



January 2019

SandRose

Magazine



YEARS OF EXCELLENCE



Kingdom of Saudi Arabia Section



SandRose

Magazine

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Celebratory Message from the Editor-in-Chief

It is with great pride and joy that I welcome each and every one of you to SandRose Magazine. We hope that this year will bring you new achievements and rapid professional growth. This particular year is special and memorable for us since it marks the 60th anniversary of the Society of Petroleum Engineers - Kingdom of Saudi Arabia Section.

Within the previous years, hard work helped us achieve great strides and break records, inspiring us for future advancements. Our accomplishments as a society are evident as our young professionals, subject matter experts and leaders earned over 300 international and regional awards in the past few decades. In this competitive environment our outstanding experts and leaders prove the distinctive qualities of the SPE-KSA Section. The SPE - KSA membership provides a number of benefits for professionals who want to share our values and advance the industry as well as their careers. Through this society, each professional is joining a global team of more than 158,000 members devoted to their area of expertise; this will fuel their professional growth through numerous workshops, conferences, and training courses.

I would like to take this opportunity to express my gratitude to all the current and former SPE-KSA section leaders and volunteers who have helped put this section on the map and attain global recognition, and to thank the sponsors for their continued support, and volunteers for their tireless efforts which made SandRose a success.

We are also pleased to announce the



Salma Al-Hashimi
Editor-in-Chief

launch of SandRose Junior; an educational initiative that targets school children and aims to enhance their interest in the country's leading industry and in STEM fields from early on. Through this initiative, young children will be introduced to oil and natural gas, and it will help them learn about how these resources are naturally formed, how they are extracted, and how they are used in their everyday life. A copy of SandRose Junior is distributed with this edition, and it has also been translated to Arabic. You can find the Arabic version on our website <https://www.spe-ksa.org/sandrose>

If you wish to contribute to SandRose or become a member of our team, we encourage the submission of articles in your field of interest. A diverse and considerable number of contributions ensures the continuous development and success of the journal, and the growth of the society as a whole. Contributors, whether authors, reviewers or guest editors are always welcome. We also appreciate your comments and suggestions to improve the quality of our publications. Join our team now and take part in sharing technical knowledge and building the future of oil and gas industry!

Meet the SandRose Team

To contribute in future editions,
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Message from the Chairman

It is an honor and a great privilege to address the 60th anniversary of SPE-Kingdom of Saudi Arabia Section, as the 44th Chairman of the section.

In 1913, during the emerging petroleum industry, a standing committee on oil and gas was created within the American Institute of Mining Engineers (AIME). Approaching the 50s, the growing interest in the oil & gas industry and increase in membership led to a restructuring decision that shaped the future of the society of petroleum engineers. In 1957, the new society of petroleum engineers developed, to address the technical interests of its growing membership. Today, we are talking about membership reaching 158,000 members globally.

Two years later, this strong foundation found its way to the leading oil exporter in the World, Saudi Arabia. In January 16th, 1959, The Saudi Arabian Section was established as the first section to be founded outside the United States of America. Today, we are one out of 143 sections around the World, and considerably the largest section outside North America.

By 1979, the section has already won a total of 20 awards, marking the birth of a shining star. A society comprised of knowledge, leadership, and excellence continued in the rise, growing in scope and scale throughout the years. In 1990, the first Annual Technical Symposium was founded. The number of events jumped outstandingly that year.

The story of Excellence continued to flourish, in 2007, the Saudi section raised to the presidency position with the appointment of Dr. Abdul Jaleel Al-Khalifah, as the first Saudi and Middle



Dr. Bander Al-Ghamdi
Chairman, SPE-KSA Section

Eastern to reach this prestigious level. The year 2007 marked another successful milestone, the inauguration of a program dedicated for the youth, the Young Professional and Student Outreach program.

Our history is full of success stories, in 2008, we embarked on a streak of winnings, receiving the President's Award for Section Excellence. For eleven consecutive years, we have been placed best section. Today we are the most decorated section with more than 300 awards.

SPE-KSA Section continues to prosper internationally; Dr. Sami Al-Naim begins the year 2019 as President of SPE International, making him the second Saudi to successfully hold this prestigious title. The development of the section is indeed phenomenal, characterized by outstanding presence and distinguished status. Our journey is a 60-glamorous years, with 44 Chairpersons determined in their mission towards Continues of Excellence!

SPE-KSA 2018/2019 Executive Board



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2019 ATS&E
Chairperson



Abdulaziz Al Nuaim
Technical Programs
Chairperson



Suha Kayum
Young Professionals
Chairperson



Meshal Al-Amri
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Chairperson



Abdullah Al-Mulhim
Trips & Social Activities
Chairperson



Abdullah Al-Ghamdi
Membership
Chairperson



Faisal Al-Zuwaidi
Information Technology
Chairperson



Salma Al-Hashimi
SandRose Magazine
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Mohammed Al-Harthe
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Chairperson



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Mohammed Alnahas
Public Relations
Chairperson

Join SPE-KSA Family Now!

SPE-KSA section is considered one of the largest and most decorated SPE sections in the world with more than 9,500 members. For more information about how to join SPE-KSA family, visit spe-ksa.org/membership/



BE THE
CHANGE YOU
WISH TO
SEE IN THE
WORLD

– Mahatma Ghandi

“2017/2018 Volunteer of The Year”



Abdullah Al-Haji

Petroleum Engineer at Saudi Aramco
SPE-KSA Treasurer for 2018/2019 Term

Being the “SPE-KSA Volunteer of The Year” for 2017-2018 term is a great milestone that would not have been accomplished without relentless hard work and tremendous dedication. My continuous commitment to SPE-KSA family is driven by a genuine

passion to support and promote the oil and gas industry. I urge you all to seize the opportunity of joining SPE-KSA prestigious section as you will have the chance to grow technically and personally along with giving back to the Kingdom.

SPE-KSA 60th Anniversary



Established 60 years ago, the Saudi section of the Society of Petroleum Engineers has been taking great strides and breaking records in the last years. Under the leadership of homegrown talent and fueled by the ingenuity of thousands of young professionals, it currently is the second largest section in the world with more than 10,000 active members and 300 volunteers driving its many functions and events.

SPE's vision is to enable the global oil and gas exploration and production industry to share its technical knowledge to meet the world's energy demand in a safe and environmentally responsible manner. The Saudi SPE chapter is helping the Industry achieve this vision through its leadership and programs; just last year the Saudi section held over 400 events from symposiums to technical dinners and student outreach programs.

SPE is truly a global society, it is active in almost 145 countries worldwide and has over 350 student sections, and yet the Saudi Arabian chapter managed to be one of the most prominent and active sections and has left its mark both internationally and regionally.

As testimony to the Saudi section's leadership and commitment from its members and

volunteers, it has been the recipient of the SPE international Presidential Section Excellence Award annually since 2008, which is awarded to sections excelling in innovation, technical knowledge dissemination, outreach & operations.

To highlight the SPE-KSA's role in this prestigious society, its former Chairman, Dr. Sami Al-Nuaim from Saudi Aramco was recently appointed as the 2019 president of SPE International, making him the second Saudi president of the international society, after Dr. Albduljaleel Al-Khalifah who was appointed 12 years ago. Regionally, the Saudi section's talent continued its leadership, where Faisal Al-Nughaimish is the new MENA Director following Khalid Zainalabedin's last term as Director of the regional SPE section.

After a remarkable 60 years of achievement, the SPE Saudi chapter would like to extend its deep gratitude and appreciation to its leadership throughout these years, the support of the sponsoring companies and mostly to the tireless efforts of its members and volunteers which helped the chapter reach this level of excellence and gain international recognition.

SPE-KSA 60th Anniversary Dinner Meeting



Mr. Amin H. Nasser
President & CEO of Saudi Aramco

To celebrate the 60th anniversary of the Saudi Arabian Section of the Society of Petroleum Engineers, SPE-KSA held its ceremonial Dinner Meeting on January 8th, 2019, hosting the President & CEO of Saudi Aramco Mr. Amin H. Nasser.

The dinner drew a remarkable audience of 500 guests from the chapter's top executives and members including BHGE, Halliburton, KFUPM, NESR, Saudi Aramco, Schlumberger and Weatherford.

A ceremonial video showing the long and rich history of the SPE-KSA Section was played followed by an inspiring speech by Mr. Nasser sharing his insights into the future of the oil and gas industry and the role of SPE in shaping it.

Mr. Nasser who is the recipient of the SPE Charles F. Rand Memorial Gold Medal in 2015 and the Lifetime Achievement Award in 2017, started his speech by commending SPE for

its technical and professional excellence maintained over the past six decades. Affirming that this section has “provided invaluable service to the Kingdom, to its members, and to the engineering sciences”, Mr. Nasser explained. SPE not only survived 60 years but also grew in strength to become the number one SPE section outside of the United States. With continued dedication and efforts to increase membership, and with the former SPE-KSA Chairman and Saudi Aramco professional, Dr. Sami Al-Nuaim, beginning his journey as the president of SPE International, Mr. Nasser has confidence that 2019 is the year the Saudi chapter becomes the leading section in the world.

Mr. Nasser believes that the next 60 years for this section will be more exciting yet challenging. Climate change as well as the natural decline in oil fields are putting

tremendous pressure on the industry, he explained that if we are to remain competitive, transformation is necessary, and SPE-KSA and its professionals can play a key role in transforming the industry. He reiterated that we must continue to promote innovation and collaboration to increase discovery and recovery, reduce cost, enhance safety and protect the environment. Mr. Nasser explained that Saudi Aramco have existing efforts ranging from investments and progress in R&D in cleaner combustion technologies and carbon capture and utilization. The company's success in these areas, along with its best practices in reservoir management, drilling and production contributed to the Kingdom being recognized for managing oil fields with the lowest carbon intensity of any major producer. Mr. Nasser concluded his speech by inspiring everyone to work together to address these tremendous challenges and to see this as an opportunity to produce remarkable achievements for "an industry with a renewed passion for innovation and a clear vision of its role in the future".

Following his speech, Mr. Nasser engaged in a lively dialogue session moderated by Mr. Bandar A. Al-Khamies, Manager of In-Kingdom Relations at Saudi Aramco, where Mr. Nasser shared further insights into the future of Saudi Aramco and the role SPE plays for the company and industry as a whole. Mr. Nasser explained that in addition to the existing efforts which capitalize on the powerful tools of the 4th Industrial Revolution, such as Artificial Intelligence, data analytics and robotics, along with other technological advancements including, horizontal drilling, seismic, crude to chemical (CTC) and simulation, he believes that more can be done to strengthen our position in technology. Such advancements are necessary to minimize the industry's carbon footprint and optimize cost.

He also indicated that SPE has a role to play in making our industry more attractive in an era where we are committed to continue reducing GHG emissions through technologies and innovations throughout the E&P process.

Mr. Nasser then highlighted the initiatives taken by Saudi Aramco to attract young talent

to the oil and gas industry in general and to Saudi Aramco in specific. A company with a focus on technology, a diverse portfolio with global investments to expand its presence, and emphasis on development programs are all attractive forces that support Vision 2030, aiming for a more sustainable economy for the Kingdom. The session concluded with Mr. Nasser encouraging the youth to increase their participation in technical societies, as they are a great platform for communication, knowledge sharing and to connect with professionals from different parts of the world.

Afterwards, Dr. Mohammed Al-Qahtani, Senior Vice President of Upstream in Saudi Aramco and Honorary Chairman of the Board of Directors of SPE-KSA, Mr. Nasir Al-Naimi, Vice President of PE&D in Saudi Aramco and Chairman of the Board of Directors of SPE-KSA, Dr. Sami Al-Nuaim, 2019 President of SPE International, and Dr. Bander Al-Ghamdi, Chairman of SPE-KSA, presented Mr. Nasser with a recognition trophy as a token of appreciation for his participation in this event. Additionally, as part of the anniversary's theme and to honor the achievements and historic milestones of the Saudi Section which brought us to where we are today, 16 past chairpersons of SPE-KSA were recognized at the event.













Honoring Previous SPE-KSA Chairmen



Dr. Zeid Al-Ghareeb
2017 - 2018



Bandar Al-Khamies
2014 - 2015



Fahad S. Al-Fassam
2016 - 2017



Yousif Al-Tahan
2013 - 2014



Fahad Al-Mutairi
2015 - 2016



Abdulaziz A. Al-Ajaji
2010 - 2011



Hiba Dialdin
2008 - 2009



Salam P. Salamy
2003



Dr. Sami A. Al-Nuaim 2019 SPE International President
2007 - 2008



Khalid A. Zainalabedin
1994



Dr. Nabeel I. Al-Afaleg
2005 - 2006



Saad A. Al-Turaiki
1991

November Technical Dinner Meeting



H.E. Abdulaziz Al-Zamil

Chairman of The Board of Sipchem, Sahara Petrochemicals, and Al-Inma Bank, Former Minister of Industry & Electricity

SPE-KSA held its third Technical Dinner Meeting on November 20th, 2018, hosting H.E. Abdulaziz Abdullah Al-Zamil, Chairman of the Board of Sipchem, Sahara Petrochemicals and Al-Inma Bank, Former Minister of Industry and Electricity. Through an enriching dialogue session moderated by Dr. Faisal Al Faqeer, CEO of Sadara Chemical Company, His Excellency walked the audience through an exciting career in Petrochemicals and provided them with invaluable insight into the world of Petrochemicals, innovation and leadership. H.E. Engineer Abdaulziz Al-Zamil is a former minister of what was previously the Ministry of Industry and Electricity of the Kingdom of Saudi Arabia between 1983 and 1995. He has over six decades of experience in leadership in industrial and petrochemicals development. The session started with an enlightening discussion on the establishment of the

petrochemicals industry in the Kingdom. After the oil embargo in 1973, there was a shortage in crudes and a big waiting line, which encouraged H.E. Ahmed Zaki Yamani at the time to propose the “Crude Incentive” in which any company that invests \$1MM in equity in a petrochemicals plant will immediately receive 1000 barrels. This incentivized companies to come and invest in the region. In 1975, when the Ministry of Industry was established, Dr. Ghazi Al Gosaibi appointed H.E. Al-Zamil to head a team to consolidate all studies done by Petromin and continue the petrochemicals discussion between companies. In 1976, a royal decree was issued to establish SABIC with a capital of 10 Billion Riyals. Dr. Ghazi was the Chairman and H.E. Al-Zamil was the first Vice Chairman and CEO. The establishment of SABIC was



dependent on the successful coordination between the Royal Commission, Saudi Aramco and the Public Investment Fund. H.E. states that: “The coordination was such that, by the time our plants were ready for startup, we had the feedstock, utilities and finances ready. This coordination enabled Saudi Arabia to be unique in what it achieved in Jubail and Yanbu. In its establishment of SABIC, Saudi Arabia managed to achieve what a lot of advanced countries couldn’t achieve. I’m really glad that the SR10 Billion that the Kingdom invested has become SR370-380 billion, in addition to SR160 Billion of exports and SR20 Billion of net income per year. But the most important thing was the value added. In addition to all those financial achievements, the fact that you have 40,000 Saudis trained in these plants and adding value has really been instrumental and truly translates

what ‘value-added’ means. SABIC has been a major contributor to manpower development and has been working by Saudi Aramco’s side in manpower development since its establishment.” When asked about the future of the industry in the Kingdom, H.E. goes on to say, “The industry now contributes 12% of the GDP. To be considered an industrial country, it has to contribute 24-27%. I believe that, with the programs that are being implemented, especially in the local context and by Saudi Aramco (such as IKTVA), by 2030, Saudi Arabia would certainly have the industry represent 24-27% and would be considered one of the industrial countries.”

The session ended with an inspiring message from H.E. Al-Zamil: “I think what Saudi Aramco has done in the past and what SABIC has achieved illustrate that the citizens of Saudi Arabia are extremely productive and hard working. For Saudi Arabia, oil is no longer the main source of wealth. Our main source of wealth is actually in the youth, and it has been shown that, if the youth are utilized correctly, we can see Saudi Arabia develop into a first world country very soon.”

Conclusion: Mr. Amin Nasser, President and CEO of Saudi Aramco, Dr. Mohammed Al-Qahtani, Senior Vice President of Upstream in Saudi Aramco and Honorary Chairman of the Board of Directors of SPE-KSA, and Mr. Nasir AlNaimi, Vice President of PE&D in Saudi Aramco and Chairman of the Board of Directors of SPE-KSA, presented both the speaker and moderator with recognition trophies as tokens of appreciation for their participation in this event. Attendance exceeded 400 individuals ranging from various management positions, engineers and young professionals.





Spotlight on YP

Meet Your Inner Leader

Oct 18, 2018

Rasha Al-Thaqafi

Senior Service Delivery Manager at Microsoft,
Founder and Certified Coach at RT Consulting



As the purpose of Spotlight on Young Professionals is to inspire SPE-KSA's youth through motivational sessions, targeted at building effective next generation leaders, Rasha's session was titled "Meet your Inner Leader". Rasha has 10 years of experience in multiple organizations and she obtained her certificate of leadership coaching from the Coaches Training Institute (CTI). Throughout the event, Rasha shed light on her most important life lessons, her take on mentorship, and leadership as well.

On life lessons, Rasha provided words of wisdom on both professional and personal growth. She explained the power of helping others without expecting anything in return. Rasha also encouraged the audience to embrace uncertainty and take a moment to reflect, especially when one is nervous or

stressed about a certain decision.

As for mentorship, the speaker advised that we allow for things to grow organically as we get to know our mentors and to always demonstrate respect. Moreover, Rasha explained to the attendees that leadership skills can be gained, and is not something we have to be born with or without.

During the interactive workshop, Rasha introduced everyone to the wheel of life exercise, where the audience evaluated different areas of their lives, and discussed what the areas represented, the exercise was well received by the audience who found it reflective and eye-opening.

Finally, Rasha guided the attendees through a visualization, where everyone had the opportunity to visualize and meet their inner leaders.

Written by: **Mariam Assadeq**
Geologist

YP Academy

How to Look, Act and Behave Like a Leader

Nov 6, 2018

John Power
Leadership Development Practitioner,
Leadership Center RT



Number of
Attendees
75

A+B cost 1.1. What is the price of B if A's price is 1 more than B? Is tempting to think the price of B is 0.1. It seems so obvious, and yet that would be wrong. B's price is 0.05. The answer is simple, but it demands a pause to think clearly about the conditions of the problem, challenge assumptions, and understand the reasons behind it. In many ways leadership is about that, understanding and challenging instincts or assumptions, taking care to note how the solution is formed and what makes it so. That is, leaders ask, ponder, relate, understand, learn, and help a team come together and achieve goals beyond individual expertise.

How to become a leader? What it takes to become one? How to look, act, behave like a [true] leader? Early November John Power (Leadership Center, Ras Tanura)

asked these to questions to a group of 75 YPs gathered for the month's YP Academy's seminar. Over the course of two hours, Mr. Power distilled the essence of leadership through examples and activities. Attendees learned how leaders transform organizations by helping and enabling them to work together. Mr. Power showed how leaders behave and act to attain this goal. YPs learnt how body language and behaviors are interpreted by others, and how these contribute to building their own leadership attitude.

Mr. Power explained all important details thoroughly and provided excellent examples for the audience to work with. The teachings resonated well with YPs who are building their careers and seek to become leaders that support and help our Upstream Organization.

Written by: **Damian San Roman Alerigi**
Petroleum Scientist

Spotlight on YP

The Joy of Giving Back

Nov 12, 2018

Malikah AlSharif

Leader of the Saudi Aramco STEMania
and co-founder of Giving Hands



Number of
Attendees

40

Spotlight on YP continued to host young, inspirational professionals with this month's event featuring Malikah Sharif. Malikah spent years giving back to her community, and in her talk, titled "The Joy of Giving Back", she reflected on those years and motivated everyone in the room to go out and do the same. Malikah, who is an honor graduate from Prince Mohammed Bin Fahd University, joined Saudi Aramco in 2013 and was leading STEMania project, which aims to increase the number of females in STEM fields.

The event, which was held in the Multi-Purpose Room in EXPEC I, started with Mariam Assadeq introducing Malikah to the guests followed by holding a small dialogue with her. In the dialogue, Malikah revealed that volunteering was not a part of who she is, but rather she had to make sacrifices and decisions to give back to the community. Malikah also explained how volunteering can be made a more

enjoyable experience by taking something that we love and do it in a way that would contribute to others.

After the dialogue, Malikah took us through her life's journey and how she became who she is today. She talked about her life changing experience when she got in an accident and got paralyzed for a year, and how this incident made her make commitments to herself. These commitments led her to devote a lot of her time to volunteering, and eventually to be one of the founders of Giving Hands and STEMania.

Malikah is very passionate about volunteering, and from experience, she believes that if someone has a chance for volunteering, they should waste no time in doing so. At the end of the session, Malikah asked everyone to write a message of commitment to themselves, a reminder to give back to the community.

Written by: Ahmad M. Ismail
Petroleum Engineer

Inspirational Leaders

3 Lessons on Success

Nov 27, 2018

Dr. Rusha Alrawaf
 Head of Marketing Communication
 Division in Saudi Aramco



Number of
Attendees

40

If you were ever told that you can't do something, or that your goals or dreams weren't realistic, you will be able to relate to Dr. Rusha Rawaf's talk on the "Three Lessons on Success".

Dr. Rawaf summarizes the lessons she learned throughout her 18-year career with Saudi Aramco in three main points:

1) Believe in yourself because no one else will do it for you

When Rusha wanted to be a commencement speaker, she was told that she won't be picked. When she first expressed an interest in Saudi Aramco, she was told that she can't do it. "You need to trust yourself, and if you don't trust yourself, you fake it until you make it, and believe in yourself".

2) Don't give "them" permission (you own the power)

Between the boss who supported her and constantly raised her self-esteem and the one who disliked her and didn't want to

see her succeed, she learned more from the latter because he pushed her to make the decision to not allow his actions to affect her. "He was my best supervisor and he taught me the most valuable lesson."

3) Don't get "comfortable" (comfort is the enemy of growth)

"If you're comfortable, you're not growing". If you feel like you're too comfortable, something needs to change.

Rusha then did a raffle on three books, and recommends them as good reads:

- "Originals: How Non-Conformists Move The World" by Adam Grant
- "The Power of Habit" by Charles Duhigg
- 27 خرافة شعبية عن القراءة ، د. صالح العبدلي و عبدالمجيد حسين

The audience addressed questions about self-assessment, getting out of their "shell" and dealing with difficult co-workers.

Written by: **Hala Alhashmi**
 Planning & Performance Management Analyst

Inspirational Leaders

The 6 Pillars of Persuasion

Dec 5, 2018

John Power
Leadership Development Practitioner,
Leadership Center RT



Number of
Attendees

66

The YP Inspirational Leaders team ended 2018 by hosting Mr. John Power, a Leadership Development Practitioner at the Leadership Center in Ras Tanura. Mr. Power gave an interactive workshop to the attendees about the Six Pillars of Persuasion. The event was well received by the 66 attendees who were engaged and aspired to enhance their leadership skills.

John's workshop goal was to inform the attendees on how to apply the ethical Principles of Persuasion to move people to change, to act and to say "yes" to all types of requests, particularly those that occur in a business setting. More importantly, attendees had the opportunity to put what they learned into practice

John's talk about the "Six Pillars of Persuasion" focused on discussing answers to the following questions

1. If you have two options to present, which should you present first – the more costly or the least costly?

2. Is it better to tell a prospect what they stand to gain by moving in your direction, or what they stand to lose if they don't?
3. If you have a new piece of information, when should you mention it is new – before or after you make the presentation?
4. If you have a product, service or idea, which contains positives and negatives. When should you mention negatives – early or later in the presentation?
5. After someone has praised you, your product or organization. What is the single most effective thing you can do immediately after the other person has said, "thank you"?
6. To get someone to like you and co-operate with you, what is the single most important thing you can do?

The audience had diverse answers to each question, which John used to demonstrate persuasion skills..

Written by: **Sarah Alruwaily**
Engineer

Balance Team

From Fat to Fit

Dec 12, 2018

Nawaf Alhussain
 Certified Fitness & Sports Nutrition Coach



Number of
Attendees

67

In its second event of the year, YP Balance Team hosted an interactive session delivered by the inspiring Nawaf Alhussain. Nawaf provided the audience with scientific-based guidelines on how to lose body fat and follow a healthier lifestyle.

Nawaf began the session with great enthusiasm by engaging the audience in a warming greet. He then walked us through his own journey of losing weight and the lessons he learned through his missteps. “Success is 99% failure” is the quote Nawaf emphasized his story around. Prior to his current achievements, He used to weigh 100 kg, with 35% body fat, and he always received negative comments from all around about his looks. This triggered his desire to pursue a healthier lifestyle and self-educate himself about the science of nutrition and fitness, followed by obtaining an IFBB certification.

Nawaf summarized his guidelines to losing body fat and maintaining a healthy lifestyle to the following:

1. Increase your physical activity.
Engage in activities that you love.
2. Maintain your insulin level.
3. Eat the right amount of food.
4. Drink enough water. On average, the recommended water intakes are 2.3 liters for women and 3 liters for men.
5. Have enough sleep to recover.

Finally, Nawaf concluded the session with a highlight on the importance of following a healthy lifestyle by giving the audience a valuable advice “Take care of your body. It’s the only place you have to live”.

Written by: **Saad Almudara**
 Petroleum Engineer

Student Outreach Committee's Collaboration with Saudi Aramco's D&WO: Empowering Young Females to Become Future Drilling Engineers

By Dania Ghazi, SPE-KSA Section's Student Outreach - ALP member



Drilling Engineers Zainab Al Saihati and Jawaher Al Saleh demonstrating to students the Well Control Simulations

On November 28th 2018, the Student Outreach - Ambassador Lecturer Program (ALP) team participated at the "School Outreach" event conducted for 50 female high school students from Dhahran Ahliyya and KFUPM Schools, arranged by Drilling & Workover (D&WO). The event aimed to promote D&WO industrial work environment, enrich students' knowledge and build their interest in the energy industry. Several

entities from Saudi Aramco (SA) participated at the event to deliver to students an extraordinary experience. The event was held at SA D&WO Well Control School, a recently inaugurated state-of-the-art school equipped with high-end well control simulators and classrooms.

Establishing Early Bonds with SPE

Zainab Al Ali, an ALP member, established early bonds with students and encouraged them to be part of the society of Petroleum Engineers SPE, by giving an overview about SPE activities. Time was dedicated to allow students to have conversations and connect with currently working females to learn from their experiences.



ALP member Zainab Al Ali sharing SPE's students tailored activities



Students are excited during the tour Visit at the Well Control School

Inspiring Youth to Become Drilling Engineers

An overview on drilling business, activities and operations were delivered by Drilling Engineers Zainab Al Saihati and Jawaher Al Saleh. Students overlooked drilling operations using a DS-5000 simulator with a cyber chair connected to large video wall (V-Wall) allowing them to get hands-on experience and learn in safe and realistic environment.

Providing Guidance to Students' Career Path

Career Counselors participated to provide guidance to students in choosing their future careers. An overview on SA College Program was delivered in addition to a personality test that allowed them to explore and reflect on their personal traits. Videos bringing to mind successful female role models in the energy sector were shown followed by a group discussion allowing students to reflect on the massive career opportunities available for them.



A snap of students' discussions during the activity sessions



On left, D&WO Operations Manager Fahad Al Mulaik and Training Division Head Faisal Al Daihani welcoming students

Collaborating to Inspire and Educate

D&WO management assured their continuous support to the community through promoting the energy industry to Kingdom's youth. During the event, D&WO Training Superintendent, Faisal Al Daihani delivered a motivational pitch encouraging students to explore career opportunities within STEM majors. Followed by an overview on Upstream business activities, delivered by D&WO Operations Manager Fahad Al Mulaik, which included an outlook on the oil industry and placement of upstream among the organization.



The "School Outreach" event was arranged by D&WO Training representative who is an ALP member, Dania Ghazi in collaboration with Eiman Al Hamad from SA Training & Development. ALP team will continue welcoming collaborations complementing its purpose to promote and educate students on career opportunities in the energy industry

A group picture with the high school students and event organizers



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Riyadh College Fair Event for High School Students



Students swarming around the booths finding the path of their futures.

The event took place in Riyadh at Tarbyh Namouthajiyah schools, where two young engineers, Zainab Al-Ali and Mohammed Al-Nahhas, from the Ambassador Lecture Program (ALP) at Saudi Aramco have participated at the college specialty selection exhibition and forum for four consecutive full-days. The two presenters have very well engaged with 600 of high school male and female students from different school districts in Riyadh, educating them about several petroleum engineering concepts and various background information about the oil and gas industry.



Topics discussed with the students include: drilling concept, the different roles of various petroleum entities including reservoir, production and drilling. The students have shown a keen interest about the petroleum industry to become part of the workforce of the world leading energy suppliers.

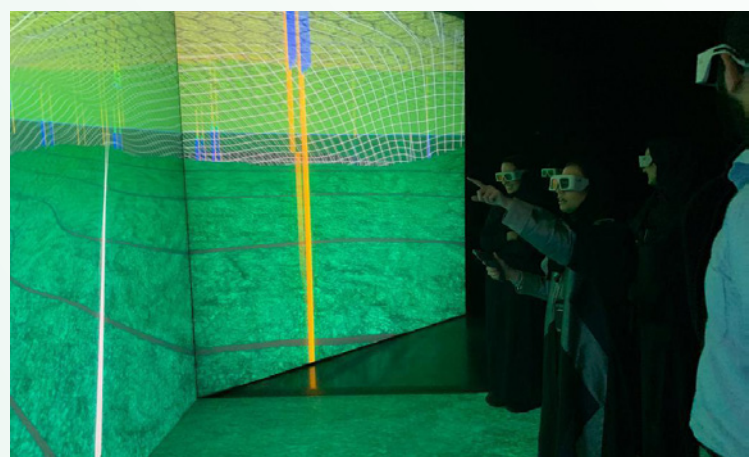


Effat University Graduate Students' Visit to Saudi Aramco's Upstream Professional Development Center



Students in front of the staggering 4D model for one of Saudi Aramco fields.

The Student Outreach committee has organized a visit for 15 graduate students from Effat University majored in renewable energy and their faculty members to the Upstream Professional Development Center (UPDC) in Dhahran. The visit was aimed to give the students a real hand-in experience of the innovative 4D Cave Automated Virtual Environment system. This system gives an overview of the entire oil journey from reservoir development, drilling through oil extraction and production processes. The students also learned about the different rock types and oil crude grades to enrich their knowledge about the petroleum industry. The session was very well received by the audience resulted in fruitful discussions among the attendees and the UPDC instructors.



It is worth mentioning that as part of BHGE commitment to support the local community and to invest in Saudi human resources across the oil & gas industry and to further empower female engineers, BHGE is collaborating with Effat university to launch the first petroleum engineering degree for female students in Saudi Arabia.

CPG 199 Poland Module

July 13, 2018 to July 23, 2018



Dinner Meeting with the SPE-AGH Student Chapter

- Visited over 30 geological sites.
- Program lasted 10 days.

The 13th of July 2018 marked the beginning of the “College of Petroleum Engineering and Geosciences-199” 10 days program in Poland, in collaboration with AGH University-Micropress Europe. The main objective of the program is to provide the students with an in-depth knowledge about the petroleum systems that exist throughout Poland. The program required that the students conduct a great deal of hiking to observe source and reservoir rocks examples. This allowed the students to complement the basic knowledge they obtained from an introductory course in petroleum geology taken in their freshman year at KFUPM. The program, however, was not entirely

built on the purpose of obtaining academic knowledge. Extra-curricular activities were also incorporated into the program to develop the students’ interpersonal skills and allow them to socialize with the hosting university. The KFUPM SPE Student Chapter students had the opportunity to organize a joint dinner meeting with the SPE-AGH Student Chapter. The dinner meeting was held in downtown Kraków on the 17th of July. Not only did the students develop new fruitful relationships, but they also had the chance to learn from the experiences of each other and share ideas. Moreover, the students were required to undergo a geophysics field training session where they had to apply several concepts of geophysics that were taught in the classrooms back in KFUPM.

Written by: Hamoud Rajaa AlShammari, *Membership chairperson of SPE-KFUPM Student Chapter.*

A Visit to the Museum of Oil and Gas Industry in Bóbrka and Gorlice – Poland

July 20th, 2018

- Opened as a museum on August 24th, 2004.
- The site holds the oldest oil well dug by hand in the world.
- The first well was dug in 1860 by manual labor and it had a depth of 50 m.
- The second well was dug in 1878 with a total depth of 132 m.
- The third well was in 1885, and it is a Canadian drilling rig powered by a steam engine.

The visit to the museum of oil and gas industry in Bóbrka was one of the activities scheduled for the CPG 199 summer camp program. The purpose of the trip was to introduce the students to the early stages of the petroleum industry. The facility covers 20 hectares and hosts some of the oldest oil wells in the world. The students had the chance to witness several different technologies and techniques that were used to dig early wells, as well as extract and treat oil and gas since the 19th century. They observed the three oldest wells in the museum and visited the majority of the wooden workshops and warehouses that date back to the 19th century. Old original gears were available for examination and observation where the students utilized this opportunity to see the evolution of these gears throughout the years. They visited the office of Ignacy Lukasiewicz (father of petroleum industry) where they got to see preserved books, journals, maps, photo albums, share certificates, technical documents and drawings which are original and some copies of rare documents that date back to the lifetime of Lukasiewicz himself. Later that day, the students visited Lukasiewicz's hometown Gorlice. They visited the PTTK Regional Museum

Written by: Mohamed Fatani, *Secretary of SPE-KFUPM Student Chapter.*



Dinner Meeting with the SPE-AGH Student Chapter

of Ignacy Lukasiewicz where they met with the mayor of Gorlice. The mayor gave the students a tour around the museum and showed them the valuable tools and equipment used by Lukasiewicz. In the end, the mayor was kind enough to give the students gifts and pose alongside them in the photographs they took.



Mayor of Gorlice handing out Souvenirs to SPE-KFUPM Students



Group Photo with the Mayor of Gorlice in the PTTK Regional

Jebel Shams Summit, Oman

July 1st, 2018

- Highest summit in the GCC.
- About 3 km above the sea level.

The first stage of the CPG 199 Summer Camp program involved a trip to Oman which was hosted and organized by an adventure company known as Hussak. During their first week, the students were tasked to complete small and fairly easy trips for three main reasons: (i) to study the geological features present in those sites, (ii) provide a means of bonding with each other and develop the feel of belonging to one large family, and lastly (iii) to prepare the students for their greatest challenge during this trip, which was the long hike to the summit of Jebel Shams. Jabel Shams is located 3 km above the sea level and demands a hike of more than 12 hours to reach the summit. The hike started at 6:00 AM in the morning and the last summiteer to reach the camp was around 7:00 PM. The hike was physically demanding and some hikers had to settle for an intermediate summit. In one instance, a student fainted twice during the hike, however despite this, he still managed to make it to the summit! Hussak usually camps in the middle of the mountain, hence taking a total time of 2 days to finish the hike, however in our case it was a one-day challenge. The reason behind the summit challenge went beyond studying and analyzing geological features and making geological interpretations of the rocks encountered. It was meant for the students to discover themselves, to see what they are capable of doing and to



SPE-KFUPM Chapter at the Summit of Jebel Shams

help them realize that the sky is truly their limit. This trip had a significant positive impact on the students, evident from their numerous positive feedback. Although it might seem pointless to make 44 students climb to a 3 km summit for 6 hours, but for them, it was the station where they left the old rusty train for a new one heading for a better future.

Written by: **Mohamed Fatani**, *Secretary of SPE-KFUPM Student Chapter.*

CPG 199 In-Kingdom Module

July 20th, 2018

- Over 10 Saudi Aramco facilities.
- Halliburton Yard.
- Schlumberger Yard.
- Visit to a full simulation of a drilling rig in SPSP.
- Program lasted 10 days.

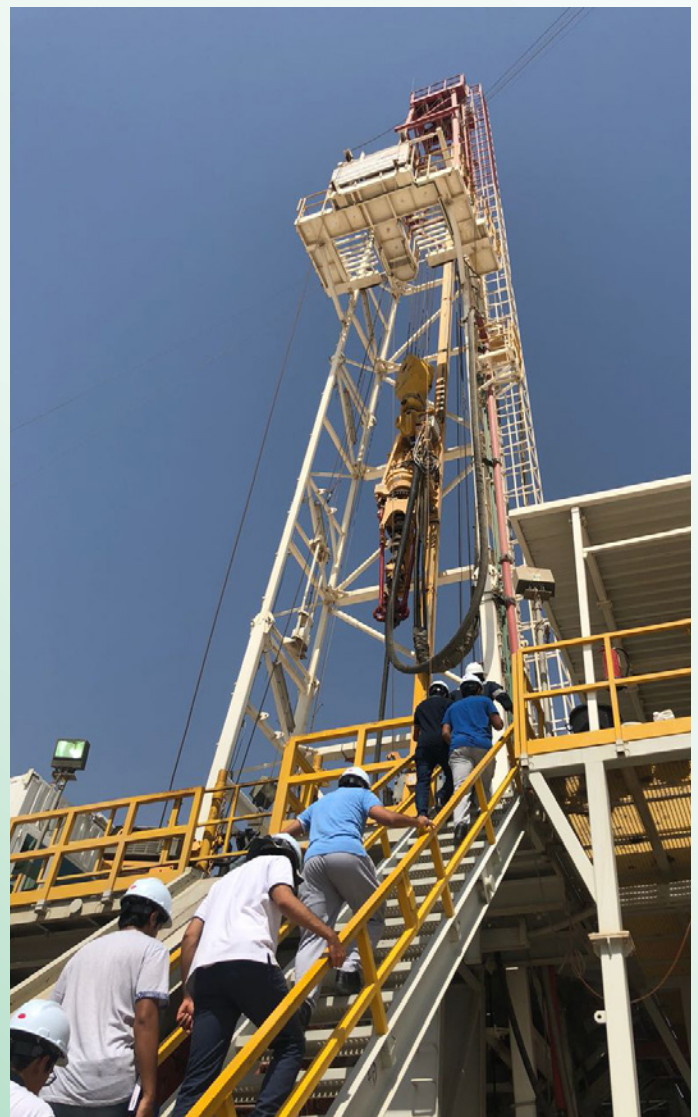
The In-Kingdom part was the 3rd and last part of our summer camp, lasting for 10 days. The main focus for this part was on Petroleum Engineering where the students got the opportunity to observe the oil and gas industry from the inside. To ensure safety, the students were always required to wear PPE if required to maximize safety. Most of the trips were mainly hosted by Saudi Aramco in their facilities which included, EXPEC ARC, Event Solution, Geosteering, Ju'aymah NGL Fractionation Department, Ras Tanura Refinery, Abqaiq GOSP 3, Qurrayah Water treatment plant, Salwa Seismic Acquisition Site, Core storehouse and King Abdulaziz Cultural Center. In-addition, the students had the opportunity to visit Schlumberger's and Halliburton's yards along with SPSP Drilling Rig.



SPE-KFUPM members in front of the Qurrayah station support building



SPE-KFUPM members at King Abdulaziz Cultural Center (Ithra)



Members heading up the simulation rig in SPSP Drilling rig.



Members posing in front of the vibroseis truck in the Salwa seismic acquisition site



SPE-KFUPM Members at the Ju'yamah NGL Fractination Department



SPE-KFUPM members at the Saudi Aramco Core Area

SPE to Launch a New Data Science Newsletter



Adam Wilson,
DSDE Editor, SPE



Salem Gharbi,
Data Scientist,
Saudi Aramco

As part of SPE efforts to support the Oil & Gas professional, and due to the big wave of the fourth industry technologies flooding our industry. SPE will launch Data Science and Digital Engineering in Upstream Oil and Gas DSDE a monthly newsletter in this January 2019. DSDE will cut through the noise to deliver content that you can count on for a deeper understanding of data collection, analysis, interpretation, manipulation, management, storage, and application to deliver meaningful benefits to our industry.

DSDE will cover the following topics:

- Data analysis applications across industry disciplines
- Artificial intelligence and its applications
- Machine learning and its applications
- Predictive analytics
- Decision science/decision making
- Digital transformation
- Data analysis theoretical articles
- Monitoring and predictive maintenance
- Cybersecurity
- Robotics and automation

Data Science and Digital Engineering in Upstream Oil and Gas

- Data capture and management
- High-performance computing
- Data storage/archival concerns
- Digital work flows/systems engineering
- Integrated decision centers/systems/visual data analytics
- Unmanned systems

The Editor for DSDE is Adam Wilson, who is the special publications editor for SPE.



To receive DSDE newsletter, ensure to update your SPE preference in this link www.spe.org/en/preferences/email_preferences

For more information, you can contact Salem Gharbi at salem.gharbi@aramco.com

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BETWEEN THE SAME WAY
BETWEEN A COMPANY
BETWEEN MAINSTREAM
TODAY, A LINE HAS BEEN DRAWN.
AND THE PAST IS ON ONE SIDE**

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Zaher Ibrahim,
CEO for Saudi Arabia & Bahrain, BHGE



First of all, we know you recently moved to the role of the CEO for Saudi Arabia & Bahrain, tell us more about yourself?

I am currently the CEO for Saudi Arabia & Bahrain, for Baker Hughes, a GE company (BHGE); a role which I took on close to six months ago. Today, my team is primarily responsible for delivering on our localization commitment to the Kingdom, deploying the latest technological solutions in market, investing in human capital and driving operational excellence with our partners and customers.

A little bit of history, I was born in Saida, Lebanon and I have a degree in Mechanical Engineering from the American University of Beirut. I started by career in GE in 2000; I was part of the Energy Services Field Engineering Program in New York and followed this with couple of field assignments in the US. I then moved to the Middle East, where I took on multiple roles including project management roles working on gas generation, turbomachinery installation and maintenance in Basra, Iraq, Shedgum, Saudi Arabia and across the UAE. Much of my career has been centered on Saudi Arabia, which has enabled me to build

strong partnerships and domain expertise.

Prior to my current role I was the Vice President, Sales & Commercial, for BHGE for MENAT & India, and this role is indeed a progression of my career at GE, where I was the CEO of the Oil & Gas business in Saudi Arabia. For me, it is a true honor to be part of BHGE, a full-stream services company that brings together the strengths and heritage of GE Oil & Gas and Baker Hughes.

And over the last few months in this role, share with us your view on the Saudi oil & gas market?

Saudi Arabia is no doubt the bellwether market for the global oil and gas industry, and I believe this is an exciting period to be in this industry, notwithstanding all the challenges. What truly fascinates me – as a professional – is how the Kingdom is taking concrete steps to diversify the energy sector, and to mark the digital transformation of the energy landscape to boost productivity and efficiency.

At BHGE, we are well-positioned to support the Kingdom in achieving these aspirations of the government and the goals of the Saudi

Vision 2030 because we bring significant strengths – through our history of over 80 years of presence here, our breadth of technology as a fullstream company and our localization initiatives that bring us closer to our customers in Saudi Arabia – and indeed – the region.

How can BHGE support the growth of Saudi Arabia's oil and gas industry?

As I mentioned, one of our biggest strengths is our local presence and history of over 80 years of working with all the oil and gas industry leaders. In fact, in 1938, BHGE (Hughes) delivered the first drill bits to support Saudi Arabia's first commercially viable oil discovery – the Prosperity Well, Dammam No. 7.

Our heritage gives us tremendous insights into the market - and the requirements of our customers. Now, with the goals outlined by the Saudi Vision 2030 and the IKTV program to boost the energy sector productivity, and the focus on digitization, we see our role as a committed partner in the progress of the Kingdom by helping transform the oil and gas industry.

In addition to our localization initiatives, digitization indeed presents a great opportunity for BHGE – which is also a top priority for us. By applying advanced digital technologies, we believe we can increase productivity and efficiency across the industry. Our focus in Saudi Arabia is to roll out our digital industrial capabilities that will help our partners to strengthen the operational efficiency and productivity of assets.

Our strong local presence enables us to deliver on our vision. Today, we have over

2,700 employees in the country, and more than 10 facilities for manufacturing, maintenance and R&D in the Kingdom. A great matter of pride is our increased local presence which positions us as a long-term partner to Saudi Arabia.

Our key facilities in the Kingdom include a drilling equipment assembly, maintenance and overhaul workshop; the Dhahran Technology Center which is currently working on more than 15 local R&D projects and has more than 50 dedicated research employees; a pressure control facility, the largest for BHGE globally, which is manufacturing made in Saudi wellheads; one of the first and largest chemical blending plants in the Kingdom, a valves manufacturing plant, a drill bits manufacturing facility which produces polycrystalline diamond compact (PDC) bits, made entirely in the Kingdom, which is exported to over 40 countries. And in 2018, we celebrated the milestone of more than 10,000 made in Saudi drill bits have been manufactured in the Kingdom.

Additionally, we recently inaugurated our Multi-Modal Facility in the 2nd Industrial City in Dammam, which is home to our Artificial Lift and Turbomachinery & Process Solutions facilities in the Kingdom. We are also building a state-of-the-art oilfield services (OFS) facility in King Salman Energy Park (SPARK), that will support ongoing customer activities for three OFS product lines—drilling services, wireline services and pressure pumping.

Through all these initiatives, we are supporting the Kingdom to build a stronger oil and gas industry with proven local manufacturing, access

to world-class technology, promote Saudi national talent and promote innovation and 'Made in Saudi' manufacturing.

We had the IKTVA Forum end of November, how is BHGE supporting this initiative?

We take our iktva commitment seriously, and it is part of our commitment to the Kingdom – and to our long-term partner, Saudi Aramco. Everything mentioned above reflects our commitment and support to iktva. In the recent Iktva forum we signed a Memorandum of Understanding with Saudi Aramco that highlights our five-year plan and how we plan to support this program further in the years to come.

We also recently inaugurated a new facility, our Mutli-Modal facility which is the first of its kind outside our Turbomachinery and Process Solutions headquarters in Florence, Italy which will support the manufacturing, assembly, packaging and testing of turbomachinery equipment and components.

As a testament to our efforts we were honored to receive the iktva Excellence Award for "Best in Supplier and SME Development." Today, we're working with more than 1,350+ local suppliers in-country and we're helping create more than 5,300 jobs; we continue to be committed to creating a vibrant supply chain in the Kingdom.

All this is an indication of what we have previously done to support the iktva program and we plan on continuing to do to further support its goals and vision.

And how is BHGE supporting young Saudi talent in the Kingdom as key

pillar of future growth?

Supporting Saudi talent is part of our operational remit – because we strongly believe that investing in our new and next generation of local talent is important for the sustainable growth of the industry. We consider developing talent and building future leaders as part of the legacy we leave behind. We are also committed to creating opportunities for females in technical and leadership roles.

We are partnering with several entities to drive these initiatives. For example, we are partnering with the National Institute of Technology (NIT) to train females through 6-month internship programs to build their capabilities in STEM; this program was initiated by Saudi Aramco to bridge the gap in IT disciplines growing in the industry. Also, during the IKTVA forum, we signed an MOU with the Leading National Academy (LNA) to sponsor 50 female trainees over the next three years, providing them with world class technical vocational training.

We are also partnering with the Saudi Arabian Drilling Academy (SADA) and Saudi Petroleum Services Polytechnic Institute (SPSP) to help build a specialized vocational workforce to address the industry's needs.

Additionally, we invest in our employees. Upon joining our company, we have a lot of leadership and acceleration programs, which include hands-on and virtual training, field experience and global assignments, that help build future leaders to serve the industry and the Kingdom. Today, 70% of our leadership team is from Saudi, including females, and we're keen on doing more.

As a leader, what is your message to young professionals starting their career in the oil & gas sector?

Stay focused, strengthen your skills and be habitual learners. The industry is evolving at a fast pace, especially with digitization, and it is important that young professionals are up to speed. The industry has been central to the Saudi economy – and will continue to play a significant role. As young professionals, who will inherit the legacy of managing the world's largest energy reserves, it is important that they ramp up their skills to be in tune with the needs of the industry.

And finally, what is your message to other leaders and investors regarding the oil & gas market in the Kingdom?

Invest in digital, invest in young talents and look at the long-term. Volatilities are the normal in the oil and gas market, so it

is important to look ahead, and work towards unlocking the true potential of the industry. This means, looking at the digital opportunity, building the right supplier ecosystem and creating opportunities for local talent in the Kingdom to serve the Kingdom. We are seeing the growth opportunities in the Kingdom, this is market rich in resources, it has the right talent and a strong supply chain ecosystem to become the hub to serve the region. We believe this is the right place to invest. We also believe that Saudi Vision 2030 and the IKTVA platform are the right platforms to help move the industry forward and drive localization in the Kingdom to meet industry's goals and vision towards growth.



Interview with Professor Tad Patzek from KAUST

By Victor Torrealba, Postdoctoral Fellow, Ali Al-Naimi Petroleum Engineering Research Center, KAUST

Professor Tad Patzek has had an illustrious career in the petroleum industry from both industrial and academic perspectives. After receiving his formal educational training in physics and chemical engineering from his native Poland, he moved to the United States to complete postdoctoral training under Professor L. E. Scriven at the University of Minnesota. Once he got started in the industry, as a researcher at Shell Development, he re-wrote the understanding of how foams propagate in porous media. He also conducted groundbreaking work in the areas of waterflooding and thermal oil recovery. Back in academia, he served as Professor of Geoengineering at The University of California Berkeley, Chairman of the Petroleum Engineering Department at The University of Texas at Austin, and currently serves as Professor and Director of the Ali I. Al-Naimi Petroleum Engineering Research





Center at King Abdullah University of Science and Technology. His current research interests are mathematical modeling of earth systems, smart waterflooding, and unconventional formations.

You joined Shell Development after your postdoctoral training at Minnesota. How did this experience influence your decision to pursue a career in the oil and gas industry?

Answer: My postdoc in Minnesota trained me in computational fluid mechanics with applications in space-station manufacturing, fabric industry

and detergent industry. However, I always felt strong allegiance to earth sciences, followed my instinct, and joined the venerable Shell Development Bellaire Research Center in Houston. My life has never been the same. As I look back, joining Shell was perhaps the best professional decision I ever made in my life.

During your time with the company, Shell Development had a very rich research environment. They housed many well-respected scientists that went on to become



prominent professors. What was Shell doing at the time to retain and stimulate its population of researchers?

Answer: As I often joke with Professor Larry Lake, Shell D. was the most academic postgraduate institution we both attended. For the first five years of my career there I felt like a boy in toy store. In many ways, these were the happiest years of my life. During that time, Shell did not have to do anything to keep us inside, because no one ever thought about leaving and there were no layoffs. We kept ourselves busy and entertained with research we conducted. The gradual dismantling of Shell D. started in 1988, and proceeded slowly until I left in 1989. Even when I was departing for Shell Western E&P, an operations division in California, the Shell D. researchers would not leave, and some of the most expensive ones were forced to either retire or quit.

What were the biggest challenges (back in the day) to bring a research idea from the drawing board to the field? What are some of your lessons learned in terms of bridging research ideas to field implementation?

Answer: The key then and now is to find and retain an ally in field operations, not in research. My greatest practical successes in Shell and subsequently at Berkeley would always originate from the problems in field operations and my collaborations with field personnel. This trend started during three year before the one-year stint as a senior reservoir engineer in waterflood operations in California and continued uninterrupted for the next 19 years at Berkeley.

Once you came back to academia, you have had your fair share of partnerships with industry. In your opinion, what are the elements of



a successful partnership between industry and academia?

Answer: Learn to understand the practical problems and realize that the problem owners, operations, are key to anything succeeding in the field.

On a related note, you have had a fair share of graduate students. What advice would you give current and future students to help them succeed in their studies and then careers?

Answer: Always learn the fundamental science: mathematics, physics, chemistry, thermodynamics, and so on, and be an expert programmer. My ability to program fluently in C made me a better and faster engineer than most of my peers in industry and academia. Those students who listened subsequently did well in industry and academia

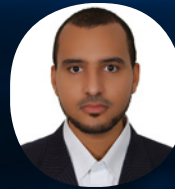
Finally, there is a new graduate degree program at KAUST on Energy Resources and Petroleum Engineering. Given you have been in the faculty at both UC Berkeley and UT Austin, how does this new program compare to related programs around the world?

Answer: This is a new program, in which we do not try to emulate the old ones. Times have changed. New skill sets are now needed to solve current problems that are so complex that no one can tackle them single-handedly. Having said that, I emphasize that team work is not about pushing work and understanding onto the next person. I see this happening all too often. Team work is about development of new deeper understanding of the problem at hand that otherwise would have eluded all team members.

Statistics and Machine Learning in Oil and Gas Industry



Mohammad Al-Nefai,
Petroleum Engineering
Systems Consultant



Beshir Aman,
Drilling Data Scientist

We live in an age where the fourth industrial revolution (IR4.0) is shaping our lives and the way we conduct business. It influences several industries and disciplines including Oil and Gas (O&G) industry. O&G industry needs to embrace fully IR4.0 to shorten its journey to digital transformation compared to the success of other industries like banking, marketing and social networking.

Artificial Intelligence, Machine Learning (ML) and Statistical Analysis are examples of IR4.0 key elements to support O&G companies' efforts to find new ways of optimizing operation, reduce cost, improve efficiency and ensure safety. In addition, utilizing such tools will help them to empower valuable resources, i.e. engineers, to focus on anticipating

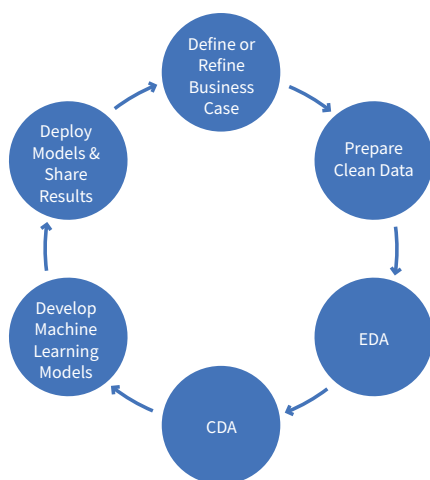
challenging issues and let machines assist human beings on doing tedious works such as analyzing tremendous amount of data.

Since decades, O&G companies have been collecting massive amount of data through field sensors and engineers input that is ready to extract meaningful knowledge and hidden patterns from it for better decisions making. The field of data science is able to achieve such goals. It is an interdisciplinary field that aims to ingest and parse the raw data into a knowledge base.

It is imperative as a data scientist to have knowledge of ML, statistics, programming skills and business knowledge. ML provides a set of tools to enable computers learn from data and draw different

meaningful insights without being explicitly programmed, using many statistical methods and concepts like probability and statistical inference. Both Statistics and ML are essential parts of the data science and it is the bread and butter of any data scientist job description. With the era of big data and high-performance computing, both have evolved to a completely new level. In the 1990s, work on machine learning and statistics shifted from a knowledge-driven to a data-driven approach.

A Data Scientist (DS) starts a project by defining or discovering a business case and preparing the required data in a clean format (data engineering). Then, he/she performs descriptive statistics or exploratory data analysis (EDA). The DS analyzes and summarizes main characteristics of data by using statistical techniques to extract useful patterns, detect outliers, visualize relationships, and make business-related hypotheses. Later, the DS conducts inferential statistics or Confirmatory Data Analysis (CDA) to quantify these relationships and test the given hypothesis. A DS is similar to a detective who wants to solve a case (problem) by collecting evidence (data), looking for clues (EDA), examining each piece of evidence (CDA), and eventually presenting his findings to the court (clients). The finding here can be iterative and data dependence. (See figure 1)

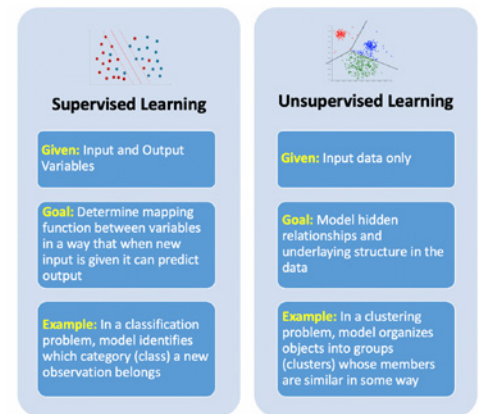


To make the point clearer, we selected the drilling discipline within O&G to explain the

concept in details. If a DS wants to analyze one of the real-time surface parameters, e.g. Hook Load for all wells to be used later in a stuck pipe prediction model, the DS will apply EDA techniques such as histograms, box plots or scatter plots, which are available in software programs like Python, R or even Excel. DS might get non-realistic insights because hook load or any other drilling parameter generally might have different patterns or distributions for different field or well type, rig activities or equipment. Then, the DS can limit the analysis to the target problem data in order to reduce complexity and have a better understanding of how the parameter behaves with fewer variables.

At this point, the DS can use CDA techniques such as Interval estimation or hypothesis testing to evaluate his findings with certain confidence level. Afterwards, the DS might need to create AI model or equations using ML to predict events of interest or classify certain activities. There are many types of learning including supervised (such as regression and classification) and unsupervised (such as clustering, association, and dimensionality reduction). (See figure 2)

One simple example of supervised ML is to classify or categorize each stuck pipe event due to mechanical or differential reasons. Firstly, it is required to gather sufficient data of already classified stuck pipe incidents provided by



drilling engineers, in addition to all drilling parameters that might be relevant. Then, a portion of this data is fed to multiple classification algorithms for training purposes and eventually, a model will be generated for each algorithm. Afterward, each model will be tested and evaluated using the un-trained data.

The model with the highest accuracy will be selected to be deployed on the field. It will help engineers to predict future stuck pipe symptoms in advance, and allow more time for them to proactively mitigate issue as fast as possible. The model may require additional re-training if the accuracy is getting lower with time or new factors are introduced.

In summary, statistics and ML are vital for O&G industry especially in the age of IR4.0, as they help solve a wide range of complex real-life business cases in a considerable time.

Invention the Mother of Necessity

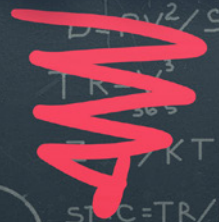


Wael A. Al-Harbi
Petroleum Engineering System Analyst

“Let no one say I have said nothing new” those were the words that were uttered by the renown French mathematician Pascal Blaise when he was questioned about the novelty of his contribution to science. Pascal is not alone in his believe. Many scientists and researchers have reached an understanding that technology is a rather cumulative process that will find its uses in later times. It seems counterintuitive for us to comprehend that a scientist first invented a device or a tool then will find an application for it. But that is exactly what takes place, at least most of the time. More often than not alot of the inventions we encounter in our daily life are a product of some inventors’ curiosity or for the sake of tinkering with new tools or ideas. In 1866, Nikolaus Otto constructed the first internal combustion engine. The internal

combustion engine invention had to wait about 20 years before Gottfried Daimler came and installed the internal combustion engine on a bicycle to build the first motorcycle. Another example is the widely held yet false view that James Watt invented the steam engine but the truth is that James was tinkering with a steam engine model that was built by Thomas Newcomen which he built using the Thomas Savery patent that was an improvement of the steam engine which was designed by Denis Papin who used an engine sketch drawn by Christiaan Huygens.

Similar examples can easily be multiplied. In 1905 when Albert Einstein published his paper about the special theory of relativity he did not know that this theory will



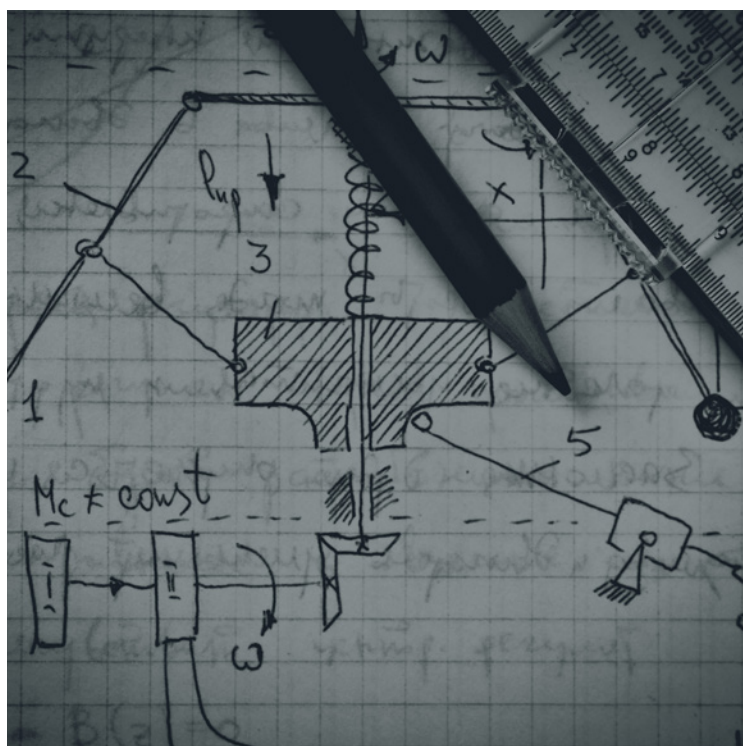
turn out to be one of the greatest inventions in scientific history. The inception of this theory came after curious Einstein was tinkering with Maxwell's equations of electromagnetism where he observed inconsistency with the classical mechanics theories and offered an improvement to correct this error. This may sound undermining of the special theory of relativity but this is not the case at all.

No discussion of invention would be complete without mentioning the well-known inventor Thomas Edison. One of Thomas Edison's famous inventions the phonograph. When the phonograph was first released Thomas included ten uses of this invention. None of these uses were picked up. After a few years, a young entrepreneur saw this invention as an excellent component to his new invention jukebox to play music. It was then that the phonograph was fully utilized.

Pascal was not in self-protective mode when he said the above sentence. On the contrary, Pascal is himself an advocate of improving on previous work. As a matter of fact, the computational triangle technique which sit at the pinnacle of the renowned mathematician's work was derived from a study that was published by the Italian mathematician Cardano which was published centuries ago by the Chinese mathematician Zhu Shijie that was part of a work published by the Chinese mathematician Jia Xian.

In many cases, uncertainties and perplexities may find its way to the hearts of scientists doubting the feasibility and the

practicality of their research topics. Nevertheless, scientists especially young scientists need to pay no attention to these negative thoughts and know that invention is building small blocks one at a time where at the early stage these blocks may seem useless but in later times, the overall effect may end up as a breakthrough and destructive technology.



In a very eloquent quote Pascal has summed all this up when he said in his autobiography “the arrangement of the subject is new. When we play tennis we both play with the same ball but one of us places it better.”

As we saw in the previous paragraphs that invention is often the mother of necessity rather than vice versa.

Be The Next Entrepreneur Workshop

November, 2018



A total of 137 SPE members attended “Be the Next Entrepreneur” workshop, which was held for the first time in SPSP base. The following objectives were delivered by Badir Program for Technology Incubators: Idea Identification, Hesitation & Courage, Partnership & Employment, and Hopes & Reality. The workshop date was November 7th, 2018.

Family Fun Day

November, 2018



The SPE family members enjoyed spending the family fun day with their kids on November 17th at Holiday Inn Resort. A total of 37 families participated on that event.

Blood Donation Campaign

November 2018

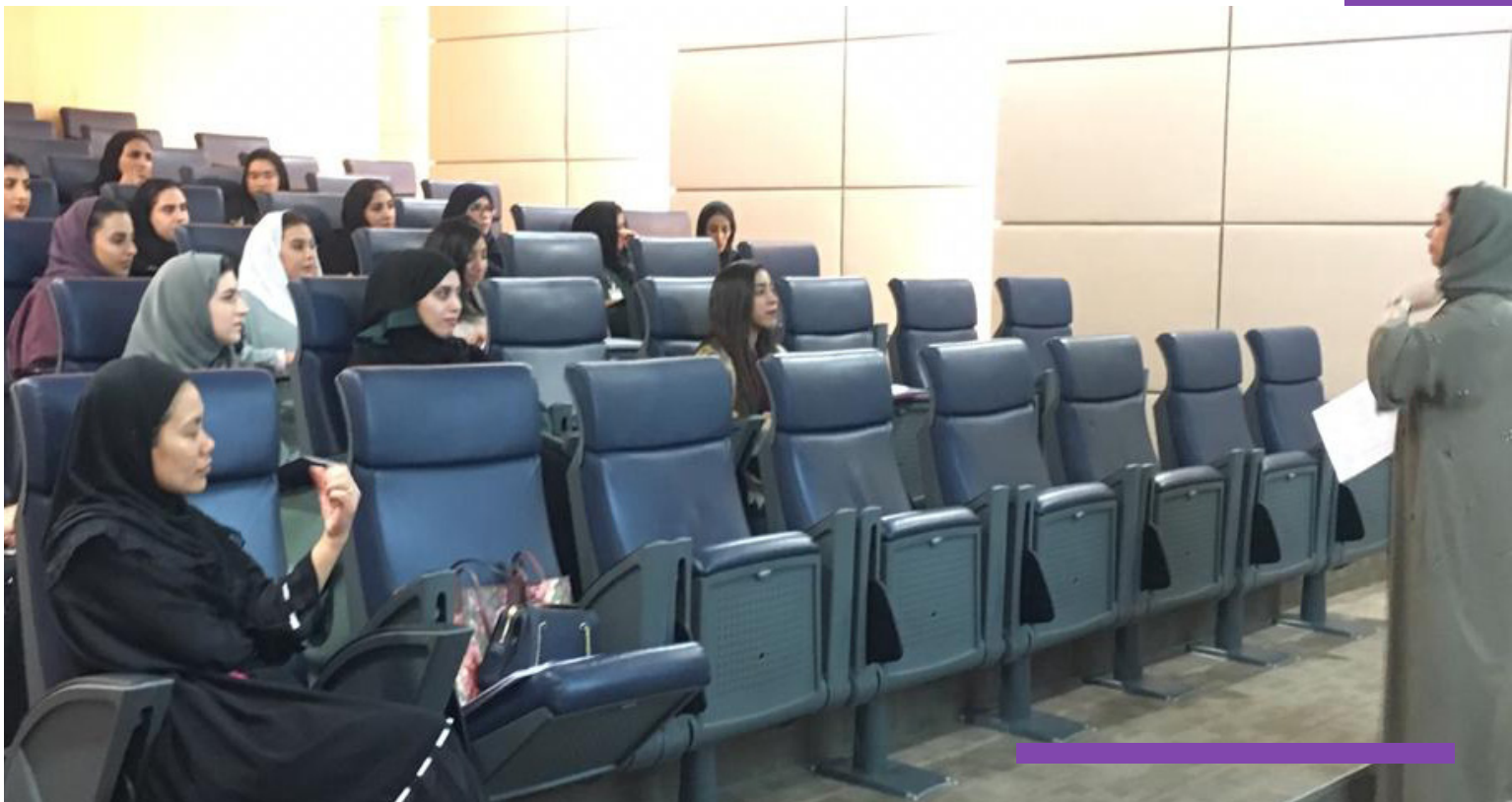


As part of ongoing efforts to improve health awareness, P&FDD at Saudi Aramco conducted a “Blood Donation Campaign” in collaboration with SPE-Trips and Social Activities and JHAH with more than 50 accepted donators. The objective of the campaign was to encourage employees, raise awareness and highlight the social responsibility of the importance of blood donation. Moreover, a total of 293 blood units were collected during our campaign out of Saudi Aramco. The campaign took place in Weatherford, Schlumberger, Halliburton, and Dhaharan Techno Valley Center. The event was led by King Fahad Specialty Hospital in Dammam in collaboration with SPE-KSA.



Effective Communication Workshop

December, 2018



Fiker Association for Female Training presented “Effective Communication” Workshop to 20 of our SPE female members on December 13th, 2018. This event took place at BHGE base in DTVC. The attendees were given certificate of attendance from the Technical and Vocational Training Corporation.



Finance for Non Finance Workshop in AlHofuf

December, 2018



Sponsored by Southern Area Production Engineering Department (SAPED), Finance for Non Finance Workshop was led by Mr. Haitham Anber, BHGE CFO in Saudi and Bahrain. The 45 attendees were introduced to the three financial statements: Balance Sheet, Income Statement, and Cash Flow. The instructor also clearly explained the difference between finance and accounting, planning and budgetary. Mr. Hamad AlMarri, SAPED manager, presented the token of appreciation for Mr. Haitham Anbar at the end of the workshop. This workshop took place in AlHufuf Intercontinental Hotel on December 11th, 2018.



Finance for Non Finance Workshop in Dhaharan

December, 2018



BHGE Senior Finance Manager, Mr.Emad Suhail, presented to 52 SPE members during “Finance for Non Finance Workshop”. This workshop took place on December 18th at BHGE DTVC base. Similar to the AlHofuf workshop objectives, this workshop covered the three financial statements: Balance Sheet, Income Statement, and Cash Flow. The instructor also clearly explained the difference between finance and accounting, planning and budgetary.



Winter Clothes Collection Campaign

December 2018



As a part of our community responsibilities, a total of 6 containers were distributed in different location within service companies bases as the following:

2 in Schlumberger

2 in BHGE

1 in NESR,

1 in Weatherford

More than 1200 pieces of winter clothes were collected during this campaign and distributed to needy families through "WEAM" charity.

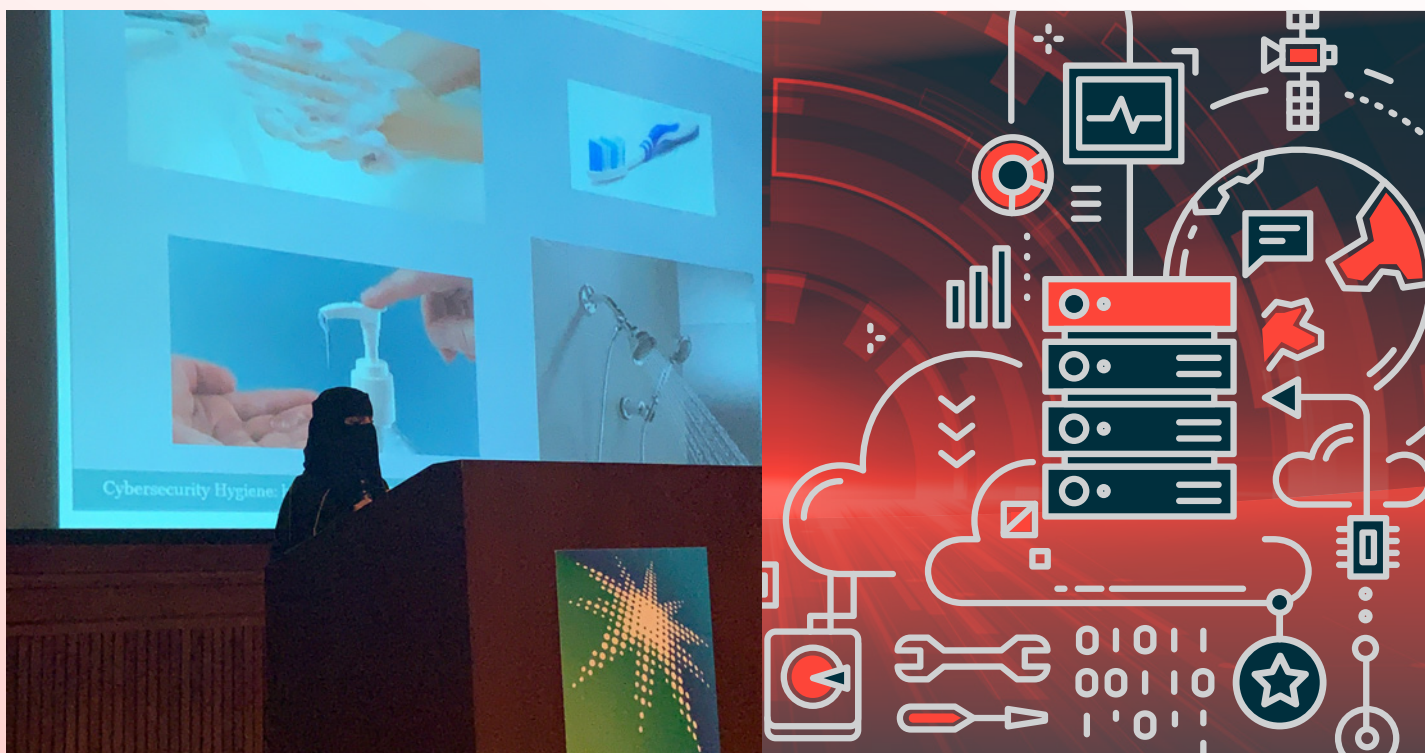
This event took place from December 19th to 31st, 2018.



Cyber Security Hygiene: How To Be Cyber Fit

December 13, 2018

Aseel AlFehaid, Security Operation Manager at King Fahad Medical City



Cybersecurity hygiene plays a critical role in protecting our virtual world since everything is almost electronic nowadays. It is the steps and procedures taken to improve the electronic devices and our online security. It is usually compared to personal hygiene since both of them serve almost the same purpose that is protecting and preventing! However, the personal hygiene protects our personal health and prevents it from germs attacks that could harm our health but cyber hygiene protects the health of our virtual world and prevents it from malware attacks.

Information technology team invited Aseel AlFehaid to talk about what is cybersecurity hygiene, how its used, the importance of it, cyber mess (which is the

opposite of cyber hygiene), and how can an individual practice cyber hygiene as part of their daily routine just like their personal hygiene. We also briefly explained some of the Information Security Regulators, regulations, standards and best practices and what is the organization role towards cyber security hygiene.

“80% of cyber attacks are due to the lack of good cyber habits within the victims organization”

Information technology Chairperson, Faisal Al-Zuwaidi and his team thanked the speaker and presented to her a token of appreciation for her participation with SPE-KSA.

Relationship with Food

Yasmeen Alhaj,
HSE Specialist, Schlumberger



What's more important: the amount of food you're eating and its nutritional value, or how you feel about it?

The answer: both. Unfortunately, only one half of the equation gets all the attention. We are commonly so concerned with what to eat and how much of it, that we eventually develop destructive eating habits resulting in a strained relationship with food. In extreme cases, these behaviors could lead to eating disorders such as orthorexia, anorexia, or bulimia.



There are many signs showing a damaged relationship with food. Here are some questions to ask yourself:

- Do your eating habits interfere with your social life?
- Do you tend to restrict yourself and then binge eat?
- When you're bored or stressed, do you reach for food?
- Do you forget to eat for long periods of time?
- When you feel hungry, do you try to ignore your hunger cues?
- Do you feel guilty when you eat certain foods?
- Do you eat (or avoid) certain foods because you're worried about what other people will think?
- Are you willing to go on a strict diet even if it makes you hungry and tired, just to fit into a certain size?

If you answered yes to any of the above questions: you are not alone. The amount of guilt and fear we link to with food makes this type of thinking such a secretive topic. Most of the time people that experience any of the mentioned (or other similar) situations won't discuss it out loud, and so we just end up feeling alone. To solve the epidemic we must start by addressing the problem from the grassroots.

Some ideas to free yourself from:

1. That there are “good” and “bad” foods.

Food is just food. Some options may have a higher nutritional value than others, and the number of calories varies. A lot of food with high nutritional value such as nuts or avocados are high in calorie content, leading to possible weight gain if not consumed mindfully – so does that make them “good” or “bad”? The answer: neither!

2. The “all or nothing” mindset.

It’s quite difficult to find the balance between eating for energy and for enjoyment, that’s why we tend to take the easy way out by just hopping back and forth from one extreme to another. Practice balancing between the two: a nutrient-dense salad bowl for energy, and slice of chocolate cake because the frosting just makes your heart skip a beat.

3. Treating food as a reward.

No, you don’t deserve that chocolate bar because you exercised yesterday. You always deserve it, regardless of your achievements. Whether you choose to eat it or not is entirely up to you, and that has nothing to do with whether you deserve it or not. You deserve it because you are valuable as an individual. Treat exercise and eating as independent of one another.

When you’re eating, ask yourself:

1. Why? Eat with a purpose. Sate your physical hunger, or the craving you’ve had lingering in your mind. Avoid eating just because you’re

bored, tired, stressed, angry, lonely, or sad.

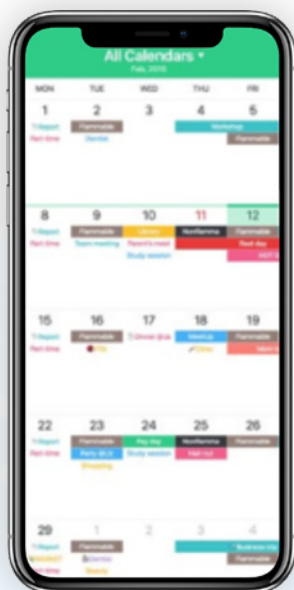
2. How? Eat mindfully. Practice mindful eating by being present for the food you’re consuming. Sit down, chew slowly, taste your food. Treat eating as an exciting event you get to experience, savor every moment, and use all your senses.

3. What? Food that makes you feel good. Focus on consuming foods you both enjoy and that will keep you feeling energized. To maintain a healthy lifestyle, most of what you’re eating should serve a nutritional value – MOST, but not all.

4. How much? Roughly the same amount every day. An amount that will keep you energized and won’t leave you feeling tired (not too much and not too little).

Shifting your focus towards improving your relationship with food will help you solve situations you may be subconsciously rejecting or trying to ignore. Whenever you feel like you’re doing something that’s harming your relationship, ask yourself: what’s really going on? Bring the issue to light and find a solution. Tired? Take a nap. Bored? Find a new hobby. Stressed? Get outside. The more time you spend addressing the root cause of your problem, the more you’ll realize that food was just your mind’s method of distraction all along. Finally, remember to strive for progress and not perfection. You’ll never be perfect, so you might as well just enjoy the journey. How freeing and wonderful is that?

Useful Apps

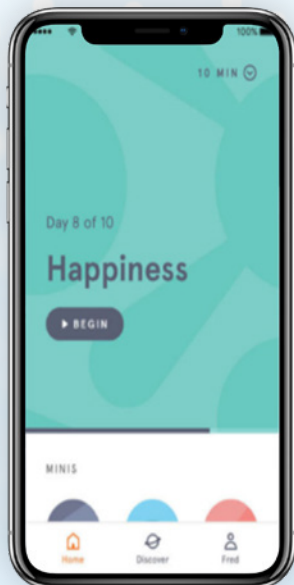


TimeTree

TimeTree keeps a group organized. It helps manage busy lives while sharing the calendar, tasks, notes, and more.

Features:

- Share a calendar and invite new members
- Reminders can be delivered to everyone in the group
- Share notes with members
- It supports the creation of multiple separate calendars



Headspace: Meditation

Headspace is the simple way to reframe stress. Relax with guided meditations and mindfulness techniques that bring calm, wellness, and balance to your life in just a few minutes a day. Plus, it has meditations on sleep to help you create the ideal conditions for a good night's sleep.

Features:

- Hundreds of guided meditations on subjects like focus, exercise, and sleep
- 2-3 minute "mini meditations" for a quick mental reset
- Track your progress and time spent meditating
- Everyday Headspace: daily meditations on a new topic each day

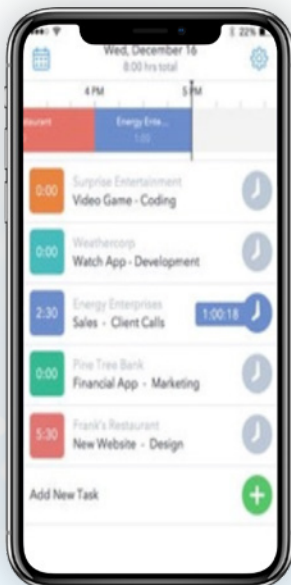


Overcast

A powerful yet simple podcast player with Smart Speed, Voice Boost, and Smart Playlists to help you listen to more podcasts in more places, try new shows, and completely control your experience.

Features:

- Download podcasts for playing anytime
- Create custom Playlists with smart filters and per-podcast priorities
- Subscribe to a podcast, or just add an episode
- Adjust playback speed, and use Smart Speed to shrink silences and pick up extra speed
- Search and browse for new podcasts
- Advanced editing by making annotations or adding customized watermark on documents.

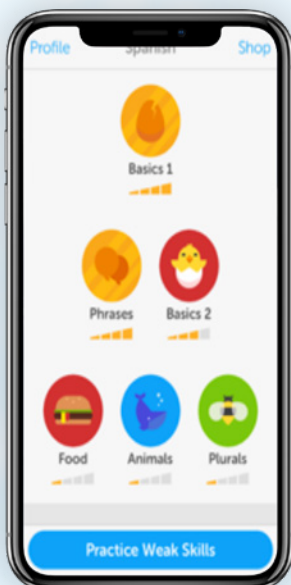


Hours

Hours is the time tracker you will actually use.

Features:

- Set smart reminders to nag you at just the right times to start and stop your timers
- Start/stop/switch timers with one tap
- Quickly see on a calendar view which days you tracked time and which days your forgot
- View on-screen reports in the app, or email detailed CSV or PDF reports



Duolingo

Duolingo is the most popular way to learn languages. It is free, fun, and effective. Duolingo feels like a game and makes sure you stay motivated. There are over 30 languages to choose from, and they are all completely free.

Features:

- Scientifically proven way to master a language
- Interactive lessons
- Practice reading, writing, speaking, listening, and conversation with intelligent Chatbots
- Allows you to keep track to make sure you reach your goals

