



*April / May 2018*

# SandRose

Magazine



Kingdom of Saudi Arabia Section

*envision your*  
**future**

April / May 2018 Edition

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# Thoughts from the Editor-in-Chief



**HIND AL-RAYES**  
*Editor-in-Chief*

This volunteering experience really showed the student's commitment to fulfil the magazine's needs and we are looking forward for more student collaborations in the future.

I would like to express my gratitude and appreciation to Baker Hughes, a GE Company for sponsoring this edition. Our partnerships with our sponsors are imperative to the success of this magazine. Their support and help during our social activities, campaigns, and technical sessions add a great deal of value to the association and its members.

SandRose magazine is always looking for talented, committed, and creative contributors who are interested in writing articles or sharing other ideas/topics they are most passionate about. We are now welcoming submissions for future editions and we hope SandRose magazine will become a primary platform to share findings and knowledge that will benefit our readers and members.

Your feedback is important to us, please don't hesitate to contact our team at [sandrose@spe-ksa.org](mailto:sandrose@spe-ksa.org). 

# SandRose Contributors



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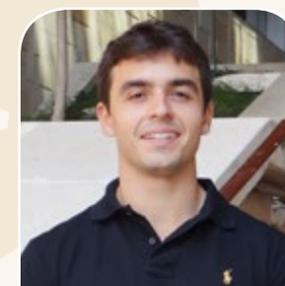
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Dear Readers,

I am delighted and it gives me immense pleasure to welcome you to another edition of SandRose magazine. This edition highlights the abundant activities and events conducted over the past two months. We were proud to organize and to have the capacity to manage the section's unique flagship event, the Annual Technical Symposium & Exhibition "ATS&E" that was held in April with the theme "Where Energy Meets Intelligence".

During this prime event, the Students Outreach team, in conjunction with the ATS&E team, conducted three major events: "Energy4ME", "Petrobowl" and "Student Paper Contest".

In this edition, we selected an exceptional topic for the cover design "Envision your future", a useful component to encourage the youth to broaden their personal horizon and to envision their future by providing a stronger base from which to think of a vision for their own personal lives, their teams, their organizations, and their communities.

Finally, we are proud to announce that in this edition, we enabled a volunteer student from Dhahran Ahliyyah School (DAS) to have the opportunity to focus on the craft of writing and to contribute to the making of SandRose magazine.

# Message from the Chairman



*Zeid M. Ghareeb*

Dear SPE-KSA community,

I am thrilled to welcome you to a new edition of SandRose Magazine. I would like to reflect in this edition on the activities and events organized during the past two months—notably, our crown jewel of events, the Annual Technical Symposium and Exhibition (ATS&E) and our Student Outreach Programs.

This year's ATS&E grew in scale and scope attracting over 5,000 professionals, academics, and researchers from nearly 40 countries. Under the theme "where energy meets intelligence," the ATS&E organizing team embarked on many new records as they organized 12 world-class training events, 50 technical sessions, and three panel discussions. In addition, this year's ATS&E went green through availing, for the first time, all technical program details electronically in an elegant mobile application. During ATS&E, we enjoyed the presence of many dignitaries including Mr. Darcy Spady, SPE President, and Mr. Mark Rubin, CEO and Executive Vice President of SPE.

In conjunction with ATS&E, the Student Outreach committee hosted two MENA region events: the Petrobowl where four teams qualified for the international championship, and the Student Paper Contests where only top students from each educational level will compete in the international contests. Giving back to the community was exemplified during the 'Energy4Me' campaign where

## DR. ZEID AL-GHAREEB Chairman, SPE-KSA Section

Student Outreach hosted 200 male and female school students who learned about the oil and gas industry. This is the first time where SPE-KSA Section hosts all three student outreach events during ATS&E.

Striving to increase student members of SPE-KSA, we successfully established a new student chapter in Effat University. This new chapter will be the first standalone female chapter bringing the total number of students to over 600 students from six student chapters hosted by SPE-KSA Section.

These great achievements would not have been possible without the generous support of our sponsors, exhibitors, management, and the organizing committees and volunteers.

Our Trips and Social Activities team conducted a number of successful events. I invite you to read about T&SA's adventure trip to Abu Dhabi. SR

# SPE-KSA 2017/2018 Executive Board



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2018 ATS&E  
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Public Relations  
Chairperson

# SPE International's new *MENA Director*

Faisal Al-Nughaimish, the manager of Gas Drilling Engineering Department at Saudi Aramco, held various supervisory positions in the Drilling & Workover, Reservoir Management, Production Engineering & Well Services, and Offshore Producing organizations. He is a board member of ARO Drilling Company.

Faisal is an active member of the SPE, IADC, and Saudi Counsel of Engineers. His service includes participation in several officer positions in the SPE Saudi Arabia section, local and regional committees, and several technical publications. He won the 2011 SPE International Young Member Outstanding Service Award and the 2013 SPE Regional Drilling Engineering Technical Award in recognition for his work, and he is an SPE certified Petroleum Engineer.



**FAISAL AL-NUGHAIMISH**

*"I am honored to be selected for the SPE board of directors and re-affirm my commitment to SPE's mission as defined in our constitution."*

Faisal enthusiastically said, "The opportunity to serve on the board of this transnational technical and professional society that is focused on the upstream to midstream

I am proud to be a member of the SPE and being appointed to the board of such a charitable, scientific, literary, and educational society is a great honor." SR

segments of the petroleum industry is rewarding for me personally and an opportunity to contribute greatly to the success of our members. As a director, I commit to avail myself, to provide guidance, and to mentor our members by governing the Society's global operations in delivering needed services and advancing the SPE mission and principles.

My focus for 2018 and beyond is to maintain the solid foundation the SPE has achieved and drive modern methods, means, and modalities for meeting the future career needs of our multigenerational, multinational, multicultural members in each career stage. I'll have a hands-on approach to ensure our global strategies, policies, and operations meet the highest benchmarks and prepare our members for the emerging future.

# SPE-KSA Highlights



*SPE-KSA Team with Mr. Khalid Zainalabedin (SPE International MENA Director) and Mr. Mark Rubin (CEO and Executive VP of the Society of Petroleum Engineers).*



*SPE-KSA Team with Mr. Khalid Zainalabedin (SPE International MENA Director), and Mr. Darcy Spady (2018 SPE International President).*

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and viewpoints.*

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**T**he articles in SandRose magazine highlight our strong community of energy industry professionals and students through the articles you write on techniques and technologies, viewpoints, ideas, and relevant activities.

Leverage SandRose as your platform to feature perspectives in the energy sector from any discipline. Send us topics that you find most interesting or interviews that you've conducted with leaders or colleagues for our community to enjoy and learn from. Include relevant high-resolution photos with captions to complement your stories.

We encourage anyone interested in learning and practicing content strategy, magazine development, or design and layout to join the SandRose team as a volunteer. 

Regards,

**Hind Al-Rayes**  
Editor-in-Chief

# First Leadership Corner Event

**H.E. DR. ABDULRAHMAN ALBARRAK**

Former minister of civil service and current CEO of Al Barrak Industrial Group



**S**PE-KSA organized its first Leadership Corner event on Tuesday, April 3rd, 2018 in collaboration with Saudi Aramco's Southern Area Oil Operations Admin Area (SAOO). The event took place in Al-Ahsa and hosted H.E. Dr. Abdulrahman Albarrak, former minister of civil service and current CEO of Al Barrak Industrial Group.

Dr. Albarrak shared his advice on what it means to be a good leader as well as his experience that spans over 36 years of service in government and private sectors. He emphasized on the importance of having values as it plays a major role in staying

motivated in the long run. He referred to it as the backbone of the career of any successful leader. His Excellency also highlighted the significance of emotions with respect to the decision making process. Good leaders tend to consider emotions in their decision making and take into account the associated consequences. In addition, Dr. Albarrak stressed the importance of being an effective listener by being receptive to others' opinions and being open minded when making decisions.

This inspiring speech by Dr. Albarrak was followed by an interactive dialogue led by Mr. Hamad Al-

Marri, Southern Area Production Engineering Manager in Saudi Aramco, where his Excellency shared his view on women empowerment and the corresponding challenges for women to be successful leaders.

At the end, Mr. Yousef Alfuraidan, General Manager of SAOO in Saudi Aramco, and Mr. Hamad Al-Marri presented Dr. Albarrak with a recognition trophy as a token of appreciation for his participation in this event. The event was well received by more than 150 attendees ranging from various management positions, engineers and students. SR



# Technical Dinner Meeting

**H.E. MR. MOHAMMED EL-KUWAIZ**  
 Chairman of the Board of the Capital Market Authority (CMA) of Saudi Arabia



**S**PE-KSA held its 6th Technical Dinner meeting on April 10 2018, hosting H.E. Mr. Mohammed El-Kuwaiz, Chairman of the Board of the Capital Market Authority (CMA) of Saudi Arabia.

Through an enriching dialogue session moderated by Mr. Majid Mufti, CEO of Saudi Aramco Energy Ventures, his Excellency shared the CMA's role as a market regulator.

His Excellency El-Kuwaiz discussed the reinforcement of disclosure standards imposed by the CMA through issuing the first corporate governance code to enhance the integrity of financial transactions and setting parameters to serve

the stakeholder's rights and public interest.

The authority recently established the electronic voting mandate for all public trading firms, where shareholders in the general assemblies of these companies are allowed to make electronic voting to report violations of the Capital Market Law. This implementation aims to create a transparent trading environment, and makes Saudi Arabia the first country to create such a mandate.

H.E. El-Kuwaiz addressed young professionals in his closing remarks on the importance of eradicating self-imposed barriers and seizing every possible opportunity. The session concluded with El-Kuwaiz

answering some of the questions from the audience.

Dr. Mohammed Al Qahtani, Senior Vice President of Upstream in Saudi Aramco and Honorary Chairman of the Board of Directors of SPE-KSA section, and Mr. Nasir Al Naimi, Vice President of PE&D in Saudi Aramco and Chairman of the Board of Directors of SPE-KSA, presented the speaker with a recognition trophy as a token of appreciation for his participation in this event. Attendance exceeded 300 individuals ranging from various management positions, engineers, and young professionals. SR





## ATS&E Pre-Event Courses and Workshops

Prior to the 2018 Annual Technical Symposium and Exhibition (ATS&E) twelve courses and workshops were conducted on April 22nd-23rd, 2018 in Kempinski Al-Othman Hotel, Al Khobar.

The Pre-event Courses and Workshops covered a wide range of topics focusing on current industry needs and challenges, aligned with this year's theme "Where Energy Meets Intelligence". For the first time, soft-skills and non-technical courses were featured to address all professional development essentials. Nearly 700 attendees

participated throughout the two days, breaking previous records. A total of four workshops and eight courses were taught by university professors and renowned industry experts.

The comprehensive technical courses covered a variety of themes such as unconventional resources, rock mechanics, hydraulic fracturing and data mining. Whereas the non-technical courses focused on soft skills, health, safety and cybersecurity. SR



## Technical Series Event

### DR. HOSSEIN HOTEIT

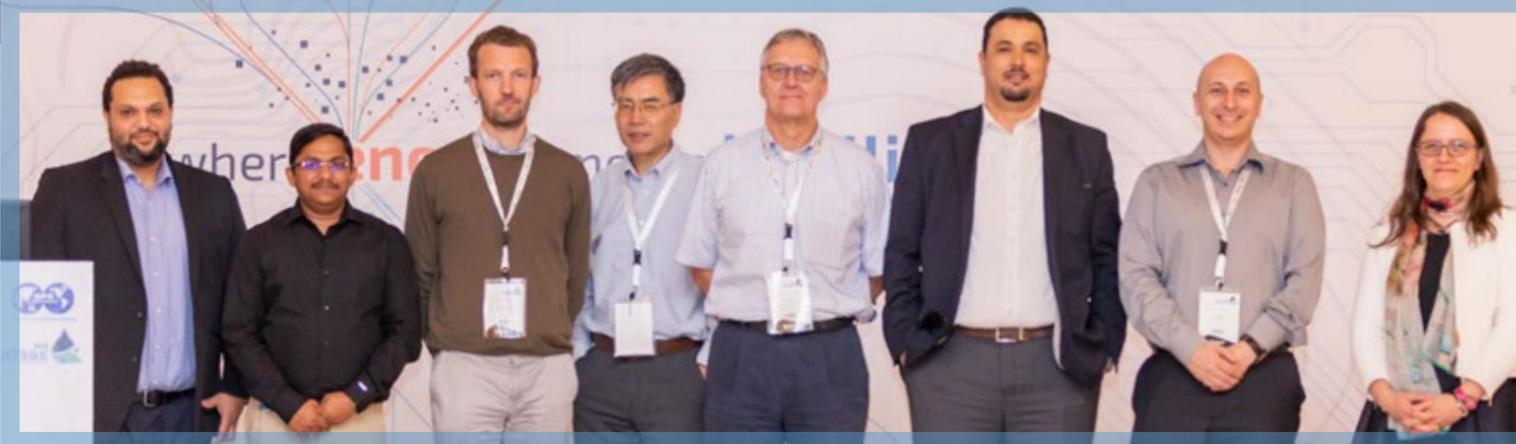
Associate Professor in Reservoir Engineering at KAUST

Technical Programs hosted the 3rd Technical Series Event in an effort to collaborate with educational institutions in Saudi Arabia. Dr. Hossein Hoteit, Associate Professor in Reservoir Engineering at KAUST, presented a lecture about Modelling Naturally Fractured Reservoirs (NFR) in the 3rd Technical Series event of the term.

Dr. Hoteit discussed different approaches to model fractures, especially in carbonate reservoirs and the

workflow of up-scaling fractures into simulators. He concluded his presentation with a summary of all simulation methods and what they are suitable for. His closing remarks included thoughts about updating current practices of characterizing NFR as well as utilizing technologies to improve modeling of NFR.

This session was concluded with Dr. Hoteit answering some questions from the audience. It was attended by over 50 professionals from the oil and gas industry. SR



# 2018 Annual Technical Symposium & Exhibition

APRIL 2018



**DR. ADEL AL-QAHTANI**

*2018 ATS&E Chairperson*

*Sr. Petroleum Engineer, Saudi Aramco*



where **energy** meets **intelligence**

**S**PE-KSA section is a significant contributor to the Society of Petroleum Engineers in the Middle East, which is exponentially growing in members, representation, and importance both nationally and globally.

The society's Annual Technical Symposium and Exhibition (ATS&E) is recognized as an international destination for oil and gas industry leaders, experts, researchers and young professionals to exchange technical knowledge and innovative ideas while networking. The section provides exceptional opportunities for oil and gas companies, academia, and energy enterprises to promote their market position and showcase their recent technologies, products and services.

This year's theme "Where Energy Meets Intelligence" highlights the emerging and exciting usage of intelligent solutions and making better business decisions to meet current energy demands. The theme reflects the current transformation of the industry toward an era of digital and artificial intelligence and its application of intelligent solutions, optimized development techniques, and advancement in automation to optimize consumption and lower production costs while promoting innovative solutions for overcoming today's dynamic challenges. SR



Kingdom of Saudi Arabia Section

# ATS&E Opening Ceremony



*“Industry 4.0 gives us the license to think big. What we do with that license is up to us.”*



The ATS&E opening ceremony took place on April 23, 2018, starting with opening remarks by Dr. Adel Al-Qahtani, the 2018 ATS&E Chairperson, in which he welcomed the guests, attendees and participants. He highlighted the theme of the symposium and the motive behind it, in addition to the new breaking records that ATS&E achieved in its technical program, pre-event courses and workshops, sponsorship and exhibition, as well as the development of technology such as the ATS&E smart phone App.

The opening ceremony presented three distinguished keynote speakers: Dr. Mohammed Al-Qahtani, Sr. VP of Upstream at Saudi Aramco; Dr. Thomas Burke, President and CEO of Rowan; and Mr. Darcy Spady, 2018 SPE International President and managing director of Broadview Energy Asset Management.



Dr. Al-Qahtani said, “Industry 4.0 gives us the license to think big. What we do with that license is up to us.” He mentioned that in Exploration for instance, we are allowed to envision Machine Learning and Artificial Intelligence through vast amounts of 3D and 4D seismic data to extract features invisible to the human eye. While in drilling, we should settle for nothing short of a fully-automated drilling rig to increase performance, safety and efficiency.

“We should be using the advances of Machine Learning to have vast amounts of data interpretation unsupervised, autonomously,” he said.

Dr. Al-Qahtani touched on the importance of motivating a prosperous collaboration model that encompasses industry partners, out-of-discipline entities, and academic institutes. He mentioned that this can only be attained through investing in human resources via training and proper development.



Dr. Thomas Burke, President and CEO of Rowan, spoke about offshore drilling business and usage of data analytics. According to Dr. Burke, drilling business is the most cyclical in the upstream sector, experiencing direct impact by the market status. He mentioned that although the industry may experience some downturn, tough times motivate and drive innovations toward efficiency, reduction of cost and changing the way business is run.

is a result of the active and energetic planning of the teams involved. He believed that energy will meet intelligence through the youthfulness of its people, where the majority of the industry is now under 40.

The third and final keynote speaker was Mr. Darcy Spady, 2018 SPE International President and managing director of Broadview Energy Asset Management. Mr. Spady applauded the participation in the event which had 40% more professionals than previous years, which

Mr. Spady was quite impressed by the leadership of the section and gave special attributes to the blossoming success of Sandrose magazine with its new concept of augmented reality. He mentioned that this is the result of having the youth leading the industry. They are the ones who can change a static magazine into something that will speak to you and play articles as videos, he said. Mr. Spady concluded his presentation with highlights of the 2018 SPE-KSA term and projection of the SPE mission and vision. [SR](#)



MR. DARCY SPADY



# Executive Panel Discussion

where **energy** meets **intelligence**

The Annual Technical Symposium's prestigious executive panel discussion was held on April 24th during the first day of the event program. The theme of the panel was in line with the main theme of the symposium "Where Energy Meets Intelligence," focusing on the transformation of the oil and gas industry into the wonders of the Fourth Industrial Revolution. The panel was moderated by the chairman of SPE-KSA Dr. Zeid Al-Ghareeb, and hosted top executives and academic professors from the energy industry including:

**DR. NABEEL AL-AFALEG**

Chief Petroleum Engineer  
Saudi Aramco

**MR. PATRICK SCHORN**

Executive VP of New Ventures  
Schlumberger

**MR. ERIC CARRE**

Executive VP of Global Business Lines  
Halliburton

**DR. ROBERT ARMSTRONG**

Director of MIT Energy Initiative  
Massachusetts Institute of Technology



Dr. Al-Ghareeb opened the discussion by introducing the fourth industrial revolution (IR), which is defined as the range of technologies that are fusing the physical, digital and biological worlds together to create an integrated system.

To distinguish it from the third industrial revolution (IR), Mr. Schorn said that there were two main characteristics that are unique in IR 4.0. The first is the velocity of intelligence evolution, where we now grow at an exponential rate compared to the previous industrial revolutions. The second is the depth of reach of these technologies, which are expected to disrupt almost all industries.

The discussion covered the main emerging technologies of IR 4.0 and the exponential impact they could have on the oil and gas industry from Artificial Intelligence, Robotics,

Drones, Big Data, Internet of Things, Nano-technology, 3-D printing, and Cloud Computing.

The advances in data analytics raised questions about physical vs. statistical based models. While addressing this debate, Dr. Nabeel Al-Afaleg stressed on the importance and long lasting benefits of the physics based simulation models. He said that the new data-driven statistical models should and will be used as a guiding tool to reduce processing time and assumptions of the physics based models, which are vital for our industry.

On the subject of automation, Mr. Carre said the sky is the limit, and a fully automated rig is something that is attainable. He explained that many current rig-labor jobs have already been replaced by automated systems and this trend will keep growing until this vision is a reality.

On the role of academia in preparing the younger generations for this seismic shift in industries, Dr. Armstrong provided insight into the ongoing efforts to introduce topics such as data mining, machine learning, and neural networks into the curriculums of undergraduate degrees. He also touched base on the huge growth of data scientist profession in the United States, which is highly sought after today.

While the benefits of IR 4.0 technologies provide new opportunities in the energy industry, the risks associated with the introduction of such technologies cannot be ignored. The panel concluded the discussion by addressing risk mitigation and why it should be the focus for all industries in order to maximize the value gain from these advanced technologies. <sup>SR</sup>



# Technical Panel Discussions



The ATS&E was also proud to have conducted two successful technical panel discussions. The first technical panel discussion, titled, “Oil and Gas Research Collaboration between Academia and Industry”, included an intriguing discussion on the titled topic while shedding light on the gaps between academia and industry. The discussion featured leaders from the oil and gas industry and academia and they are Dr. Ghaithan Al-Muntashari, Chief Technologist at Saudi Aramco; Dr. Mohammed

Al-Badri, Director at the Carbonate Research Center at Schlumberger; and Dr. Abdulaziz Al-Kaabi, Dean of College of Petroleum Engineering and Geosciences at King Fahd University of Petroleum and Minerals (KFUPM). The panel moderator was Dr. Talal Al-Mousa, General Supervisor at Saudi Aramco.

The second technical panel discussion, titled “How to Maximize Young Professionals’ Technical Contribution in Science, Technology, Engineering

and Math—STEM”, featured young professionals from the industry and academia where they discussed numerous topics related to their technical engagement in the industry. The panelists engaged in the discussion are Dr. Hamza Al-Jamaan, Reservoir Engineer at Saudi Aramco; Abubaker Saeed, Petroleum Engineer at Saudi Aramco; Victor Torrealba, Postdoctoral Fellow in the Ali I. Al-Naimi Petroleum Engineering Research Center at King Abdullah University of Science and Technology (KAUST); Suha Kayum, Petroleum

Engineering Systems Analyst at Saudi Aramco; and Abdulhadi Al-Qarah, Borehole Production Engineer at Schlumberger. The panel moderator was Abdulaziz Tubayyeb, Reservoir Engineer at Saudi Aramco. Both sessions were well attended by enthusiastic professionals from the industry and academia and have engaged in stimulating discussions with the panelists from both technical discussions. [SR](#)



# Exhibition

# Gala Dinner



LEFT TO RIGHT:  
 Dr. Adel Al-Qahtani,  
 Mr. Darcy Spady, Dr. Mohammed  
 Al-Qahtani, Dr. Thomas Burke,  
 CG. Rachna S. Korhonen,  
 Dr. Nabeel Al-Afaleg,  
 and Mr. Nasir K. Al-Naimi



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**limitless**

## Established Female Chapter

First fully operated female chapter in the Kingdom of Saudi Arabia

by **SULTAN MADANI**, SPE-KSA Student Outreach Chairperson



**B**ehind an induced strive; the Society of Petroleum Engineers in the Kingdom of Saudi Arabia has established a new chapter in Jeddah's best, Effat University. This new chapter will be fully operated by females for the first time in Saudi Arabia- if it is not the world's first standalone female chapter. It is worth mentioning that this is the sixth chapter in the Kingdom following King Fahd University of Petroleum & Minerals in Dhahran, King Saud University in Riyadh, King Abdullah University of Science & Technology, King Faisal University in Hassa, and Prince Mohammed bin Fahd University in Khobar.

Effat University undergraduate and graduate programs hold critical and possible future opportunities to let women work in the oil fields. The university offers engineering programs in multiple disciplines, such

as: Electrical Engineering, Computer Engineering, Information Systems, and Energy Engineering.

Among the benefits of joining SPE as a chapter, students are linked to universities around the world and are supported by the section. Active student members work closely with the Student Outreach team, faculty advisors, and department heads to host industry-related events. As being active as a chapter, there is a great way to network with peers and industry professionals which will offer ways to develop new skills.

Mrs. Haifa Jamal Eldeen, Effat University President, is hoping to keep inspiring female students to join oil and gas industry as she promised to provide full support to SPE-KSA team to conduct future event inside the campus. SR

## Awareness Session at KAUST

Conducted by Student Outreach

by **SUHA KAYUM**, SPE-KSA Student Outreach Member

**T**he SPE-KSA sections' Student Outreach team visited KAUST and met with the chapters' President, and newly initiated Chairpersons. Challenges faced by the revived chapter were addressed and discussion was held on how the SPE-

KSA section could help the KAUST chapter tackle their challenges. A plan was laid out that involved increasing the student body participation by raising more membership campaigns for SPE, holding more activities and events and participating in SPE-KSA section events. SR

*“When delegates take the role of curious student rather than an informed expert, people are much more motivated to engage.”*



# 2018 MENA PetroBowl®

## KFUPM wins regional championship

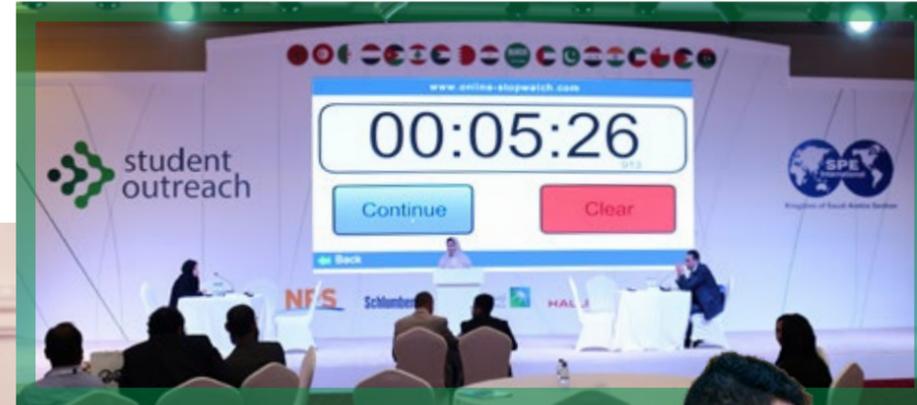
by **DEEMA BADAN**, SPE-KSA Student Outreach Member

The competition included a total of nine teams participating from different countries around the region, including Saudi Arabia, UAE, Sudan, Pakistan, Oman, and Egypt. Students answered a pool of intriguing and challenging questions about the oil and gas industry with an impressive performance.

Young professionals with great potential moderated, scored, and timed the competitions. After a fierce battle, King Fahad of Petroleum and Minerals won the regional championship title against Cairo University. Both of

these universities qualified for the international PetroBowl® along with King Saud University and Abu Dhabi Polytechnic. 

**PANEL JUDGES**  
DR. HASAN AHMADI  
DR. NAYEF SADHAN  
DIMITRIOS KIRNIS  
MARK MA



LEFT TO RIGHT: Dimitrios Kirnis, Mark Ma, Dr. Nayef Sadhan, and Dr. Hasan Ahmadi



# Student Paper Contest

Student Outreach hosts students from the MENA region

by FERAS ROWAIHY, SPE-KSA Student Outreach Member

During the week of the 2018 ATS&E, SPE-KSA Student Outreach committee hosted two MENA region events; the Petrobowl® where four teams qualified for the international championship and Student Paper Contest where only top students from BSc, MSc, and PhD levels will compete in the international contest that will also take place in Dallas, Texas in September 2018.

The Student Paper Contest competition included a total of 35 students participating in three level (BSc, MSc and PhD) and from different countries around the region, including Saudi Arabia, UAE, Sudan, Pakistan, Oman, Iraq, Qatar, and Egypt. Students presented their papers and answered to several challenging questions with an extraordinary performance. Student Outreach committee included 15 (5 per level) expert judges to evaluate

students' work. It is worth noting that SPE-KSA facilitated a remote connection to include more students that could not travel to Saudi Arabia for the event.

The winners were announced during the of 2018 ATS&E closing ceremony. We congratulate the winners and wish them the best of luck while representing the MENA region at the ATCE. [SR](#)

## MENA'S Top 3 Qualifying Students for ATCE Paper Contest

RANK	NAME	UNIVERSITY	QUALIFIED
PhD 1	<b>MAISSA SOUAYEH</b>	<b>SULTAN QABOOS UNIVERSITY, OMAN</b>	<b>YES</b>
PhD 2	ABDULLAH YOUSSEF	KING FAHAD UNIVERSITY OF PETROLEUM & MINERALS, KSA	NO
MSc 1	<b>JAMIU ADEGBITE</b>	<b>KHALIFA UNIVERSITY OF SCIENCE &amp; TECHNOLOGY, KSA</b>	<b>YES</b>
MSc 2	TURAL JAFAROV	KING FAHAD UNIVERSITY OF PETROLEUM & MINERALS, KSA	NO
MSc 3	ABDELRAHMAN ELDIASY	SUEZ UNIVERSITY, EGYPT	NO
BSc 1	<b>MOHAMED ELSHAWAF</b>	<b>SUEZ UNIVERSITY, EGYPT</b>	<b>YES</b>
BSc 2	TABARAK ABDULHUSSEIN	TEXAS A&M UNIVERSITY, QATAR	NO
BSc 3	SARWAR ABDULRAHMAN	KOYA UNIVERSITY, IRAQ	NO



LEFT TO RIGHT:  
Mr. Darcy Sapdy,  
Maissa Souayah,  
and Mr. Nasir Al-Naimi

Jamiu Adegbite

Mohamed Elshawaf



# 'Energy4Me'

Back in Saudi Arabia

by AHMED ALKHALIFAH, SPE-KSA Student Outreach Member



The SPE-KSA considers giving back to our community as one of its objectives. Student Outreach team has organized "Energy for Me" workshop to enrich more than 200 high school male and female students about the energy and oil industry. This event took place in Dhahran Expo on April 25-26, 2018 in concurrence with 2018 ATS&E. The workshop was designed with a rich agenda which included inspiring

talks, a real life young professional story, and hands-on activities on how to explore oil and gas and some experiments on rock and fluids properties. Also, the students had the chance to take a tour in the exhibition to help them in career choices and future opportunities. The workshop was well received by all attendees. The students enjoyed the visit and expressed sincere gratitude for the efforts and time spent on the program. [SR](#)



# MADE IN KSA



## DHAHRAN PDC drill bit plant

Baker Hughes, a GE company (BHGE), has partnered with customers in the Kingdom of Saudi Arabia (KSA) for more than 80 years, and is a key player in the country's oil and gas supply chain ecosystem.

Today, our business' support for the transformational growth of the Kingdom, and the wider Middle East, North Africa and Turkey (MENAT) region, grows ever-stronger. Our localization journey continues, firmly focused on the advancement of KSA's local suppliers, and development of in-country expertise, fully aligned to support the aims of Saudi Vision 2030.

For BHGE, localization means more than simply operating and supporting our customers through services provided locally. Instead, we work to create links across the local economy, through technology and skills transfer, the creation of local employment opportunities, generation of value in Saudi's domestic supply sectors, development of the local manufacturing base, and through helping to process the country's oil and gas outputs prior to export, across the refining, petrochemical, and fertilizer industries. This is more than an obligation. Our mission to develop a vibrant global supply chain in the KSA is part of our organizational DNA.

Our state-of-the-art drill bits factory in Dhahran is a shining example of the global excellence that can be achieved through ongoing investments in the Kingdom.



## Setting new benchmarks for BHGE's operations in the KSA

Since Saudi Arabia's first commercially viable oil discovery—the Prosperity Well, Dammam No. 7—was drilled in 1938 with BHGE (Hughes) drill bits, we've played a vital role in supporting Saudi Aramco's mission to be a reliable supplier of hydrocarbons to the world. In the 1930s, Saudi wells were drilled with drill bits imported from the US. But today, BHGE's PDC bits are fully produced right here in the Kingdom—and exported worldwide.

In 2010, we decided to increase our localized investment, and built a 2500 m<sup>2</sup>, state-of-the-art, PDC drill bit plant in Dhahran—making us the first company to completely manufacture PDC drill bits in the KSA. This was also the first facility in the Middle East to fully manufacture drill bits from raw material to finished product.

In addition to supplying drill bits to Saudi Aramco, we started exporting a large portion of the plant's output to other countries—first within the Middle East and, before long, into other regions. Those drill bits are now used in 41 countries around the globe, including the US, Russia, Italy, Kenya, Indonesia, and China.

Our Dhahran plant is robust and agile, which helps us get to market faster in response to customer needs. Beyond the direct benefits of the superior quality of the drill bits, the technological advances and economies of scale realized at this plant are ultimately helping our customers get through difficult economic times—because efficiency gains lead to lower cost per foot drilled.

Today, the Dhahran plant's reach continues to expand. In 2017, 36% of the drill bits made at the facility were used in Saudi Arabia—and the other 64% were exported around the world. That's roughly \$500 million USD in export value.

Going forward, a planned investment in new manufacturing technologies will ensure that the drill bits we produce over the next 10 to 15 years will do justice to the new evolving raw materials. The investments will also enable a production capacity increase of approximately 50% by 2019. By that time, our employee headcount is projected to increase by up to 50%, and our exports will exceed 75% of production.

We continually pursue strategic partnerships to help us further localize our operations. One big change we're working on is to minimize the plant's import requirements by working with local suppliers, including small and medium-sized enterprises, to enhance their portfolios so that they can provide more of the raw materials and component pieces needed for the PDC drill bits.

The Dhahran plant is a testament to our long heritage of contributing to the development of local infrastructure projects and talent—and to BHGE's continued commitment to deliver mutually rewarding initiatives with our partners in the Kingdom.

### Global exports of BHGE PDC drill bits manufactured in the KSA



Albania, Algeria, Angola, Argentina, Australia, Brunei, China, Colombia, Congo, Ecuador, Egypt, Gabon, Ghana, India, Indonesia, Iraq, Italy, Kazakhstan, Kenya, Kuwait, Libya, Malaysia, Mexico, Namibia, Netherlands, New Zealand, Nigeria, Oman, Pakistan, Philippines, Qatar, Russia, Scotland, Senegal, South Africa, Thailand, Tunisia, UAE, USA, Vietnam, Yemen

In 2016, GE was honored with the 'Best in Supplier Development' award at Saudi Aramco's IKTVA Excellence Awards—recognizing efforts to develop the capabilities of in-country suppliers in a number of areas, including technical capabilities, technology transfer, quality improvement, and integration into the international supply chain.

## OUR FOOTPRINT

### PLANT

- State-of-the-art 2500 m<sup>2</sup> manufacturing facility
- Plant has achieved a production record of 50 PDC drill bits per week for 13 consecutive weeks
- Partnered with 47 local suppliers

### PEOPLE

- 80 employees; 73% Saudization
- 50% of the Engineering and Sales teams are Saudi
- Teams trained locally and internationally
- Zero work-related injuries for three years straight

### PRODUCTS

- Dynamus™ extended-life bits
- Genesis™ general-purpose PDC bits
- IRev™ impregnated diamond bits
- Talon™ 3D vector-accurate PDC bits
- Talon Select adjustable PDC bits
- Talon high-efficiency PDC bits
- TerrAdapt™ adaptive bits
- Talon™ force – high velocity PDC bits
- Kymera™ hybrid drill bit
- Kymera™ XTL extended life
- Kymera™ XTreme
- Vanguard™ arabia tricorne bits



# DHAHRAN TECHNOLOGY CENTER

FUELING THE REGION WITH INNOVATION

## QUICK FACTS

- Located in Dhahran, Saudi Arabia
- Inaugurated in 2012
- 2,500m<sup>2</sup> facility
- Serves the Middle East, North Africa, Turkey & India
- 400+ Years of experience in data, reservoir, rocks, fluids and corrosion domains

## RESEARCH FOCUS AREAS

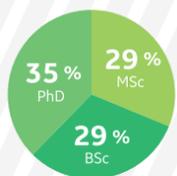
- DIGITAL INDUSTRIAL TRANSFORMATION
- HIGH EFFICIENCY PRODUCTS AND SERVICES
- RESERVOIR & PRODUCTIVITY



**38%**  
SAUDIZATION



**25%**  
FEMALE



**50+**  
R&D EMPLOYEES



CONTRIBUTOR



ACADEMIA SUPPORT  
24 Jewelsuite Software Licenses Donated



**2**  
INNOVATIONS COMMERCIALIZED



**15**  
ACTIVE LOCAL R&D PROJECTS



**1,800**  
PERFECT HSE DAYS



**30+**  
PATENTS FILED



**50+**  
TECHNICAL PAPERS

- **MaxLock:** Breakthrough Fluids Loss Prevention
- **PEMS:** Predictive Emission Modelling - Turbomachinery

**TRANSCOIL:**  
A CO-DEVELOPED SOLUTION WITH SAUDI ARAMCO



REDUCED RIG TIME BY **50%**



ELIMINATED MORE THAN **50%** OF TRADITIONAL RIG COST



MITIGATED **8,000** BOBP DEFERRED PRODUCTION DUE TO RIG AVAILABILITY



# Women in Oil & Gas

## Female Geosciences Engineer Helps Solve Saudi's Unconventional Oil Challenges

by **WARD PINCUS**, Baker Hughes, a GE company



*“This really gives me a reason to wake up in the morning,” Maryam said during a break from her testing, which mostly takes place in a lab that’s more than half filled with large bulking equipment.”*



As unlikely as it seems, Saudi Arabia imports sand and Maryam Al Ohaly is taking her childhood passion for chemistry and her two degrees in chemical engineering to help eliminate the Kingdom’s need for this import in the area of hydraulic fracturing.

Maryam is a Saudi chemical engineer and scientist at Baker Hughes, a GE company (BHGE). She works at the company’s Dhahran Technology Center on a project to localize hydraulic fracturing technology to enhance oil and gas production in reservoirs in Saudi Arabia, the wider Gulf region, and globally.

The team is looking to develop the right mix of treatment ingredients and local Saudi sand to provide the ideal hydraulic fracturing fluid solution (a liquid that combines water, chemicals and proppant/sand) that is pumped under high pressure into oil and gas fields to ‘fracture’ the tight reservoir in a way that causes the field to produce more hydrocarbons.

“This work is not only connected to what I studied previously. What I’m doing is solving problems, finding solutions and developing a product locally that can be implemented in my country and help increase the economics of oil and gas here. Being a part of this project is something not only rewarding for myself and my company, but also my country,” said Maryam.

Since joining BHGE in July 2017, Maryam has seen a great deal of support for women at the company as part of a broader effort to enhance gender diversity in the workplace. Maryam said BHGE is investing in her fellow female engineers with training, development programs, and career support.

Maryam is part of the BHGE’s Saudi Sand Project that’s looking to replace man-made proppant by locally sourced sand to be used in the fracking process. Currently, hydraulic fracturing operations in the Kingdom are importing man-made proppant.

If Maryam and the rest of the team can develop a local sand and the right localized chemistry for the fracturing

fluid that carries the sand into the wells, it will improve the economics of fracking in the Kingdom, and contribute to IKTVA (In Kingdom Total Value Add) program, driven by Saudi Aramco and fully supported by BHGE.

The chemical engineering challenges facing this project are part of the appeal for Maryam.

*“I always like to challenge myself. In engineering, you’re solving problems and you become that problem solver in your professional and personal life. In this role, I’ve got to find a solution for every challenge.”*

She’s the same outside of work. “I’m always trying to think of a solution to a problem that people might have. It shapes my identity,” she said.

Science wasn’t just a school subject that Maryam studied. “It’s a state of mind as well—always being inquisitive and wondering. As a child, the world around me constantly captivated me and inspired different questions.”

Maryam earned a BSc in Chemical Engineering from the University

of Dammam, and an MSc in Nano Science and Nano Technology from the University of Nottingham in the United Kingdom.



An avid reader and runner, Maryam goes to the gym most days after work and begins her day with a cardio workout. That’s a good thing, because one of her biggest surprises in her current job is how physically demanding it is. As part of her testing, she’s lifting 25kg metal testing cells boxes that she has to place inside the lab equipment.

“It was a challenge for me to deal with, and I dealt with it,” she said.

Even having received encouragement from her family during her studies and work, Maryam’s advice to her younger self is still: “Believe in yourself, and then the sky is the limit.” She explains, “If I didn’t believe in myself, I wouldn’t have become what I am right now.”

To young women today, she says,

*“Follow your dreams; don’t be afraid, and don’t put limitations on yourself. There is nothing you cannot do. Limitations are only in your mind. If you step forward, lots of people will help you to reach your goals.”*

In her own career, she’s seen how people can help, including at BHGE. When interviewing for her current

role, the interviewer sketched out her career path for the next three years, including training she would receive in the United States. “Showing me my path, so that it all made more sense was one of the main reasons for my decision to join BHGE,” she said.

Almost immediately they sent her to BHGE facilities in Houston for training with the company’s Pressure Pumping Team to learn about the chemistry, new technologies, techniques and analysis in this area of hydraulic fracturing. “It addressed everything I needed to help build this technology in the Kingdom. The learning was huge and BHGE supported me in this,” said Maryam. SR

# Maria Capello

of the Kuwait Oil Company

by VICTOR TORREALBA, KAUST

**M**aría Ángela Capello is a senior advisor for the Deputy CEO (North Kuwait Directorate) of Kuwait Oil Company, and in this role, she leads several strategic activities for KOC and the Directorate, related to Reservoir Management standardization across KOC, liaisons with professional societies of oil and gas, and technical training for North Kuwait with the IOCs. She also coordinates the Professional Women Network of the 9 companies of the Kuwait Petroleum Corporation holding. Capello previously coordinated the Burgan super-giant Integrated Business Management initiative, for the alignment of all activities of this asset. She is an awarded leader for the upstream sector of the Oil and Gas industry, and recently won the “GRIT” award in 2018 for being a “change-maker in Energy”. She is the leading author of the recently published “Learned in the Trenches”, a book about leadership and resilience.

## CAN YOU SHARE INFORMATION ABOUT YOUR START IN THE O&G INDUSTRY?

My very first contact was a summer internship with a national operating company in Venezuela, called CORPOVEN. It was a magical journey of discovery for me. During 6 weeks, I was given a wonderful familiarization training, being exposed to Exploration and Production workflows.

My internship was indeed very complete, and included field and office programs. For example, I spent a week visiting drilling rigs, on land and on water, in the Maracaibo Lake. It was an eye opening experience! My heart was captured forever by this industry. I loved the technology, the complexities, the teamwork, the very specialized professional profiles, and the



excitement of investigating the subsurface in search for precious oil resources.

## AT WHAT POINT DID YOU REALIZE YOU WANTED TO PURSUE A MANAGERIAL PATH COMPARED TO A TECHNICAL PATH?

My work journey gradually and naturally led me from doing things alone to coordinate actions of others. I started leading small teams for technical projects, to lead departments and then assets.

After a while, colleagues started to ask consistently for my guidance, and I realized I felt at ease explaining the “hows”, the “whens”, and the “whys” of what we were doing. And when you can answer these three questions, you can lead. You are ready to lead. I reached that moment, and realized I could lead.

## WHAT EFFORTS HAVE YOU SUPPORTED THAT HAVE HAD THE MOST IMPACT ON MOTIVATING WOMEN?

I have been engaged in Diversity efforts related to nationality-based Diversity and Gender Diversity.

In relation to the Gender-Diversity, I think the efforts that have the major impact are the preparation of statistics of the gender-balance situation at a given organization, and presenting those figures to the leadership.

This worked at every organization I have been in. Showing the leaders any gaps in the statistical analysis of gender balance within their organizations, triggers rapid actions. Because number gaps are visible, noticeable, and do not require much explanation.

We cannot afford not to utilize all the workforce we have access to. And women are still our “untapped reserves”, in many senses.

Another element of great impact is short workshops to motivate a self-reflection about our individual strengths and weaknesses, providing tools for self-empowerment. Many times, it is only by realizing what we could do differently, that we help individuals to overcome their challenges.

In the Middle East, I have found wonderful women, authentic role models in oil and gas and I am sure in Saudi Arabia the young women in oil and gas know several awesome women who are role models in their organizations.

I would recommend the young women in oil and gas to get to know more about their own role models, in their companies or countries. Learning from others is key and I would recommend to them to be mentored by someone they admire or consider advanced in their profession. Men or woman, a mentor is crucial to trigger actions to improve oneself.



Finally, I would encourage the Petroleum Engineer young women to enroll in the SPE, and the geoscientists in the SEG or AAPG. My volunteering work in professional societies has provided me many opportunities to improve my leadership. I am sure it will be the same for them!

## YOU RECENTLY COAUTHORED A BOOK WITH HOSNIA HASHIM CALLED LEARNED IN THE TRENCHES. WHAT ARE THE MOST INSPIRING LESSONS LEARNED FROM YOUR BOOK?

I wanted initially to capture the learnings of both of us in launching the Professional Women Network of KPC and its Subsidiaries, and those from the Field Development – Reservoir Management enhancement initiative, in which we worked together as chair and lead advisor respectively for several years. But the project evolved into compiling as well the learnings of other leaders from the Middle East, and international leaders as well. Leaders dear to each one of us.

I would say the main learnings from our compilation are that Leadership is grounded on having a clear vision, integrity, but most importantly, in having high skills in communication and a fair (or huge!) self-confidence. There were also awesome findings: I was particularly surprised, for example, to find out that many of the top leaders interviewed in our compilation started to build their leadership through sports.

Our book is also about Resilience, that capacity to bounce back from adversity, and pursue long-term goals.

Hardships in work and life shape who we are more than success. Almost all the leaders in our book had to face extremely difficult circumstances. And they rose over those to become even better leaders, better persons.

I am Italian, and one of my favorite quotes is by Dr. Rita Levi-Montalcini, an Italian pioneer woman, Nobel Laureate, who lived until 103 years of age. She said: “Above all, don't fear difficult moments. The best comes from them.” 

# Data Science in the Oil & Gas Industry

by **MOHAMMED NUFAIE**, *Drilling Data Scientist, Saudi Aramco*

In the era of the 4th Industrial Revolution (IR4.0), the dependency on data has become more critical in all types of industry. The oil and gas (O&G) industry is no exception. In fact, data is becoming more critical due to the risks and costs involved across the industry.

Due to the huge amount of O&G data that is being transmitted on high and low frequencies, it has become difficult to process and analyze. In the IR4.0 era, big data has come to be characterized by the five V's—volume, variety, velocity, veracity, and value.

IR4.0 has contributed to the use of advanced and novel approaches such as Artificial intelligence (AI), Machine Learning (ML) models, and advanced analytics techniques. They have made it possible to apply Data Science (DS) processes and techniques to extract the fifth V's—value—from the big data. DS is an enabler for the O&G industry to move faster toward IR4.0. It can empower petroleum engineering professionals with state-of-the-art data-driven solutions, enabling timely and effective decisions.

Interestingly, to some, big data is considered “the new oil.” We can explore, drill, produce, and market its value. However, it needs to be refined like oil to make the most of it (Figure 1). That's what data scientists do.

DS is a mash-up of science that requires computer science, math and statistics, and business knowledge. See it in the right sidebar.

In general, statistics professionals should have competencies in statistics modeling and they should have knowledge about ML algorithms. The software

developer needs to know about computer science scripting language (e.g., Python and R), as well as database and knowledge of any visualization tools such as Tableau. The subject matter expert (SME) also plays a critical role in any DS efforts. They should be curious about the data and has the ability to think strategically. Most importantly, they must be a team player and collaborative professional.



To extract valuable knowledge from big data, an infrastructure and an analytical platform are essential. The process involves building a big data solution architecture that is capable of handling the expected workload, including servers, network, and software architecture. Also, it involves establishing data engineering processes to transfer the data from a transactional-based paradigm to an analytics-based paradigm. The established big data analytics environment results in a more streamlined and rapid data science lifecycle, which makes it easy to develop, combine, and deploy IR4.0 based models.

## TYPICAL DS LIFECYCLE

Figure 3 shows a typical data science lifecycle. Find it in the right sidebar.

## DEFINE THE PROBLEM

The process starts with defining business cases; most of the time, this is done by SMEs who know the business domain. Sometimes, it is done by the data scientist, as well. The concept here is to be creative thinkers and propose innovative ways to look at business problems.

## DATA ENGINEERING

Data engineering is the process of exploring, understanding, cleaning, and shaping the data based on the defined business cases. This step requires knowledge on how to prepare large and varied datasets.

## EXPLORATORY DATA ANALYSIS (EDA)

In this process, the data scientist dives deep into the data to draw hidden insights for the business cases. With a combination of business focus, strong analytical and problem solving skills, as well as programming knowledge, the data scientist will be able to construct a hypothesis through the exploratory phase of the project.

## DEVELOP ML MODELS

In this phase, the data scientist develops and evaluates the models. They apply advanced statistical, AI, and ML modeling techniques to build, maintain, and improve on multiple solutions. They also capitalize on strong programming skills (such as Matlab, Python, or R).

## DEPLOY MODELS AND COMMUNICATE RESULTS

Data scientists must be able to present back their findings to the business by exposing their assumptions and validation work in a way that can be easily understood by their business counterparts. Excellent written and communications skills to report the findings in a clear, structured manner are required.

In conclusion, the O&G industry has always been challenging and requires continuous adaptation to IR4.0. The O&G industry looks to optimize potential business application in areas of operation, predictive analytics, prescriptive analytics, process automation, and simulation. DS can help the O&G industry with a process of cleaning, transforming, and examining big data to uncover hidden patterns, find correlations, or extract knowledge and insights by using advanced AI, ML, and advanced analytical methodologies. **SR**

FIGURE 1



FIGURE 2

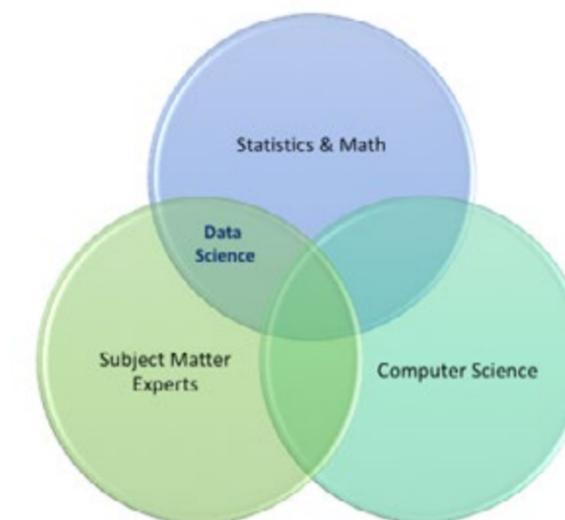
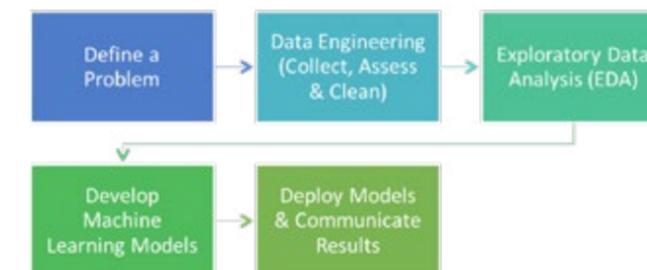


FIGURE 3



# SPE Booth at AT&E

The Trips and Social Activities (TSA) team was representing SPE-KSA in the Annual Technical Symposium 2018. The booth awarded the TSA achievements throughout the term, while encouraging visitors to join SPE as members. SandRose magazine was also represented in the T&SA booth. The Booth engaged more than 500 visitors from a diverse range of nationalities and backgrounds.

The team has showcased strong team spirit by working together in a coordinated manner, supported by the Board of Directors. This led to an enduring and exciting atmosphere, which made visitors eager to learn more about SPE.

We have gifted the visitors numerous items to promote SPE, which was well received by the visitors. These items include; t-shirts, caps, and LED lights. SR



# Sir Bani Yas Challenge

By **ALI AL-YAMI**, Trips & Social Activities Chairperson

**S**PE-KSA's Trips and Social Activities (TSA) team organized the very first hiking challenge, in collaboration with HUSAAK Adventures for families. Twenty family members, ranging from 18-year old teenagers to 55-year old grandparents.

The team gathered in Dhahran and traveled via the luxurious bus to SBY island. The challenge was implemented in the amazing and exotic Sir Bani Yas Island, which is the largest wildlife reserve in the UAE, with more than 1500 wildlife creatures roaming around. Upon the arrival to the island, the team got safety and race briefing, welcoming dinner & got social with more than 280 racers coming from around the globe. Later on, everyone got to their tent on the beach side and started preparing for the early morning race.



racers found themselves challenged, not only by their peers across the road but also by Gazelles & Giraffes. The challenge was well organized and suite all ages. For instance, there were different exit spots prepared with fruits and cold drinks combined with ambulance and police to ensure the racers' safety.

Several people made it successfully to the final line and everyone was happy and cheering for others. Finally, everyone got a medallion for pushing themselves beyond the limit. After the race, the SPE group deserved their relaxation night at Khalidiya Palace Rayhaan resort at Abu Dhabi. The next day everyone had their free time to enjoy shopping and get gifts for their beloved ones, before making it safely back home.

Special thanks goes to all participants for their collaboration, making it a remarkable and historical trip. Lastly, we must give special appreciation and gratitude to the organizing team. **SR**

The race started at 6:30 am, after everyone got their energy boost from the healthy breakfast. The challenge was a total of 33 km including running, hiking and kayaking race set amongst the natural beauty of the island. The



# Stay Healthy During Ramadan

By **GHADA AL-HABIB**

Director of JHAH Clinical Nutrition & Food Services Division

**M**aintaining a healthy lifestyle during the Holy Month of Ramadan can be challenging. Your dietary consumption changes as a result, your hunger levels and cravings for high calorie foods also fluctuate.

To reinforce your confidence in being able to make healthy decisions every day and maintain a vigorous lifestyle during this Holy Month, you should focus on positive behaviors that you have incorporated into your day to day activities.

## WHAT IS THE BEST WAY TO BREAK A FAST?

Break your fast at your Iftar meal with 3 dates and 1 cup of warm low-fat soup (vegetable or grain soup) before going to prayer. You can also have 1 cup of low-fat buttermilk, but make sure it is not chilled as cold drinks do not promote digestion. After prayer, you can resume your main Iftar meal in order to help your system adjust to ending the fast.

## WHY DO I FEEL SLEEPY AFTER MY IFTAR MEAL?

This is rather common and the way to avoid it is to:

- ▮ Limit your food consumption.
- ▮ Chew all your food thoroughly.
- ▮ Minimize the amount of fats and oils consumed.
- ▮ Drink small quantities of fluids regularly between Iftar and Suhoor.
- ▮ Do physical exercise such as walking during your day but wait at least two hours after Iftar meal before any exercise.

## WHEN IS THE BEST TIME FOR SUHOOR AND WHAT SHOULD BE CONSUMED?

Suhoor should be as close to Fajr as possible because Suhoor should include those foods that digest slowly to last for many hours and thus reduce hunger during the daylight fasting hours.

Best foods for the Suhoor meal are:

- ▮ 1 cup of low-fat milk, laban or yoghurt.
- ▮ 2 slices of whole wheat bread or 1 cup of oatmeal.
- ▮ Low-fat labnah, low-fat cheese or peanut butter.

▮ Fresh fruit, unsweetened fruit juice or dried fruit.

▮ 1 cup of cooked lentils or beans.

## HOW MUCH WATER SHOULD I DRINK?

Drinking 8 to 10 cups of water between Iftar and Suhoor meals is recommended. Drinking 1 to 2 cups of water every 2 to 3 hours is ideal.

Unsweetened juices, low-fat or non-fat milk, butter milk, low-fat soup are also good for you, if limited to 1 cup a day because of the caloric content.

## HOW MANY DATES CAN I EAT?

3 to 5 dates per day, with each date providing 30 kcal and containing the equivalent of 1 teaspoon of sugar.



## WHAT KIND OF SNACKS CAN BE CONSUMED DURING THE NIGHT?

- ▮ 1 cup of non-fat or low-fat milk, yogurt or buttermilk.
- ▮ 1 fresh fruit or 1 cup of unsweetened fruit juice.
- ▮ 2 slices of low-fat cheese or 2 tablespoons of low-fat labnah.
- ▮ 2 slices of whole wheat bread or 1 cup of oatmeal.
- ▮ 1 cup of salad or vegetables.

## HOW CAN I REDUCE THIRST WHILE FASTING?

- ▮ Drink 8 to 10 cups of water between Iftar and Suhoor.
- ▮ Increase fluid intake with low-fat soup, milk, and unsweetened fruit juice.
- ▮ Replace dried sweets (such as baklava or Lugaimat) with custard, jello or puddings.

- ▮ Replace caffeinated drinks (tea, cola, and coffee) with decaffeinated refreshments.
- ▮ Reduce the salt intake.
- ▮ Limit the consumption of meat.
- ▮ Do not exercise in the heat of the day, but perform regular exercise in the evening.
- ▮ Reduce the consumption of fried, spicy and salty food, i.e., pickles, olives, canned food, zaater, salted cheese, and salty sauces.

## HOW CAN I REDUCE HUNGER WHILE FASTING?

- ▮ Eat the Iftar meal at sunset as permitted.
- ▮ Divide meals into three timings: Iftar, Midnight and Suhoor.
- ▮ Delay Suhoor to just before Fajr comes in (as close to sunrise as possible).

- ▮ Consume more protein at Suhoor, including low-fat cheese, labnah, peanut butter, low-fat yogurt, laban or milk.
- ▮ Consume more slow-digesting foods at Suhoor including cheese, labnah, yogurt, lentils, beans, oatmeal, peanut butter, dried fruits and lean meat.
- ▮ Increase the fiber intake at Suhoor including whole wheat bread, legumes, salads, vegetables and dried fruit.
- ▮ Reduce the intake of sweets.

- ▮ Do not exercise during the day while fasting.
- ▮ Your body should adapt and hunger should subside as Ramadan progresses.

Best wishes and many blessing to you and your families, may we all have a happy and healthy Ramadan. **SR**

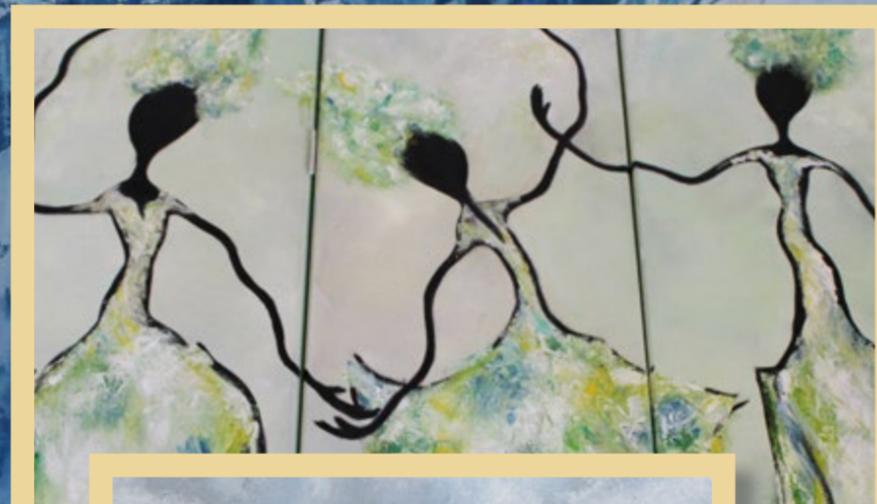
# Discover the Beauty of Oil Painting

By HANA AL-MATOUQ, Chemical Engineer, Saudi Aramco



*In this section we will showcase the diverse skills of SPE members.*

Share your passions with us, [sandrose@spe-ksa.org](mailto:sandrose@spe-ksa.org)



As a child, like so many other children, I was fascinated by the magic that colors can create on a blank piece of paper. And since then I started exploring this magic slowly. I simply started with endless meaningless rainbow scribbles all over the papers, and kept exploring from there until the artist in me evolved.

I discovered the beauty of oil painting when I was 15 and started

a new experimental journey with oils since then. In the beginning, the paintings were not satisfying, but like any other new skill you try to learn, practice makes perfect. I kept going and I used all the available resources around me to become the self-taught artist that I am today.

Art to me is an expression of emotions, stories, feelings, successes and even failures, it is the ability to tell people what you want to say without the need to use a single word.

There is no ugly art, all art is beautiful as long as it speaks out to the artist.

To anyone learning how to paint or learning any other skill, if you think you don't have the talent then keep looking for the right motivation, practice and be patient. You will be amazed at what you can accomplish with these three.

Feel free to follow my art gallery on instagram [@hanaart6](https://www.instagram.com/hanaart6). 

*The future depends on what we do in the present.*

—Mahatma Gandhi



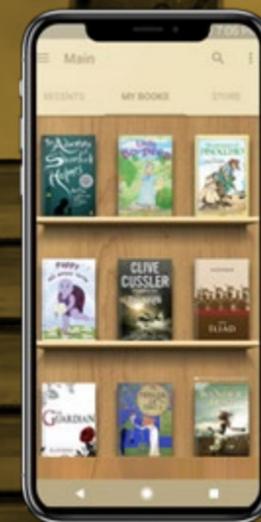
## Useful smartphone apps

*Looking for a good app? Check out these cool apps!*

This section focuses on useful and creative smartphone applications. In this edition we introduce and review five useful apps that vary from educational to social media. The common criteria between the apps we review is their creativity and usefulness.

All five apps in our review were suggested by our very own SandRose readers. We encourage you to send us an email with your own recommendations to be featured in our next issue.

*Please write us at [sandrose@spe-ksa.com](mailto:sandrose@spe-ksa.com).*



### E-READER PRESTIGIO: BOOK READER

This app is for reading ebooks and pdfs, with its text-to-speech functionality. It also has audio books as an additional feature.

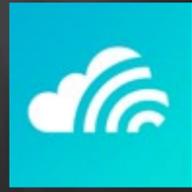
eReader Prestigio is a multilingual app with over 25 interface languages. It has over 50,000 text books, for children and adults.



**4.6 STAR  
RATING**

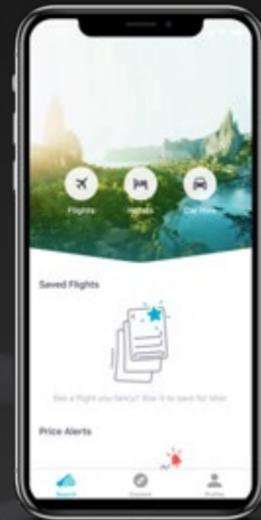


**+10 MILLION  
DOWNLOADS**



## SKYSCANNER: TRAVEL PLANNER

Skyscanner is an all-in-one travel app. It allows users to instantly search, compare and book flights, hotels, and car rentals. You can also get competitive and discounted prices. The good news is, that the app is totally free.



4.5 STAR  
RATING

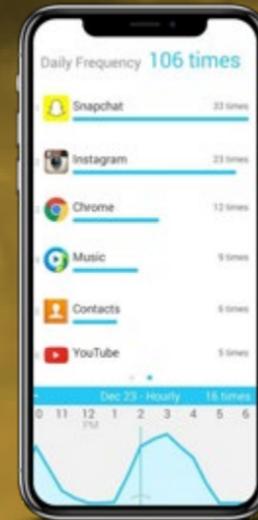


+10 MILLION  
DOWNLOADS



## QUALITY TIME: MY DIGITAL DIET

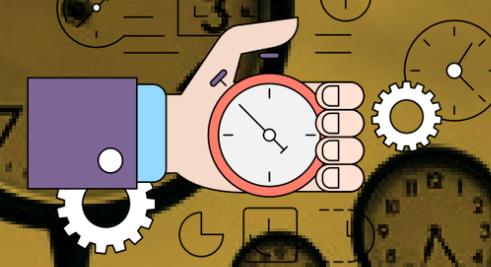
For those who worry about smartphone addiction. It tracks your phone and app usage time plus the number of times you unlock your screen.



4.2 STAR  
RATING

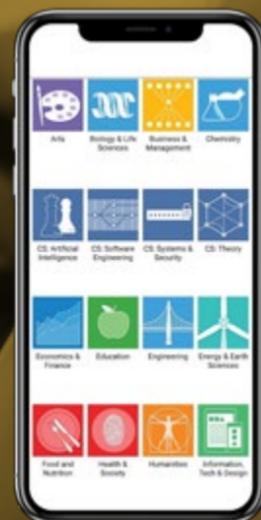


+1 MILLION  
DOWNLOADS



## COURSERA: ONLINE COURSES

This app provides access to more than 2000 courses and specializations developed by more than 140 of the best colleges and universities in the world. Subjects offered in this app vary from programming and data sciences to photography and music.



4.4 STAR  
RATING



+5 MILLION  
DOWNLOADS



## WATERLOGGED: STAY HYDRATED

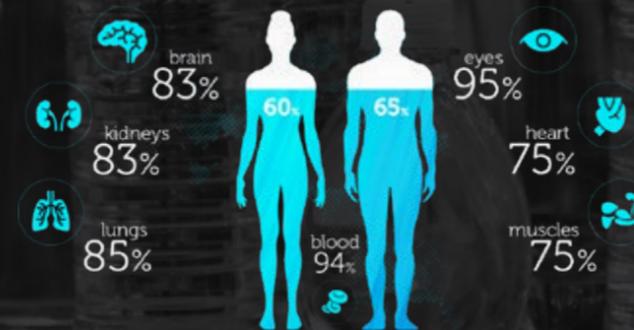
Waterlogged helps you with charts and reminders to keep you hydrated. The goal of this app is to track and improve users' water intake.



3.6 STAR  
RATING



+50,000  
DOWNLOADS



*what will you*  
**build**

*where will you*  
**take us?**