والتنمية والإنتاج والتكرير والبتروركيمياويات والنقل والتوزيع والتسويق بالإضافة إلى دعم التعاون في مجال تكنولوجيا الفحم النظيف والوقود الحيوي، فضلاً عن دعم التعاون في مجال كفاءة الطاقة والطاقة المتجددة وتكنولوجيا المنشآت الصديقة للبيئة والشبكات

الملا : نستهدف إنتاج ٦٩٠ ألف برميل يومياً في نهاية العام المالي الحالي

البترولية المرتفعة والإسراع في إسنادها للشركات العالمية الكبرى التي تمتلك كوادرات وخبرات والتكنولوجيات الحديثة لتحقيق اكتشافات جديدة للبترول خاصة بعد الإنتهاء من عمل المسح السيزمي ثنائي وثلاثي الأبعاد لهذه المناطق البكر ، وفي هذا الإطار أوضح أنه تم طرح المزايدة العالمية للبحث عن البترول والغاز في منطقة البحر الأحمر والمحدد لها موعد إقبال في ١٥ سبتمبر القادم ، مشيراً إلى أن قطاع البترول وضع شروط متوازنة جاذبة للاستثمار وتقدم الشركات العالمية لهذه المزايدة في ظل المنافسة العالمية



أن يصل إلى حوالي ٦٩٠ ألف برميل يومياً في نهاية العام المالي الحالي . وأوضح الملا أنه في إطار العمل على زيادة إنتاج البترول تم اختيار بعض المناطق في عدد من القطاعات بمنطقة غرب المتوسط لاحتماليتها

قال المهندس طارق الملا وزير البترول أن قطاع البترول نجح خلال الفترة الماضية في الحفاظ على معدلات إنتاج الزيت الخام ومواجهة ظاهرة التناقص الطبيعي للآبار والحقول القديمة من خلال تنفيذ مشروعات وبرامج عمل مكثفة للبحث والاستكشاف والحفر وتمية الآبار في المناطق الرئيسية المنتجة للزيت الخام من خلال استخدام التكنولوجيات الحديثة وتحسين الأداء وزيادة كفاءة تسهيلات الإنتاج مع العمل على خفض تكلفة الإنتاج ، مشيراً إلى أن متوسط الإنتاج من الزيت الخام والمنتجات يبلغ حالياً حوالي ٦٢٠ ألف برميل يومياً وأنه من المستهدف

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