

Middle East Energy Technology Dialogues SPECIAL REPORT

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How will the Covid-19 Pandemic Impact the Middle East Energy Industry's Adoption of the 4th Industrial Revolution Digital Toolbox?



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FOREWORD

By Sir Mark Moody-Stuart

**A Member of the Board of Saudi Aramco,
and Former Chairman of Royal Dutch Shell PLC**



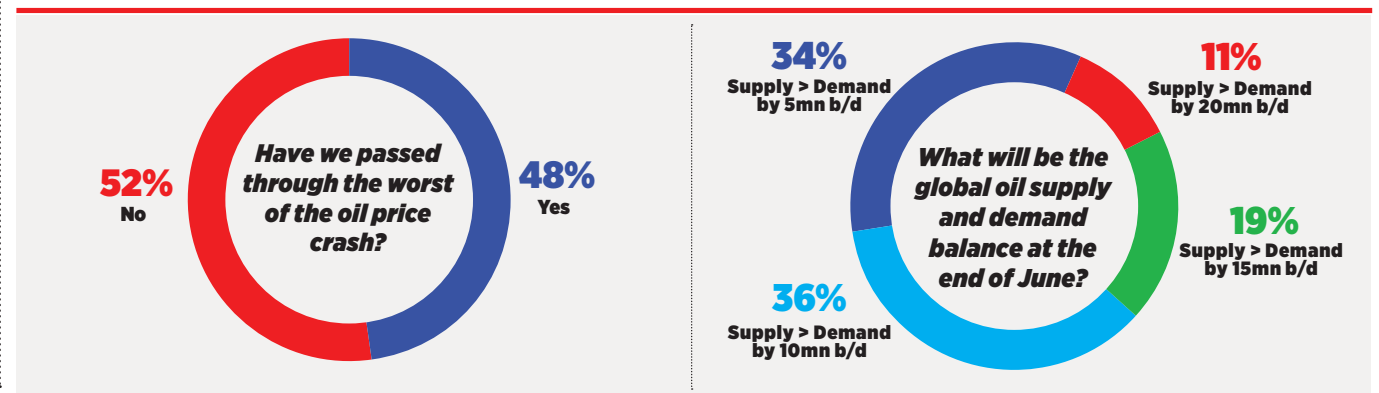
Covid-19 pandemic has accelerated the oil industry to a tipping point

It's a tipping point for the industry for a variety of reasons. Oil is an unusual commodity. It's the only commodity where the lowest cost producers have restrained production for 45 years and allowed higher cost production to grow. This has been going on since the 70s. It started with the expansion of the North Sea, where we were saved by the OPEC putting

the prices up, and then oil sands and finally Shale. That system has worked, provided that demand was growing. Demand has grown, not hugely but consistently, over the past decade.

However, at the moment a point is approaching where demand is flattening. Low-cost producers would have been previously happy, even if they lost some market share, because their production could grow, and prices were up. If you come to a point where demand is flat, then the game changes. They cannot continue to restrain production to keep oil prices up. Otherwise, it would wither away to nothing and the high cost producers would take over.

This is a point where oil transforms into a normal commodity, like Iron, Nickel and Copper, where low cost producers dominate in market share and the higher cost producers fill in the tail end. This has been coming for some time, but Covid-19 accelerated it. I personally don't think the market will decline very much, but demand will be flat. In this situation, you cannot keep cutting production to hold oil prices up. The high-cost producers must realize that the game has changed. It will take them the rest of the year to get the situation under control. ■



Source: 350 energy stakeholders in Q2, 2020

Edited text

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Integration & leveraging open source technology is key

By Dr. Satyam Priyadarshy
Technology Fellow & Chief Data Scientist
Halliburton



A doption of the 4th Industrial Revolution technology toolbox and the disruption that it allows has gradually filtered into the regional oil and gas industry since 2015. But the sector is still not well connected. A large legacy of manual processes are endemic in energy systems, such as power generation and even the new generation of renewables.

Today's Challenge?

We must embed a culture of data aggregation so that the information can be applied 100% in real time. The one element that the industry has under its control is cost and finding that cost comes from data. We have decades of production data at our fingertips to analyze inefficiencies. But to do this, we need to accumulate and connect the information from the many silos of operations that exist. Integration and leveraging open source technology is key.

Holistic Approach

Technology is not the only solution – it has to be coupled with talent readiness. Training and educating the workforce to understand what new technology brings is essential. This includes how data integration works and creates value, how to interpret and present data and understanding new terms such as ‘cloud platform hybrids’. All are critical components of success.

We cannot do workflow optimization without also optimizing the talent along with the technology. With digital connection solutions at our disposal, we can now enhance that value even further. ■

“The adoption of the 4th Industrial Revolution digital tool box in the oil and gas industry – so globally, I think I would score 4IR adoption at about 7 or 8 out of 10. In the Middle East, I would say they are coming to 5 to 6 out of 10 because they are now getting more serious about it.”

Technology innovation & deployment of tools like Artificial Intelligence has played a dominant role in the transition of power generation

By Paddy Padmanathan
CEO
ACWA Power



Renewables are increasingly cost competitive, especially thanks to five years of lower costs of finance and technology innovations. This includes the deployment of digitalization, including artificial intelligence (AI). These are critical to improving performance and optimizing systems across renewables (i.e. the transition of power generation) and the entire energy sector.

Regional snapshot

The Middle East is quickly adopting technologies. The region benefits from relatively small amounts of legacy equipment, plus the exponential growth of a young population, rising consumption and industrialization. Affordability and access to tech is being further improved as suppliers compete to sell into the region. The main constraint is still human resources. We need the best and the brightest. If we can attract the talent, adoption will be much faster.

Impact of Covid-19?

We have managed to move people and equipment into the right places, altering our operating assets as much as possible where required. This means we continue to provide vital services. We have 2,000 of our staff split into smaller groups inside power plant complexes and working from home. The main concern would be any disruptions to supply chains. With borders shut, it may be challenging for companies to get replacement parts for large mechanical and electrical assets. ■

“While the world is going to be very, very different post-covid-19, the only thing we don’t know is how different it will be. I expect we will see a massive acceleration in the digitization of the Middle East power sector, a huge improvement that will represent a step change as we go forward.”

Stress drives the evolution of industries and accelerates the transition of entire ecosystems

By Eric Koenig
VP Strategy & Marketing –
Oil, Gas and Petrochemicals
Schneider Electric



Stress drives the evolution of industries and accelerates the transition of entire ecosystems. The negative impact of Covid-19 on demand and oil prices now calls for supply chains to reduce costs, hastening digital transformations and the adoption of the 4th Industrial Revolution toolbox.

Just look at the US' shale industry. It became much leaner after the 2014-2015 sector downturn when oil prices fell sharply, evolving rapidly thereafter. Today's hope is that the entire global oil and gas industry will become more efficient and adopt innovative solutions, while keeping an eye on increased cyber risks.

Rethink the status quo


Companies must alter their regular practice in this new environment. For example, our factories remain open, but we are running them with less personnel on site. Even part of our laboratory work is being done remotely. We are looking at investing in new ways to perform factory acceptance tests and certifications. Of course, these new processes and others across the sector will take time to integrate. We are at the intersection of deploying automation and have always supported critical industries, infrastructure and lines of trade – from data centers to water and wastewater to electric utilities. We must continue to rapidly adapt and learn together. ■

“Some kind of stress has always been a good thing for the evolution of the industry and for accelerating transition. The hope today is that the entire global oil & gas industry will become more efficient and adopt innovative solutions, while keeping an eye on the increased risks for cybersecurity.”

In today's world of the 4th Industrial Revolution, the energy industry must collaborate on technology more than ever

By Christian Cravedi
SVP, Hub Manager, India, Middle East & Africa,
Energy Industries, ABB



 How to help stay one step ahead in tough times? Share intelligence and knowledge. In today's world of the 4th Industrial Revolution (4IR), the energy industry must collaborate on technology more than ever – both on legacy and modern tools. Identifying a clear, united purpose is vital to sustainable progress.

Synergies on the rise

Amid today's challenges, we must all innovate and adopt solutions that are in line with our current limits. In this vein, more and more collaborations are emerging across a broad spectrum. This includes the oil and gas industry, environmental services and the power, water and chemical sectors. These business synergies are being crafted to maximize companies' value propositions. Integrating the tools of the 4IR, such as artificial intelligence (AI), into this mix unleashes ever growing potential for companies' plans. This encompasses worker safety, business continuity, efficiency and productivity.

Green tech is the future

Evolving green technologies – such as expanding the hydrogen market – are undoubtedly the next frontier for energy firms. But the pace of progress will differ between companies. Different types of utilization of the 4IR toolkit will evolve for different purposes at different times. But what is a clear priority for all is that we can no longer think in silos.

We must all consider ourselves in a visible and open souk where the 'product' of the hydrocarbon chain is able to work alongside many other 'products' in the souk, such as renewables. All the 'products' are critical to improving our quality of life. Whatever combination helps establish the right balance – identified through knowledge sharing – is invaluable. ■

“Adoption of 4IR tools is going to be an evolution for different types of utilization – whether in the green energy space or in hydrocarbons. We can no longer think of sectors – we will have the hydrocarbon chain with the value it brings to the economy and we will have other energy sources and the choice will be a combination that will improve quality of life and find the right balance.”

Integration of legacy infrastructure and clean data will be crucial for any energy company to excel in the future

By Nicolas Mey
Industry Technical Director
Bureau Veritas



Adoption of tested and proven technology solutions will accelerate as the financial pressures, triggered by the Covid-19 pandemic and record-low oil prices, build on businesses. Amid today's challenging times, continuity is especially vital for companies. As budgets are inevitably readjusted, firms will focus their technology choices on what is most urgently required to keep operations safe, efficient and agile.

Oil impact?

The collapse in oil prices over the last month will not only accelerate digital choices and adoption. It will also spur the technology integration of stakeholders within the energy ecosystem. Trust and transparency will be critical for successful deployment and implementation. The good news is that there is room to grow as the Middle East and Europe's efforts on this front are still relatively immature.

Streamline legacy data

We cannot underestimate the importance of the legacy data and information in the energy system today, nor what intelligence it can generate to reveal new efficiencies. For one, it would enable technologies of the 4th Industrial Revolution (4IR) toolbox to be deployed earlier and deeper throughout the supply chain. Of course, this won't happen overnight. It will probably take many years. But the integration of legacy infrastructure and clean data will be crucial for any energy company and consortium that wants to not only survive this period, but excel in the future. ■

“There is a future beyond Covid-19 and it is very important to bridge the gap with what will be the new way of work and become more flexible, agile and efficient in production schemes.”

Data quality and governance must be a focus of all companies' long-term strategy

By Dean Mikkelsen
Data Management Manager
Rumaila Operating Organisation



It may not be an easy task to decide and align the technologies that should be adopted within a consortium of companies, all with different viewpoints. But it is essential. In Iraq for example, we have had Chinese suppliers who brought in hardware and UK companies who delivered technical expertise. This is not always an easy marriage. But operators must get on and integrate the best technologies that will enable them to hit production targets, sustain safety standards and offer the best returns.

Patience pays

Efforts won't be an overnight success. Replacing legacy infrastructure with modern technology tools and software applications – i.e. merging analogue and digital environments – is a step-by-step process. This is especially true when working with partners or in a consortium. With it, comes the challenge of acquiring and training staff to ensure human resources are creative, efficient and inspired. Of course, this is a global challenge.

Data integration

Breaking down silos of information is key. This applies equally to international oil companies (IOCs) and national oil companies (NOCs) in the Middle East and beyond. It is vital that knowledge is transparent and easily accessible so that everyone has the answers to key questions. For example, how is a well being handled, what is the capacity for drilling and how can digital technologies help? Spending should be prioritized on tools that ensure data is accessible, clean and consistent. Without this, using the digital toolbox of the 4th Industrial Revolution – such as artificial intelligence (AI), robotics and automation – is of little use. Companies must start with the basic datasets that are already available and then build on that foundation. Data quality and governance must be a focus of all companies' long-term strategy. ■

“Without clean data, use of digital tools such as artificial intelligence (AI), robotics and automation is of no use. Data quality, accessibility and governance must be the focus of companies' long-term strategy.”

The value of investing in the 4IR toolbox has never been clearer

By Naji Masri
Head of Business Development, Digitalization
and Distribution Management
BASF



The stress of Covid-19 and collapsing oil prices has a flip side. It can be an opportunity for organizations, many keen to increase the efficiency of their balance sheets, to accelerate their digital transformations. And so, budgets are increasingly being viewed with an eye on how to leverage the toolbox of the 4IR. Those who have failed to embrace the 4th Industrial Revolution (4IR) so far are likely regretting missing out on the economic and operational benefits it can unleash.

Clear priorities

Before the global pandemic, the energy industry in the Middle East was on the right track in terms of embracing the 4IR. But today's challenging environment means there is no room for error. Efforts cannot falter. If anything, the value of investing in the 4IR toolbox has never been clearer.

Amid the pandemic, technology and the digital toolbox have proven pivotal in sustaining workforces and the global economy. Looking ahead, the Middle East can explore the value of smart manufacturing more deeply. And artificial intelligence (AI) and robotics are just two of the many technologies that can streamline production, ensuring faultless and safe operations. The world is clearly facing great stress. But we must harness the potential of technology to ensure that when the pandemic inevitably calms and oil prices rise, companies are poised to bounce back and ensure energy security. ■

“By adopting the 4IR toolbox, the Middle East can leverage smart manufacturing, deployment of Artificial Intelligence (AI) and robotics onsite at oilfields to ensure safe, streamlined operations and prevent disruptive incidences.”

Companies that have the agility to pinpoint opportunities in different scenarios will be the most successful

By Bart Cornelissen
Energy, Resources & Industrials Leader
Deloitte Middle East



One rule does not suit all when it comes to digital transformations. For one, the Middle East's national oil companies (NOCs) are well behind international oil companies (IOCs) when it comes to their digital evolutions. One reason has been necessity. With one of the world's cheapest rates of oil production, the need to apply digital solutions to bolster efficiency has not been as urgent. NOCs are also considered anchors of employability in many Middle Eastern economies. So, they must tread more carefully as today's dominant

view among workforces is that digitalization leads to job losses. While this perception is gradually shifting, the risk is that innovations within NOCs will be stifled when revenues recover after the worst of Covid-19.

Focus on real returns

NOCs must pin down the impact of new technologies and digital tools on the real return of investments (ROI). Today, companies are being forced to make trade-offs between current liquidity and longer-term investments and projects. Pressure on short-term cash reserves and dividends means non-critical ideas, even those with a robust ROI, may not make the cut in today's challenging financial environment.

Master unpredictability

The strain from the pandemic and collapsed oil prices serves as a vital lesson: learn to embrace uncertainty. Companies that have the agility to pinpoint opportunities in different scenarios will be the most successful. Looking ahead, all companies must take a dual approach. They must seize opportunities to fix immediate issues, while also preparing for longer-term recovery and growth. Not everybody is doing this balancing act. ■

“One of the lessons from this period is that you have to learn to embrace ambiguity and uncertainty. It is important for companies to take a dual approach and not only invest in technologies that tackle immediate challenges but also those that will keep them competitive in the future.”

The HSE tools of yesteryear are simply not sufficient for the new working environment

By Morgan Eldred
Managing Partner
Digital Energy



Safety is always the top priority. So, rethinking health, safety and the environment (HSE) in the energy industry is a must. A new, carefully designed status quo that leverages digital tools is imperative, especially once the global pandemic eases and staff gradually return to work.

A new normal

Industry stakeholders seem to be waiting for regulatory bodies to direct them. While authorities set standards, it is companies that must step up and provide the technical solutions for HSE. The HSE tools of yesteryear are simply not sufficient for the new working environment. Of course, new methods will take time to establish and to be understood company wide. For now, firms are not ready. They are more focused on financial survival. This makes it difficult to convince organizations to adopt digital solutions unless they are priced very, very competitively.

Next steps?

HSE has long been stringent across the energy markets, especially in operational field environments. But amid this global health threat, it must be even more robust, today and going forward. The need for a heightened integrated safety system presents challenging questions. How and where to isolate staff while sustaining strong communication and safe operations? How to perform new risk assessments affordably and remotely, both on and offshore? How to train workers remotely on the new digital tools that companies want to adopt? One solution may be using artificial intelligence (AI) to assess workforce risk, for example. Addressing these challenges – and many, many more – must be done while reassuring staff that their safety is absolutely assured. ■

“The HSE tools deployed by the industry are not sufficient for today’s new way of working and need to shift focus from control measures to predicting real-time risk to frontline workers.”

The Middle East has made good progress in digitalizing industry processes in recent years but there is still much road to travel

By Dr. Axel Wietfeld
Managing Director
Uniper Energy Storage



Cost efficiency and scalability. Both are pivotal to achieving modern, efficient and competitive economies that can produce increasing amounts of energy with minimal CO₂ emissions in the 2020s. But this is still a goal: it has not yet happened. The Middle East and Europe have made good progress in digitalizing industry processes in recent years, improving efficiency and standardization. But there is still much road to travel.

Applications abound

Sites must be evaluated on a case-by-case basis when leveraging digital expertise across different business segments. The industry's 4.0 toolbox, as part of the 4th Industrial Revolution (4IR), is not just applicable to newer assets, such as hydrogen facilities and power to gas projects. The toolbox is also valuable when it comes to optimizing legacy assets, such as coal fired power plants. For example, predictive analytics can be used to better manage monitoring and testing in all operations. And automation can prove especially critical in managing operations during the Covid-19 pandemic. For one, enhanced remote control systems can enable staff to dispatch and operate assets from home bases, which sustains operations and protects staff.

Post-Covid-19?

The current crisis can be viewed as an opportunity for businesses. We should be thinking carefully and wisely about how to spend the billions in various currencies that are being pumped into economies via massive funding and cash injections. One obvious route would be to support a greener economy as per the global energy transition, as well as talent elevation so that employees' skills keep pace with the 4IR. ■

“The massive funding and cash injections into economies occurring today should be invested wisely and towards key areas like digitization and green economy that can truly transform our energy landscape.”

Energy companies' strategies must ensure human resources and digital growth are aligned

By Dr Steven Griffiths
Senior Vice President, Research and Development
Khalifa University



Today's major downturn means adopting the digital tools of the 4th Industrial Revolution (4IR) in the oil and gas industry is essential to survival. This encompasses blockchain to manage supply chains, artificial intelligence (AI) to optimize legacy data and augmented reality and automated robotics to streamline operations and improve safety. All of these, and many more applications, are critical to generating greater cost efficiencies and ensuring reliable operations.

Digital education

Human capital development is instrumental to the success of these digital solutions. This especially applies to digital education; an area that needs considerable improvement. One route is stronger collaboration between academia and industry. For example, students can be enabled to perform fundamental applied research that is relevant to national oil companies' (NOCs) operational needs. This would also give them valuable insight into the industry's day-to-day workings. Whatever the landscape going forward, energy companies' strategies must ensure human resources and digital growth are aligned.

Seek partnerships

In the UAE, partnerships with international NOCs and international oil companies (IOCs) can be a very positive driver in bringing digital tools and technology to the fore. It also supports the challenging geological plays that the country has planned, including increased enhanced oil recovery (EOR). ADNOC's concessions that it awarded to international partners play an important role in this effort. The whole region must continue utilizing international expertise, research and development (R&D) capabilities and in-house knowledge to remain robust in these challenging times. There is no need to reinvent the wheel. ■

“Whether it is augmenting the workforce, moving to full autonomous operations or coordinating supply chains with blockchain, 4th Industrial Revolution digital tools provide major opportunities for considerable cost efficiencies.”

Digital solutions are imperative in the oil, gas and services sector to help the industry make a comeback

By James McCallum
Executive Chairman, Xergy
Professor of Energy, Strathclyde University



A lot has changed in three months. The Middle East's energy sector is operating in a very different world. Now, amid the Covid-19 crisis, energy stakeholders must deliver hydrocarbons amid collapsing demand and human resource dimensions have been enormously eroded. Now, digital solutions are imperative in the oil, gas and services sector to improve cost efficiency and help the industry make a comeback.

Slow start, fast future?

So far, the region has been a very slow adopter of digital technology solutions, despite some encouraging signs. The main hurdle has been cost efficiency. When you already have a low cost of energy development like the Middle East, the need to continually trim expenditure takes on a different perspective; think the Arab Gulf versus the North Sea. But amid today's pressures, incentives are changing. The Middle East is in a strong position to embrace its new digital challenge and can look both east and west to secure new opportunities and partnerships. The region is also shifting back into a position of relative influence in the global supply equation, having partially lost this seat for the last three years with the emergence of US shale.

Necessity is the mother of innovation

Middle Eastern energy producers face an incredible opportunity to be at the forefront of global thought leadership in digital applications. But the region risks missing out if it doesn't have a coordinated agenda amongst all parties – industry, services sector and academia. Rapid acceleration in digital technology adoption and human capital development means working together and soon. ■

“The Middle East has an incredible opportunity to be at the forefront of thought leadership in digital application but this is not feasible unless there is collaboration across major producers, academic institutions and the service sector.”

The first step to a successful digital distribution and application is building trust in the systems and operations

By Andrew Rippon
Founder
Thrupny



Lean and reactive energy firms that can deploy digital tools will respond far better to unexpected market swings – a fact that Covid-19 has brought into sharp focus. Until now, energy-related businesses’ digital adoption has evolved at hugely different speeds across the Middle East. But now it is clear: proactivity pays.

Build digital trust

Human resources will always be valuable, but firms must equally understand how automated processes can enhance results. The first step to ensure successful digital distribution and application in the workplace is building trust in the systems and operations. For example, blockchain can act as a ‘guarantor’ for many of the other tools under the umbrella of the 4th Industrial Revolution (4IR).

Stress spurs positive disruption

Companies’ legacy methodology can be a major constraint, delaying digital transformations. But in today’s challenging environment, the systems that lack resilience are being revealed. The plus side is that this also acts as an opportunity to show how newer technologies in the 4IR can be introduced with relative ease to support business operations.

How we define the business case is also changing amid today’s strained business environment. Long-term return on investment remains critical to business models, but so is the value of resilience, environmental factors, health considerations and work/life balance. All are of growing importance, especially when the world faces big shocks. ■

“This is one of those enlightenment moments where we have a reason to accelerate digital transformation. Real efficiencies can be implemented that will have long-term impacts.”

Recognizing shared value in digital transformation is critical to ensure that all stakeholders are on the same page

By Joost De Bakker
Regional Wells Manager – Middle East and Asia (West)
Lloyd's Register



Mixed speeds. That's the best way to describe digital adoption in the Middle East's energy industry. Strong progress has been made in downstream oil and gas, especially in terms of mapping value on a strategic level, such as the integration of platforms. But upstream progress has been more complex. Efforts to tie technologies together, including merging legacy and modern tools, are working. But there is a long way to go before we see greater benefits.

Accelerate decisions

The tendency for top-down decision-making in the Middle East should make it easier to merge different technology interfaces and leverage the tools of the 4th Industrial Revolution (4IR). Striking the right balance in a business model between what to automate and what not to is also vital, especially when it comes to protecting the original investment. Success will also benefit from a broader ecosystem that avoids silos, such as bringing a diversity of skills, capabilities, and knowledge together.

Promote unity

Digital technologies offer endless potential, such as improving cross-sector and cross-technology alignment. But success is not guaranteed. It very much depends on flexibility and removing the traditional hierarchies between various business interfaces so that segments can work more seamlessly together. Recognizing shared value is critical to ensure that all stakeholders are on the same page, i.e. those in the supply chain and those issuing contracts. The Middle East's leadership and vision will also be key to counter cultural adversity within firms. Digital transformations carry new risks, including concerns over job security and return on investment. Strong communication will help transcend those.

Despite the deeply unfortunate circumstances, perhaps the Covid-19 crisis is the trigger to make 4IR technologies really work for business objectives and supply chains? Maybe it will allow majors to maximize assets with the legacy and 4IR tools available? Expect the next few months to reveal how the Middle East's energy industry reacts. ■

“The Fourth Industrial Revolution can only be successful if you bring the diversity of skills, capabilities, and knowledge together. Working in silos is going to delay the process of maximizing the value of the benefits.”

Integrating technologies is no easy task but it is paramount to the long-term growth of the Middle East's energy industry

By Dr. Symeon Kassianides
Chairman & CEO
Hyperion Systems Engineering Group



Integrating technologies is no easy task, especially amid a global pandemic. But it is paramount to the long-term business growth of the Middle East's energy industry. Particularly in the last two years, operating companies in the region have started successfully adopting digital technologies that lie under the umbrella of the 4th Industrial Revolution (4IR). This encompasses operating areas like production planning, shipments, supply chains and quality reviews to improve efficiencies.

Mastering the balance

But now for the trickier part: fully integrating legacy foundation technologies with 4IR tools like artificial intelligence (AI), blockchain, predictive analytics and more. Some oil majors and national oil companies (NOCs) in the Middle East are well prepped for this digital transformation, demonstrating strong appetite for adoption by building appropriate infrastructure and instilling thought processes. But there is still much work to do.

Step change

Through a very unfortunate default, the Covid-19 crisis and the resulting drop in energy demand and revenue is forcing a step change in how the energy industry views and uses digitalization. Not only will we see digitalization being used to cut operational costs, but we should also see stronger cooperation between stakeholders on how to make digital tools a seamless, safe and profitable part of daily life. Just two months into this crisis, solutions are being developed remotely to be implemented at plant sites. As these new methods gather pace, it will make going back to the old status quo much more difficult. ■

“The adoption of 4IR technologies in the Middle East is well underway, and the region is considerably ahead of other places in the world.”

Striking a balance between setting short-term and long-term objectives is key when it comes to the 4IR toolbox

By Peyman Moh
Digital Innovator



Huge room for improvement. That's how best to describe the adoption of digital tools in the 4th Industrial Revolution (4IR) in the Middle East's energy sector. The region's relative immaturity is due to companies' lack of connectivity and integration when it comes to technologies, such as robotics and automation. Some major energy firms like Saudi Aramco have started using advanced technologies and new systems, including leveraging the cloud for secure data centers. But the process is still in early stages; efforts must be more focused and accelerated.

Prioritize efficiency

Striking a balance between setting short-term and long-term objectives is key when it comes to the 4IR toolbox, particularly in today's economically challenging environment. Improving blockchain and self-driving cars can be explored later, for example. More importantly for now, the automation of processes can directly impact companies' bottom line. But there is no silver bullet. Every organization has its unique challenges and must optimize the technologies that best suit them.

Integrate legacy data

In the Middle East, the first step must be the integration of legacy systems. For one, doing this can provide a huge amount of insight and knowledge from generations of data. Creating a structured data ecosystem enables better analytics, which are key in improving the accuracy of forecasts, for example. Thereafter, knowing they have a strong data foundation, companies can expand their 4IR toolbox. ■

“In the Gulf region, the first priority should be the integration of legacy systems. There is a huge amount of insight that can be generated from breaking down data silos. Once this is established, companies can move onto next steps of using the 4IR toolbox.”



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