ESF MENA

ENERGY & SUSTAINABILITY FORUM

Decarbonising the Downstream Industry

16–18 October 2024

Riyadh, Kingdom of Saudi Arabia

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POST SHOW REPORT

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EPC
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INTRODUCTION

In line with Vision 2030, the Kingdom of Saudi Arabia has aims to reach net zero by 2060 by achieving its sustainability goals and accelerating the energy transition. The journey to climate neutrality requires strong partnerships between all stakeholders: legislators, investors, technology suppliers, and operators. Significantly reducing carbon emissions is a priority, and digitalisation, innovation, investment opportunities, and other sustainable solutions will help make positive changes to the energy sector.

Vision 2030, along with SABIC's sustainability and decarbonisation vision and strategy, provided the perfect backdrop for the 3rd edition of ESF MENA, the only event in the Middle East dedicated to downstream decarbonisation and sustainability.

Operations in the downstream industry need to remain competitive, reliable and profitable. Though energy security is an important factor, a proper balance between meeting the energy demand, addressing carbon intensity and reducing the carbon footprint needs to be reached. At Euro Petroleum Consultants, we recognise the importance of these pressing issues and the need to bring together industry executives for a conducive exchange of insight and expertise through our Energy and Sustainability Forum which was held on 16–18 October 2023 in Riyadh, Kingdom of Saudi Arabia.

We were privileged to have **SABIC** as the event's Host Sponsor, and also to have the official support of the **ROYAL COMMISSION OF JUBAIL AND YANBU**.

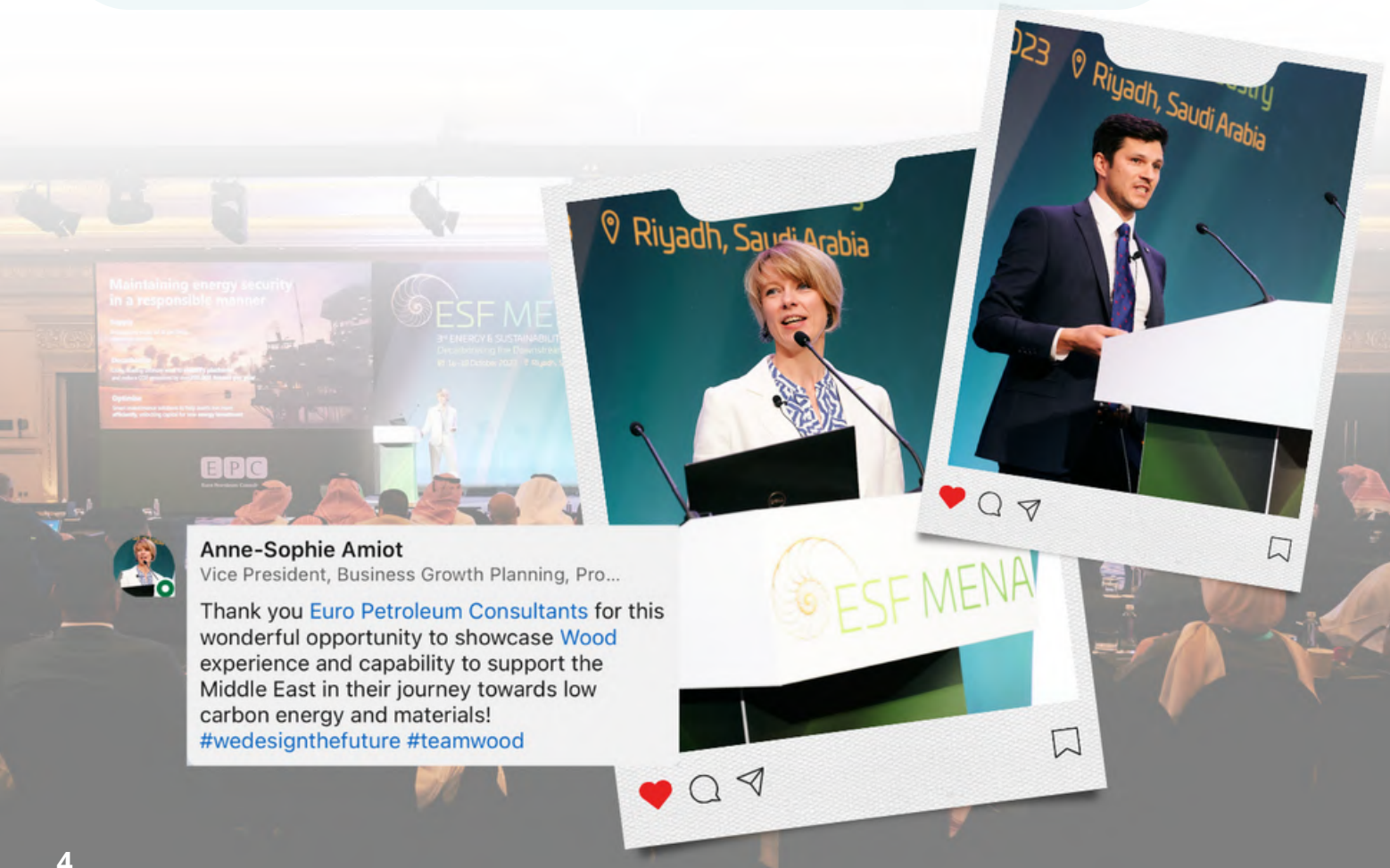
The three days provided a unique platform: highly informative sessions, interactive panels, focused seminars and unrivalled networking opportunities - all tailored for our attendees to discuss the way forward in downstream decarbonisation, circularity and sustainability.

PRE-CONFERENCE SEMINAR

Hosted by WOOD, one of Euro Petroleum Consultants (EPC) premium partners, the seminar focused on how the Middle East leads the way in the supply of low-carbon energy and materials.

Helping the downstream industry realize the scale of this opportunity, experts from Wood showcased carbon capture solutions, renewable energy options, technology for emissions monitoring, and the repurposing of existing assets to produce advanced materials for the energy transition.

VIEW THE FULL PHOTO GALLERY
https://www.flickr.com/photos/europetro/albums/72177720311519222/with/53219616240




16–18 October 2023
Riyadh, Saudi Arabia


Downstream Industry
Saudi Arabia


From linearity to circularity: where to close the loop?
ESF MENA Pre-conference seminar
16th October 2023
wood.
EPC
Euro-Petroleum Consultants
ESF MENA
3rd ENERGY & SUSTAINABILITY FORUM
Decarbonising the Downstream Industry
16–18 October 2023
Riyadh, Saudi Arabia


ESF MENA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THE CONFERENCE

DAY 1

Decarbonisation: from pathways to delivery, the theme of the opening session, got the conference started by examining the opportunities for refiners and petrochemicals producers to carbon baseline their assets and accelerate the adoption of low carbon technologies and digitalisation, as well as identifying what is achievable short term through the delivery of energy and operational efficiency to minimise both, the carbon footprint and operating costs.

Andrew Inglis, Vice President, **NEXANTECA**, provided the Consultant Overview, "The Middle East's Energy Transition Challenge", which provided an in-depth overview of how the energy transition is evolving and the barriers and drivers that may impact it, the technical solutions that are evolving to meet this demand, and how the Middle East will position itself for the transition and maintain its competitiveness in the energy value chain.

We then had the privilege of welcoming **David R. Edmondson**, Chief Executive Officer, **NEOM GREEN HYDROGEN COMPANY (NGHC)**, to hear about the significant progress being made on the NEOM Green Hydrogen project, how close partnerships and collaborations are helping to meet project milestones, and how green hydrogen will contribute to global net-zero targets by decarbonising key sectors such as transport and manufacturing.

Our first panel of the conference, and a true delegate favourite, the Keynote Executive Panel, addressed a **"Future Sustainable and Low Carbon Economy"**. Expertly moderated by **Hasan Shafi**, Partner, **EY-PARTHENON**, the panel included, **Mohammed Al Ruwaidhi**, Vice President Aromatics & Energy, **OQ**, **Fahad Al- Sherehy**, Vice President, Corporate Sustainability, **SABIC**, **Mater Al Dhafeeri**, Vice President Commercial, **SIPCHEM**, and **Zekeriyya Gemici**, EVP, Strategy & Growth, **TASNEE**.

Read the full takeaways below.

The second part of the opening session began with a presentation from **Juan Carlos Alba**, Vice President Performance Solutions Upstream, **SOLOMON ASSOCIATES**, on "The Impact of a Baseline on Pathways and Targets", focusing on the importance of establishing a credible and appropriate baseline for GHG emissions, with an explanation for what can go wrong if baselines are not established correctly.

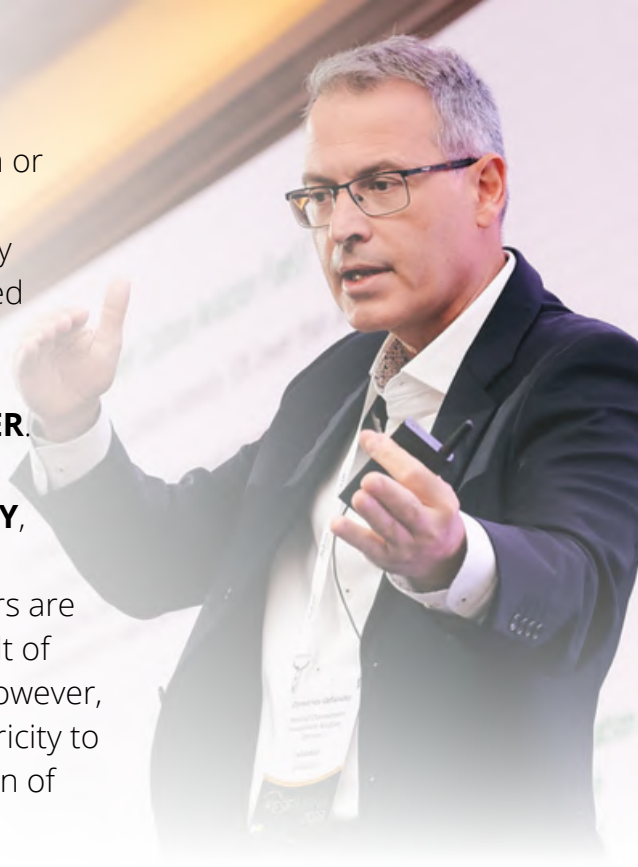
Next to present was **Azhari Dafaalla**, Principal Consultant, **KBC (A Yokogawa Company)**, on the "Pathway to the Energy Transition in the MENA Oil and Gas Industry", and more specifically, on the key enablers and pre-requisites for an effective Energy Transition in the MENA region.

Dimitrios Orfanidis, Head of Downstream Investment Analysis Division, **ARAMCO**, then followed with his presentation on, "Lower Carbon Fuels: Bridging Towards a Low Carbon Future", highlighting that on average ~ 20% of fossil based fuels life cycle emissions are not related to end use but to emissions during extraction, processing and transportation, and that reducing these non-end use life cycle emissions of fossil fuels will lead to significant absolute GHG emissions reductions.

And the final presentation for the opening session was delivered by **Richard Grant**, OBE - Director Carbon Advisory, **WOOD**, on "Extending the Energy Bridge to the Future", looking at how fossil fuel is positioned to bridge the energy gap between where the world is now and where it needs to be some time in the future, and what opportunities exist currently to better position the industry from a carbon intensity perspective.

Technology and technology solution providers will play a pivotal role in helping producers and the industry meet their decarbonisation objectives. After lunch we concluded the Decarbonisation: from pathways to delivery theme with the much-anticipated Keynote Technology Panel. Moderated by **Stefan Chapman**, Vice President, **EURO PETROLEUM CONSULTANTS** (EPC), this panel assembled an extremely strong line-up of senior executives, with **Jean Sentenac**, President & CEO, **AXENS**, **Bryan Glover**, Chief Growth Officer, **HONEYWELL PMT**, and **Ujjal Mukherjee**, Chief Technology Officer, **LUMMUS TECHNOLOGY**, who discussed **"The region's Path to Net Zero – Decarbonisation Strategies & Enabling Technologies"**.

Read the full takeaways below.



The transition is a journey with many steps, not a competition or challenge between technology or colour. Cooperation and collaboration are needed between different sources of energy and the many opportunities available today must be embraced in parallel. This perfectly embodied the theme of the second session on Day 1 - **Transition & Diversify** - which was moderated by **Dragos Fundulea**, Principal, **ROLAND BERGER**.

Peter Kuzma, Technology Director, **LUMMUS TECHNOLOGY**, began proceedings with his presentation, "Steamcracker Decarbonisation Approaches", highlighting that steam crackers are major emitters of CO2 in the petrochemicals sector as a result of high energy consumption and the use of methane rich fuel however, replacing this fuel with zero carbon fuels, utilising green electricity to replace the energy provided by combustion, and electrification of cracking heaters are now commercially available methods for reducing these CO2 emissions.

Following this, we heard from **Salim Al-Duhami**, Research Fellow, **SABIC**, on the e-furnace, "A Step Towards Carbon Neutral Olefins", more specifically on the role of Furnace electrification in CO2 emission avoidance, with an overview on Cracker e-furnace, and future integration.

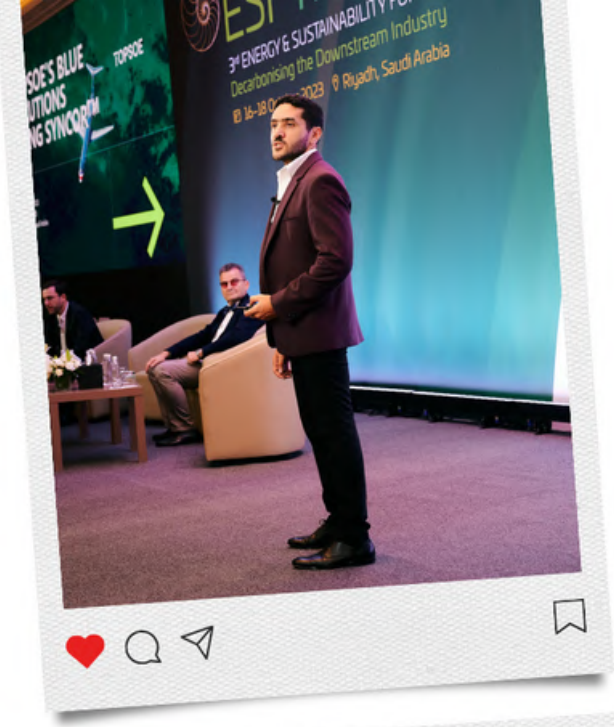
And bringing both, the session and Day 1 to a close, was the presentation from **James Brigman**, Managing Director, **INGENERO**, "Leveraging Applied AI for Sustainable Process Manufacturing", which outlined how the uutilisation of big data using AI, co-enabling digital technologies, and associated engineering, has helped transform operations and enhance outcomes for the process manufacturing industries.

DAY 2

Day 2 of the conference opened with the theme, **Hydrogen, Derivatives, and the Role of CCS**, which explored the latest zero emissions technologies, including CCS and hydrogen, essential to achieving deep decarbonisation targets. The session was moderated by, **Emma Theron**, Associate - Sustainability & Strategic Insights, **SOLOMON ASSOCIATES**.

Adrian Blanck, Chief Digitalization Officer, **LUBEREF**, got proceedings started with a presentation on "Advancements in Carbon Capture, Utilization and Storage: Unlocking the Potential for a Sustainable Energy Transition", which explored the magnitude of CO2 emissions and effective mitigation strategies, the regulatory frameworks impact on CCSU technologies adoption, and an overview of the latest advancements in capture technologies.

Next up was a presentation from **Guido Daniel**, Executive Director Operating Unit Petrochemicals, **thyssenkrupp Uhde**, on "Sustainable Chemicals to Support Decarbonisation", focusing on blue and green Ammonia solutions for a hydrogen-based economy, why green methanol will revolutionize petrochemical value chains, and how biomass and renewable power pave the way to the future's fuels and chemicals.



And concluding part one of this session was a presentation from **Avhishek Dutta**, Regional Manager Middle East & India, **DAILY THERMETRICS**, on "Reducing GH Emission & Energy Consumption in Hydrogen Production by Upgrading Temperature Instrumentation", which looked at reducing carbon emissions by enhancing temperature instrumentation in hydrogen production, the optimization & monitoring of reactor catalyst for blue hydrogen units, and increasing plant efficiency and diminishing GHG emissions through smart investment in advanced temperature sensors.

Hussein Elsherif, Account Manager, **TOPSOE**, opened the second part of the session with a presentation on "Blue Solutions", which addressed the considerations for mega scale blue hydrogen/ammonia production, and discussed how Steam-to-Carbon in autothermal reforming affects the operation and economy of scale.

The final presentation for this session, "New Advancement in Blue Technologies for Lowest Emissions and Highest Efficiency", was delivered by **Ermanno Filippi**, Chief Technology Officer, **CASALE**.

The final act of this session was the insightful the panel discussion on **"Hydrogen Production – Combining the Right Colours and Ensuring Availability"**, moderated by **Alessandro Zampieri**, Partner & Associate Director - Climate & Sustainability, **BOSTON CONSULTING GROUP**, and with a stellar line-up of expert panellists, including: **Jean-Paul Desrochers**, Manager, Low Carbon Hydrogen, **ARAMCO CHEMICALS**, **Hatim Al-Dekhiel**, Vice President, Hydrogen Strategic Growth, **SABIC**, **Anne-Sophie Amiot**, Vice-President, Business Growth Planning, Process & Chemicals, **WOOD**.

Read the full takeaways below.

Innovation, regulation, integration, and infrastructure are all needed to ensure that waste becomes a valuable material that comes back into the chain. There is a big innovation challenge for the whole industry to make these technologies scalable and affordable, especially to be successful by 2050. This set the scene perfectly for the final session of the conference, themed: **Circularity / Sustainable Chemicals, Catalysts and Fuels**.

The first presentation of the final session came from **Mohannad Al-Haidri**, Senior Manager, CE Business MEAF, **SABIC**, on SABIC's sustainable growth and the concept of Home of Innovation™ that SABIC has implemented to foster innovation and sustainability within the company. SABIC with their circular economy programs aims to reduce waste, reuse materials and recycle resources to promote sustainability.

Keith Couch, Head of Business Development & Integrated Projects, **HONEYWELL UOP**, was up next highlighting the benefits of molecular management and efficient project development to improve sustainability and cost effectiveness in the production of light olefins in the petrochemicals industry. Consumption of feedstock and undesirable byproducts can be reduced by implementing molecular precision in production processes.

With the final presentation of this session, **Cécile Plain**, Business Development Manager, Decarbonisation & Consulting, and **Sophie Babusiaux**, Technology Advisor, Sustainable Conversion & Hydroprocessing, **AXENS**, explained the importance of reducing the carbon footprint in crude to chemical processes and leveraging innovative and low carbon solutions to minimize the environmental impact and advance net-zero sustainability goals.

To bring down the curtain on another hugely successful conference, we had the privilege of welcoming an esteemed panel to discuss: **"Can a SAF strategy Lift Refinery Operators Decarbonisation to New Heights?".** The panel was moderated by **Richard Charlesworth**, Executive Director, **S&P GLOBAL COMMODITY INSIGHTS** who was joined by **Amer A. Amer**, Transport Chief Technologist, **ARAMCO**, **Fabien Lundy**, Vice President Commercial - EMEA, **AXENS**, **Tiancun Xiao**, Chief Technology Officer and Co-founder, **OXCCU**, and **Anne-Laure Bulliere**, Asset Manager, **TOTALENERGIES**.

Read the full takeaways below.


12
NexantECA
13


LUMMUS
TECHNOLOGY
Innovation Applied.
Performance Delivered.


TOPSOE
TOPSOE
13
14
KBC (A Yokogawa Co
Bringing
Decarbonization

NETWORKING EVENING

At EPC we know that a successful conference isn't just about the content in the classroom, it's the connections and collaborations that matter.

That's why we concluded the first day of the conference, with an unforgettable evening cordially hosted by **SIPCHEM**.

Delegates explored the rich history and culture of Diriyah, the original home of the Saudi Royal Family, followed by a networking dinner at Cello Restaurant, where exceptional food meets an inviting ambiance and the soothing sound of Cello!

The evening provided an excellent backdrop for making long-lasting connections and engaging in meaningful discussions.


CELLO
Italian Restaurant


مطار البحيري
BUJAIRI
TERRACE

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walter tosto BELLELI ENERGY Critical Process Equipment OUR EXPERTISE FOR YOUR PROJECTS

PARTICIPATING COMPANIES

ESF MENA IN NUMBERS

1
SEMINAR

3
DAYS

10 +
HOURS OF CONTENT

10 +
HOURS OF NETWORKING OPPORTUNITIES

35
SPEAKERS & PANELLISTS

200 +
EXECUTIVE REGISTERED DELEGATES

60 +
PRE-ARRANGED MEETINGS

125
Q&A SESSION QUESTION ASKED

HIGHLIGHTS VIDEO

Click on it to watch it!

NOT WORKING? WATCH IT ON YOUTUBE!
https://www.youtube.com/watch?v=9QOocdX3lb8

SEE THE PHOTO GALLERY
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TESTIMONIALS

From my experience, this event is one of the most well organised, with well-known speakers and informative presentations and sessions and the exhibition was also good. The event outlined the challenges faced by the Middle East on decarbonization tragets. The presentations and discussions were aimed at addressing net-zero emission targets.

ARAMCO

An excellent forum, providing a platform to learn the latest technologies and communicate with SME's. It is the place where collaboration starts!

BAPCO ENERGIES

Attending the event was an incredibly enriching experience. The event brought together technology providers and industry leader/SMEs who shared valuable insights on reducing carbon emissions. The panel discussions and presentations were highly informative and focused on solutions and advice on the challenges for decarbonization.
Looking forward for next event in 2024.

YASREF

It was a great conference.
Lots of insights and networking opportunities.

ADNOC REFINING

Very interesting event with great opportunities for networking, learning more about energy and getting to know the different companies around the world and learn about their activities.

SABIC

The conference was really well organized, good panels and speakers, and seemed to have decision makers at the conference that were looking for solutions.

INGENERO

ESF has brought together all stakeholders in our downstream industry. Euro Petroleum Consultants have professionally organized a very comprehensive agenda and platform on which there is a great open exchange of insights and new developments that help all industry stakeholders prepare better for a sustainable future.

LUMMUS TECHNOLOGY

It was a very insightful experience with a lot of knowledge gains and knowing how the industry leaders are headed with future energy.

KIPIC

It is a great event to get an overview on what is the future in Oil Downstream, and a great opportunity to expand your network. All discussions were really good lead and the participants were open to discuss strategic and technical topics.

OMV

#ESFMENA IN THE MEDIA

NEOM Green Hydrogen Company
40,221 followers
4mo •

We are delighted to have taken part in the 3rd edition of Energy & Sustainability Forum MENA 2023, which was hosted in Riyadh, Saudi Arabia. During the conference, our CEO, David Edmondson led a keynote presentation on the topic 'Building the World's Largest Green Hydrogen Plant', and provided valuable insights regarding our significant contributions to the production of cost-effective green hydrogen and shared progress updates on the construction of the plant.

This plays a pivotal role in aiding the downstream industry in its efforts to align with global net-zero goals.

For more information, visit our website: www.nghc.com

#ESFMENA2023 #ESFMENA #NGHC
#NEOMGreenHydrogenCompany

يسرنا جداً بمشاركتنا في النسخة الثالثة من منتدى الطاقة والاستدامة في منطقة الشرق الأوسط وشمال أفريقيا 2023، والذي استضافته مدينة الرياض في المملكة العربية السعودية. وقدّم ديفيد إدموندسون، الرئيس التنفيذي لشركة نيوم للهيدروجين الأخضر، عرضاً رئيسياً خلال المنتدى حول مشروع "إنشاء أكبر مصنع لإنتاج الهيدروجين الأخضر في العالم". وألقى الضوء على مساهمة الشركة بشكل ملحوظ في إنتاج الهيدروجين الأخضر الفعّال من حيث التكلفة، مشيراً إلى آخر التطورات على صعيد أعمال البناء والتشييد في الموقع الجديد.

ويلعب ذلك دوراً محورياً في دعم المساعي التي يتمّ بذلها ضمن قطاع التكرير والمعالجة والتسويق، لتحقيق الأهداف العالمية المرتبطة بالحياد المناخي.

للمزيد من المعلومات، نرجو زيارة موقعنا الإلكتروني www.nghc.com

#شركة_نيوم_للهيدروجين_الأخضر

See translation

Anne-Laure BULLIERE · 2nd
Asset Manager for TotalEnergies JV Refinery in Saudi Arabia
4mo • + Follow

I had the privilege to attend the 3rd Energy & Sustainability Forum for MENA, hold in Riyadh last week. And I had the honor to be part of a panel dedicated to Sustainable Aviation Fuel. During our discussions, and through the exchanges with the audience, we covered key areas such as demand, technologies, projects, feedstocks, ambitions and progress.
I was thrilled to see how our Industry is embracing the challenge of decarbonizing air transportation: together, we are continuously looking for the most efficient way to reach our targets, with solid pragmatism, an innovative spirit, and lots of enthusiasm!
#SAF #CarbonNeutrality #ESFMENA

Richard Spires · Following
Director Of Technology Development at Wood
4mo • Edited •

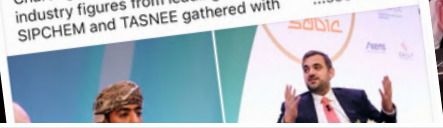
Today's Wood seminar at the Euro Petroleum Consultants conference in Riyadh is underway - How the Middle East leads the Way in the Supply of Low-Carbon Energy and Materials with Anne-Sophie Amiot, Blair Fraser, Shaun Johnston, Alastair Evans, Shaun Johnston

Zekeriyya Gemici · 2nd
Executive Vice President at TASNEE
4mo •

Good discussion this morning at #ESFMENA about sustainability and path to carbon-neutrality in the petrochemicals and downstream oil & gas sectors in the Middle East.

Euro Petroleum Consultants
16,873 followers
4mo •

Charting the Saudi Net-Zero Road Map 🌿 Key industry figures from leading companies OQ, SABIC, SIPCHEM and TASNEE gathered with ...see more



Axens
@AxensGroup

🗓️ Today is the last day of #ESFMENA "Decarbonizing the Downstream Industry" hosted by @EuroPetro! Be sure to stop by our booth. 👋
📸 Yesterday, our President & CEO Jean Sentenac took part in the panel "Saudi's Path to #NetZero."

Malcolm Cook
Senior Vice President - Chemicals & Process T...

An excellent event, well organised, great content and opportunity to have good conversations to create mutually beneficial solutions.

NexantECA, Energy and Chemicals Adv...
6,964 followers
4mo • Edited •

#ESFMENA 2023 was an incredibly illuminating conference on how the Middle East is well positioned to lead on the energy transition.

Both Andrew Inglis and Younis Al Hirz took part in some of the excellent spotlight sessions with SABIC, aramco, NEOM Green Hydrogen Company, OQ, TASNEE, SIPCHEM Yanbu Aramco Sinopec Refining Company (YASREF) Ltd. and all the critical technology providers, who shared how they are taking a leading role in the energy transition.

NexantECA can help make informed decisions on the energy transition by providing independent market and technology reviews.

To initiate a discussion with the NexantECA team, or for more information, email us at contactus@nexanteca.com

#Sustainability #OilandGas
#energytransition Euro Petroleum

Richard Spires · Following 4mon
Director Of Technology Development at Wood

Thank you to Saudi Arabia for your warm welcome, SIPCHEM for introducing us to the wonderful history of Diriyah, Euro Petroleum Consultants and Debbi Limond for helping to make this such a great event for Wood

Emma Theron · 2nd
Sustainability Consultant
4mo • + Follow

It was an honour to moderate the session on Hydrogen, Derivatives and the role of CCS this morning at #ESFMENA. Thank you Euro Petroleum Consultants for organising such a professional and informative conference.

Chris Chant · 2nd
Director, Sales & Technology New Energies Eastern Hemisphere at Dail...
4mo • + Follow

Well what another great conference connecting with key stakeholders working within the fast paced and evolving energy industry in Saudia Arabia and across the gulf region.

Thanks goes to Daily Thermetrics Reginal Sales manager Avhishek Dutta for a great presentation highlighting the importance of Instrumented Data Points in the drive for energy efficiency and the role it plays to help operators with their Decarbonisation objectives, also to all at Euro Petroleum Consultants for organising the event.

#ESFMENA #SAF #decarbonisation #temperature #Sustainability #Innovation #EnergyTransition

Mohammed Al-Zahrani · 2nd
Decarbonization strategy / Sustainability strategy / Leadership /ESG focus / Sustainability framework (ES...
4mo •

Great opening day as always by Euro Petroleum Consultants and Wood team. Looking forward to the up coming two days which I am sure will be very engaging and beneficial for all attendees.

Euro Petroleum Consultants
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It's another full house for Wood's pre-conference seminar! 🌿🌍 Kudos to Anne-Sophie Amiot, Blair Fraser, Richard Spires, Alastair Evans, ...see more

Ghazi Shahin
Managing Director Refining and Chemicals - Q...

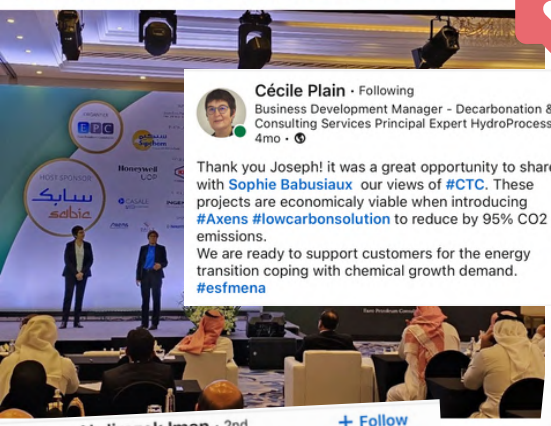
Very rich discussion around sustainability and decarbonisation!

Laura McMan...
Conference Director | Energy & Sustain... Downstream Decarbonisation | Key Account Manager...
4mo •

Congratulations to my amazing colleagues on a very successful #ESFMENA in Riyadh this week! #teamworkmakesthedreamwork #workfam

Joseph Ibrahim · 2nd
Managing Director at Axens
4mo ·

Sophie Babusiaux and Cécile Plain presenting Bringing Crude to Chemicals Complex towards Net Zero Future. #ESFMENA, Euro Petroleum Consultants



Cécile Plain · Following
Business Development Manager - Decarbonation & Consulting Services Principal Expert HydroProcessin...
4mo ·

Thank you Joseph! it was a great opportunity to share with Sophie Babusiaux our views of #CTC. These projects are economicaly viable when introducing #Axens #lowcarbonsolution to reduce by 95% CO2 emissions.
We are ready to support customers for the energy transition coping with chemical growth demand.
#esfmena

Abdirazak Iman · 2nd
Regional Director | +15 Years of Experience | Access to +400 Custo...
4mo · + Follow

2 reposts

It was outstanding to exhibit at the 3rd Energy and Sustainability MENA forum #esfmena that took place in Riyadh KSA earlier this week. Immense participation from many customers from the petrochemical and chemical sector of KSA as well as some the latest cutting edge technologies in Decarbozation and CCUS. At "Bilfinger we aim to be the number one in enhancing the efficiency and sustainability for our customers with a legacy that is more than 140 years and over 32,000 qualified professionals across the globe #TeamBilfinger Thank you Euro Petroleum Consultants for a great well organized forum !

Sabrine Mchakri · 2nd
Business Development Consultant
4mo ·

I had the privilege to attend the third Energy & Sustainability Forum for MENA in Riyadh #ESF_ME
The event covered different aspects of decarbonising the downstream industry.
During the three filled days of interesting exchanges with participants, I gained a broad perspective on the different challenges as well as opportunities to:
-Reduce #carbon_intensity of #refining_petrochemical_products
-#Hydrogen gaining a huge importance in the #energy_mix to support the GCC strategy as a fuel for domestic use as well as export
-Reporposing existing assets to produce advanced materials for the #energy_transition
- The region's path to #Net_Zero; Focus on #CCUS
-Innovation, Regulation, Integration and Infrastructu
for #circular_economy

Hana Smeckova · 1st
Sales & Marketing Specialist at Lummus Technology
4mo · Edited ·

Lummus Technology is ready for #ESFMENA 2023. Looking forward to meeting you!

#LummusTechnology #ThisIsLummus

SIPCHEM
154,490 followers
4mo · + Follow

Sipchem actively engages in driving positive change as it takes part as a (Platinum) sponsor in the 3rd Energy & Sustainability Forum MENA 2023 held in Riyadh, Saudi Arabia.

/P Commercial Eng. Mater Al Dhafeeri participates as a ey panelist in the executive panel discussion titled by Future Sustainable and Low-Carbon Economy."

سبكيم راعي (بلاتيني) للنسخة الثالثة من مؤتمر الشرق الأوسط وشمال إفريقيا للطاقة و الاستدامة الذي يُعقد في الرياض، المملكة العربية السعودية.

كما شارك نائب الرئيس التنفيذي للقطاع التجاري، م. مطر الظفيري، كعضو رئيسي في جلسة الحوار التنفيذية تحت عنوان "نحو مستقبل اقتصاد مستدام منخفض الكربون".

See translation

Mohammed Al-Hattan - E... + Follow
Decarbonization | Sustainability | ESG
4mo ·

Agreed, it truly was a magical night filled with rich Saudi Arabian culture and history! The heritage experience in Diriyah allowed us to immerse ourselves in over 300 years of tradition, making it truly unforgettable. A special thank you goes out to SIPCHEM led by Mr. Mater Al Dhafeeri for organizing such a unique and meaningful networking event. It was a fantastic opportunity to connect with like-minded individuals in the Petrochemical industry while a
sustainability. #ESFMENA #Ne
#Sustainability

Alastair Evans · 2nd 4mon ···
Head of Advisory, Clean Energy EMEA
Thanks for putting on a great conference team EPC - have a good trip back to Dubai

thyssenkrupp Uhde
36,037 followers
4mo · Edited ·

Tackling supply chain emissions and driving the decarbonization effort is paramount for climate action. At the Energy Sustainability Forum 2023 in #Riyadh, Dr. Guido Daniel, Head of Operating Unit Petrochemicals & Polymers, shared valuable insights into key elements of our decarbonization portfolio such as blue & green ammonia and our value chains from biomass via gasification to end products such as green methanol.

"Decarbonization and defossilization of whole industries are big levers for climate protection. With our sustainable chemicals, such as green ammonia, green methanol and our future 100% drop-in solution of methanol-based Sustainable Aviation Fuel, we are ready to shape the green transformation", emphasizes Dr. Guido Daniel.

#thyssenkrupp #Uhde #ESFMENA #decarbonization #GreenAmmonia #GreenMethanol

Moisés Ferreira · 2nd
Business Development Manager at...
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It's only the first step on this market. There's a lot businesses to develop here.
Let's go!!!

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Customer Marketing Specialist
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Honeywell UOP was honored to be a Gold Sponsor at #ESFMENA in Riyadh, Saudi Arabia.
At the event, our very own Keith Couch shared insights on how to leverage the power of the UOP Six Efficiencies (E6) framework. By implementing E6, you can significantly improve the efficiency of your projects, while simultaneously reducing feedstock consumption, cutting down on CO2 emissions per tonne of light olefins, and optimizing your cash expenditure.

UOP Six Efficiencies (E6) framework is a path to a more sustainable and cost-effective future for your petrochemical vision. Let's work together to make a real impact! #ESFMENA #HoneywellUOP #Sustainability #SaudiArabia

lutions is thrilled to announce our at the ESF MENA 2023 – Middle East stainability Forum, taking ...see m

João Pedro Ferreira and 1 oth

Head of Business Development at thyssenkrupp Uhde - Saudi Arabia &...
4mo · Edited ·

Excellent presentations and networking opportunities with the industry leaders at #ESFMENA discussing about different aspects around the decarbonization of the petrochemical industry.

Thanks Euro Petroleum Consultants for organizing this great conference.

Debbi Limond
Sales Marketing & Enablement Lead at Wood
4mo ·

And that's a wrap for #ESFMENA 2023! Wood have had a successful week catching up with clients and making new connections. A massive thank you to Euro Petroleum Consultants for a fantastic event and to SIPCHEM for the tour of Diriyah and dinner. Looking forward the next event.

Valentin Kotlomin · 2nd
Consulting Manager at Argus Media
4mo · Edited ·

What a panel! Great thanks to Dr. Alessandro Zampieri (Boston Consulting Group (BCG)), Jean Paul Desrochers (aramco Chemicals), Hatim Aldekhiel (SABIC) and Anne-Sophie Amiot (Wood) for insightful discussion on the prospects of low-carbon #hydrogen in the #GCC at #ESFMENA 2023 - Energy & Sustainability Forum held by Euro Petroleum nsultants on October 16-18 in #Riyadh, audiArabia.

nong over 200 delegates of the forum are ADNOC roup, Alfa Laval, Aramco, Axens, Bahrain Petroleum ompany, CASALE, EY-Parthenon, Farabi etrochemicals, Honeywell, Ingenero, KAPSARC, KBC Yokogawa Company, KBR, Inc., KNPC, Lummus echnology, Maaden, National Petrochemical ndustrial Company, NEOM Green Hydrogen Company, OMV, OQ, Roland Berger, SABIC, Sadara Chemical Company, S-Chem, Sidi Kerir Petrochemicals Co. (Sidpec), SIPCHEM, Sulzer, TASNEE, thyssenkrupp Uhde, Topsoe, TotalEnergies, Wood, Yanbu Aramco Sinopec Refining Company (YASREF) Ltd.

More news on #netzero by Argus Media - https://lnkd.in/e8tVPBxM

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Dr. Alessandro Zampieri · 2...
Cleantech Expert
4mo · Edited · + Follow

Yesterday I had the opportunity to moderate a panel "Hydrogen Production – Combining the Right Colors and Ensuring Availability" at the Energy Sustainability Forum in Riyadh. A big thank you to Maryanne Morris and Euro Petroleum Consultants for the invite and organization. I was joined on stage by 3 distinguished speakers: Hatim Aldekhiel (Vice President, Hydrogen Strategic Growth, SABIC), Anne-Sophie Amiot (Vice-President, Business Growth Planning, Process & Chemicals, WOOD), Jean Paul Desrochers (Manager, Low Carbon H2, ARAMCO Chemicals). We discussed why Gulf Countries are well positioned to supply low-C molecules to the world, and what enablers and technologies will help them consolidate a prominent role in the industry.

In a recent report, IEA estimates that the electricity share of total final energy consumption will have to grow from 20% today to roughly 53% by 2050, in order to contain global warming to 1.5-degree. However, renewable electrons alone will not be able to satisfy the energy needs of the hardest to abate sectors, such as shipping, aviation, chemicals / fertilizers, cement and steel. One of our best hopes to decarbonize these industries lies in low-C H2 and its derivatives, e.g., SAF, ammonia, methanol, etc. According to IEA, H2 and H2-based fuels account for more than 8% of global energy consumption by 2050.
reliably and cost-effectively deliver H2 at scale.
les of H2 derivatives will also play a role, as regions less abundant or less competitive NG or REN urces will seek to import REN and low-C molecules than 1,000 projects have been announced corresponding to a pipeline of
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Azhari Dafaalla · 2nd
Head of MENA Consulting Delivery at KBC Process Technology
4mo · Edited ·

It has been my pleasure to attend and speak on the 3rd Energy & Sustainability Forum #ESFMENA well organised by Euro Petroleum Consultants in Riyadh. It is a great opportunity to share KBC A Yokogawa Company experience in helping and supporting MENA's oil and gas industry on their Energy Transition journey.

Key takeaways from my today's presentation are:

1. Energy transition and decarbonization should always start with moving from a lagger energy perfo to a leader one.

2. Globally, MENA region has got th est energy improvement potential due to the influence of the historical low energy prices on greenfield an plants design.

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derivatives like NH
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KEY SPEAKERS

HATIM AL-DEKHIEL
Vice President,
Hydrogen Strategic Growth
SABIC

FAHAD AL-SHEREHY
Vice President,
Corporate Sustainability
SABIC

AMER AHMAD AMER
Transport Chief
Technologist
ARAMCO

JEAN PAUL DESROCHERS
Manager,
Low Carbon Hydrogen
ARAMCO CHEMICALS

JEAN SENTENAC
President & CEO
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FABIEN LUNDY
Commercial VP Europe,
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BRYAN GLOVER
Chief Growth Officer
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KEYNOTE EXECUTIVE PANEL

FUTURE SUSTAINABLE & LOW-CARBON ECONOMY

DISCUSSION TOPICS

- With huge ambitions for growth in the region, how to balance the decarbonisation of traditional operations whilst continuing to meet consumer demands?
- Intensity, dependency, price and mix – drivers to transition and diversify. How has the transition been affected by recent events?
- Championing collaboration and building partnerships between NOCs, IOCs and Government with a common focus of reducing collective carbon emissions.

MODERATOR

Hasan Shafi, Partner, **EY-PARTHENON**

PANELLISTS

Mohammed Al Ruwaidhi, Vice President Aromatics & Energy, **OQ**
Fahad Al-Sherehy, Vice President, Corporate Sustainability, **SABIC**
Mater Al Dhafeeri, Vice President Commercial, **SIPCHEM**
Zekeriyya Gemici, EVP, Strategy & Growth, **TASNEE**

TAKEAWAYS

- Middle East and Kingdom of Saudi Arabia have challenged geographical environment but have equal opportunities in sustainable and environmentally friendly practices, clean energy, carbon reduction, and sustainable investments. Mega projects in Kingdom of Saudi Arabia strives to have sustainability elements and infrastructure to advance clean energy, water, and hydrogen innovation, achieve net zero emissions and reduce carbon emissions.

- Regulation, strategy for carbon voluntary markets, finding carbon credits, commitment to targets, disruption and deployment in technology, increase in society pressure for low carbon footprint products, decarbonisation plan, customers and value chain, financing, availability of blue and green hydrogen are the key enablers for decarbonisation and has an impact on high carbon emitting business.

KEYNOTE EXECUTIVE PANEL

- Saudi Arabia aims to diversify its economy and lessen reliance on volatile oil prices. The National Vision 2030 prioritizes a sustainable low-carbon economy, with Saudi green initiatives targeting a reduction of 278 CO2 equivalents by 2030 and a mandate to decarbonize 50% of electrical grids. The country is aligning with global energy transition trends and technologies, focusing on sustainable development, carbon emission reduction, and contributing to global climate change efforts. The 2050 environmental targets include enhanced energy efficiency, hydrocarbon utilization in industry, Carbon Capture and Utilization (CCU), procurement and displacement of carbon molecules, technology and innovation roadmaps, flare reduction, and the development of infrastructure for carbon storage and the supply of renewable power.

- Collaboration and integration in industries, new technologies, big investments, sharing risks, strong alignment between stakeholders, government, industries and countries vision along with the execution on grounds is required to reduce carbon emissions. Partnerships between stakeholders and authorities are key to promoting and implementing sustainable practices to achieve a sustainable and low carbon future.

- As a part of Saudi green initiative, Saudi Arabia drives the national program for circular carbon economy and energy mix, that is a key enabler in the decarbonisation framework and is not biased to any technology and is flexible depending on the operations and industry.

- As an example, the phase 1 of the the biggest project in the globe to capture 9 million tonnes of carbon dioxide in Jubail area by SABIC and Aramco's carbon sequestration projects was discussed. Aramco is also pioneering in the non -utilities 9 million tonnes carbon storage capacity by 2027. Almost 7% of global production of petrochemicals is done in Jubail and Yanbu and Saudi Arabia is responding to the carbon neutral regulations and creating dynamic strategy for decarbonisation. Few multidimensional factors in the decarbonisation structure involves demand, technology adoption, structured and strong criteria for investment, energy efficiency, lower carbon intensity alternatives like natural gas, fuel gas, biofuels, etc.

- Collaboration of National Oil Companies, International Oil Companies, Government frameworks and policies is mandatory for sustainability and low carbon initiatives. Technological implementations like low carbon emitting technology, decarbonisation technology for better energy efficiency and plant reliability, electric furnaces, multiple solutions for plastic recycling, monitoring mechanism's, etc ensures and creates a significant impact in achieving sustainable and low carbon economy.

- Energy integration between different assets, integration of gray hydrogen systems that provides minimum redundancy and maximum efficiency of assets, electrification to get baseline for energy efficiency and decarbonisation, zero flaring for assets, steam, waste and hydrocarbon management, push towards green ammonia and green hydrogen, carbon border adjustment that protects environment and industry, replacing carbon emitting power to clean power, CCUS are different ways in which low carbon economy can be achieved.

KEYNOTE TECHNOLOGY PANEL

THE REGION'S PATH TO NET ZERO

DECARBONISATION STRATEGIES & ENABLING TECHNOLOGIES

DISCUSSION TOPICS

- Merits of the strategies being put in place in order to meet the current demands without impacting the needs of future generations.
- Importance of stakeholder engagement in terms of adopting key enabling technologies, forging strong collaborations, and showing resilience to reach decarbonisation goals.
- Focus on CCUS: Deployment challenges & opportunities in the region - unlocking the full potential of CCUS in the region?

MODERATOR

Stefan Chapman, Vice President,
EURO PETROLEUM CONSULTANTS

PANELLISTS

Jean Sentenac, President & CEO, **AXENS**
Bryan Glover, Chief Growth Officer, **HONEYWELL PMT**
Ujjal Mukherjee, Chief Technology Officer, **LUMMUS TECHNOLOGY**

TAKEAWAYS

- The Kingdom of Saudi Arabia aims to lower its carbon emissions to 278 mtpa (millions of tonnes per annum) by 2030 and aims to achieve net zero by 2060. In line with this goal, refiners and producers in Kingdom is taking initiatives and investing in new technologies and carbon capture solutions that also increases efficiency in energy production.

KEYNOTE TECHNOLOGY PANEL

- Sustainability requires long-term planning to ensure that current energy demands are met, whilst balanced with a better, more sustainable and equitable future. In the transition from oil to chemicals, more efficient use of decarbonized conversions of crude to chemicals, sustainable innovation in operating companies, engagement with technology developers, quick deployment in technology is critical to make natural decarbonisation happen.

- Due to market volatility and inflation in many countries, oil demand is expected to rise to 2 million bpd and the projects that were on hold in the past has kick-started with “sustainability” as the major factor.

- In Asia and Europe, the adoption of new technologies, such as methanol olefins, ethanol-jet, methanol-jet, e-fuel, gas processing, plastic recycling, carbon capture in power facilities, and hydrogen carrier projects, is on the rise but poses significant challenges. Environmental considerations have led to a slowdown in launching megaprojects in densely populated areas in China. India is placing greater emphasis on ethanol and the digitalization aspect in decarbonisation projects. Meanwhile, in the Kingdom of Saudi Arabia, there is a significant shift towards chemicals, exploring renewable feedstocks, implementing Carbon Capture, Utilization, and Storage (CCUS), utilizing blue hydrogen, and installing operational electrical furnaces as part of decarbonisation and energy-saving initiatives.

- Collaboration and strategic partnerships are crucial to collectively achieve decarbonisation goals. Engaging stakeholders is key for technology adoption and helps to build resilience in achieving sustainability goals.

- Carbon capture utilization and storage, plays a key role in achieving decarbonisation goals. Although there are still many challenges in the deployment, overcoming these challenges and capitalizing on the opportunities can benefit the region economically and can contribute to the climate goals.

- Some of the challenges include availability of flexible solutions to convert oil barrels to chemicals, track baseline of carbon emissions, society, environmental and investment impact, delayed project activities due to fossil fuels demand, region, project type, supply chain, feedstock security, regulations and guidelines, etc.

- Breakthrough of emerging technologies like EV, cryogenic hydrogen solutions, catalytic and membranes technology, blue hydrogen production, electrolysis, plasmolysis, deeper collaboration between technology providers and owners to accelerate innovation and technology faster is the current need of the hour. Risk management in plants, HSE considerations, first adopter resistance, decarbonising the existing assets, change in catalysts and operating conditions, minimizing hydrogen consumption, molecular management, better heat management, energy management, ways to manage and effective recovery of hydrogen, are few challenges which has immediate impact on emission savings.

- In Kingdom of Saudi Arabia, to maintain the equational level, carbon dioxide penalty and policy like IRA is needed. Blue hydrogen is considered as an efficient way to decarbonize the existing assets in hydrogen production and the steps to governise assets and willingness to source green hydrogen in market; not as fuel but as a chemical is gaining attraction.

HYDROGEN PRODUCTION

COMBINING THE RIGHT COLOURS & ENSURING AVAILABILITY

DISCUSSION TOPICS

- With hydrogen steadily gaining importance in the energy mix, what are the key enablers required for the GCC to position itself as a leader?
- GCC advantage: Factors favouring blue & green H2 production in the GCC - location, funding, resources, skilled workforce, supply chain
  - Looking ahead - H2 market dynamics
  - Increasing demand from high demand regions; EU, Japan, etc
- Potential revenue from H2 & ammonia exports
- What are the optimal CCUS and hydrogen technologies and production solutions available now to support the GCC strategy?

MODERATOR

Alessandro Zampieri, Partner & Associate Director - Climate & Sustainability,
BOSTON CONSULTING GROUP

PANELLISTS

Jean-Paul Desrochers, Manager, Low Carbon Hydrogen, **ARAMCO CHEMICALS**
Hatim Al-Dekhiel, Vice President, Hydrogen Strategic Growth, **SABIC**
Anne-Sophie Amiot, Vice-President, Business Growth Planning, Process & Chemicals, **WOOD**

TAKEAWAYS

- Hydrogen, being both lightweight and abundant, presents diverse applications and significant opportunities for decarbonisation. The GCC, with its ample hydrocarbons, renewable energy sources, funding prospects, and strategic geographic positioning, is making substantial investments in green hydrogen production, aiming to drive economic growth and reduce carbon emissions in the future.

PANEL DISCUSSION TAKEAWAYS

- As per the International Energy Report, hydrogen and hydrogen-based fuels are expected to contribute over 8% to global energy consumption by 2050. To meet this demand, global hydrogen production needs to increase from 95 million tonnes to 400 million tonnes per year by 2050 in the most reliable and cost-effective manner.

- The GCC region is poised to emerge as a leading producer and exporter of hydrogen. While fossil fuels currently dominate exports, strict climate targets are expected to decrease revenues from oil and gas exports, creating an opportunity for hydrogen to fill the gap and generate substantial revenue.

- Middle East is the major consumer of hydrogen with 13% global consumption which is 12-13 million tonnes per year. GCC has opportunities to decarbonize current production of hydrogen and become major export hub of low carbon hydrogen. Current solutions to decarbonize is synthesis of low carbon hydrogen, low carbon products, electrification, direct sequestration.

- Hydrogen is gaining importance as clean source of energy and GCC countries are advancing in low carbon fuel chain and energy transition, due to the abundance of hydrocarbons, natural resources and renewable energy, well integrated stakeholders agreements and funding, strategic geographical location and proximity to clients and its export market of Europe, Asia, Africa; its financial stability and ranking post pandemic, infrastructure, and national transformation programs. However, there are factors that cause hindrance in moving faster in green hydrogen production like supply chain constraints, lack of policy, technological agreements.

PANEL DISCUSSION TAKEAWAYS

- Demand for low-carbon hydrogen is expected to grow rapidly by 2050. Scaling up hydrogen production in the GCC will position the region as the global hydrogen hub, supplying to European and Asian markets. As new markets develop, “Hydrogen diplomacy” -that covers development of international hydrogen markets and enhanced co-operation to harness the opportunities that the hydrogen market creates; will gain more importance and produce new geopolitical dynamics.

- Saudi Arabia announced to be the key producer of low carbon hydrogen -upto 4 millions metric tonnes before 2030.Low carbon hydrogen demand is expected to grow rapidly by 2050 so scaling up hydrogen production in the GCC positions the region as the global hub of hydrogen, supplying to European and Asian markets; thus contributing to the revenues and economy. In this process, there are challenges to overcome, such as bringing sustainable energy, secured supply of low carbon hydrogen to clients and affordability.

- Investing in CCUS, and different hydrogen production technologies including reformation, gasification, pyrolysis, and electrolysis, as well as storage solutions including compression, and liquefaction are necessary to advance the long-term hydrogen strategy in the GCC.

- Technologies that are enablers for blue hydrogen are: 1) back-cracking of ammonia to hydrogen that lowers energy requirement and lowers cost of delivery of hydrogen to the export markets like Europe. Aramco is working on a pilot plant that will be operational by 2026 which works on this technology; 2) Shipping technology that ensures moving ground ammonia which is expensive. Ensuring the product efficiency and in order to make sure that the whole product delivery of ammonia is without carbon emission, increases the overall cost; 3) Certification as per the global standards that involves certification of ammonia, certification of CCS in case of blue hydrogen, delivery certification that covers shipping, transportation of cargo to customer by rail, pipeline in the form of both ammonia and hydrogen.

PANEL DISCUSSION TAKEAWAYS

- Reforming ATR, SMR, non-catalytic POX technology is used in hydrogen production however the main challenge in blue hydrogen is to understand what to do with the captured carbon. In terms of ammonia fired gas and CCGT technology, ammonia is not converted to hydrogen but fired directly, and this will shift much demand for ammonia and things in power sector gradually.

- Electrolysis technology is used to make green hydrogen and integration of renewable energy with electrolyzers is used to get maximum efficiency and reduce capital intensity of investments. As most projects in KSA are not integrated with grids, grid owners and electricity suppliers must address this in the coming years.

- Keeping the GCC at the forefront of hydrogen requires; continuous investment and investment to advance green hydrogen technologies in terms of quantity, efficiency, affordable prices, development of production and infrastructures, use cases, cost of operating green hydrogen, cost of renewable power, supply chain, sustainability agenda, global development in setting long term regulation and policies, partnerships across value chains including customers and end users to bear cost element of green hydrogen, manpower aspect, integrated growth plan, etc.

CAN A SAF STRATEGY LIFT REFINERY OPERATORS DECARBONISATION TO NEW HEIGHTS?

DISCUSSION TOPICS

- Is the demand for SAF from aviation sufficient to warrant operators investing and using SAF as a decarbonisation strategy?
- Can SAF technologies provide the scale and economics to make a sufficient impact to net zero targets?
- What product premiums are needed to overcome the CAPEX and OPEX?

PANEL SCENE-SETTER AND MODERATOR

- Where is the push for SAF coming from?
- What are the market growth and price expectations?
- What technologies are available?

Richard Charlesworth,
Executive Director,
S&P GLOBAL COMMODITY INSIGHTS

PANELLISTS

Amer A. Amer, Transport Chief Technologist, **ARAMCO**
Fabien Lundy, Vice President Commercial - EMEA, **AXENS**
Tiancun Xiao, Chief Technology Officer and Co-founder, **OXCCU**
Anne-Laure Bulliere, Asset Manager, **TOTALENERGIES**

TAKEAWAYS

- Compared to traditional fuels, Sustainable Aviation Fuels (SAF) can slash carbon emissions by 80%. Advancements in technology, policy, infrastructure, strategic partnerships for securing feedstock, and investments are crucial in hastening the development and use of SAF. Leveraging SAF to offset carbon in the aviation sector serves as a market entry strategy for synthetic fuels, driven by airlines to stimulate demand.

PANEL DISCUSSION TAKEAWAYS

- Embracing Sustainable Aviation Fuel (SAF) technologies necessitates a comprehensive understanding of factors such as technology selection, economic considerations, low-carbon regulations, local feedstock availability, scalability, production capacity, and feedstock source and supply. These technologies must be cost-effective and capable of assessing, capturing, and converting carbon emissions into hydrocarbons to align with net-zero targets.

- Challenges in implementing Sustainable Aviation Fuel (SAF) involve scaling projects, requiring capital and operating expenditures, which are key cost drivers for SAF production. The infrastructure, production volumes, and equipment of a project impact SAF prices. Public funding is crucial for large-scale capital projects. Variable factors like market dynamics, regulatory changes, and feedstock pricing affect production, emphasizing the importance of financial and economic analysis for SAF project implementation.

- Sustainable Aviation Fuels play a crucial role in helping countries achieve net-zero emissions goals and contribute significantly to their green initiatives. As global fuel demands are expected to peak by 2030, transitioning to new energies such as solar electricity, wind electricity, integrated powers, and renewable biofuels becomes essential to produce SAF.

- The aviation sector's decarbonisation will be primarily led by liquid SAF, with a carbon footprint ranging from 1/2 to -80% compared to fossil jets. Total Energies has announced a $300 million investment in SAF production at an existing refinery in France, utilizing cooking oil and animal fat, with plans to market the product by 2025.

- Motivated by environmental considerations and commitments to achieve net-zero, various stakeholders in the aviation sector, including government authorities, policymakers, public-private partnerships, and environmentalists, are actively working on standards, international compliance, and guidelines to promote the use of Sustainable Aviation Fuel (SAF). Airlines and manufacturers have made significant investments in SAF technologies and heightened public concerns have further driven the demand for SAF adoption.

PANEL DISCUSSION TAKEAWAYS

- The SAF market is expected to expand by 60.8% by 2030. Closing the price disparity, addressing supply capacity, and managing the higher costs (nearly two to four times more than conventional jet fuels) necessitate increased investment, legislation, incentives, standardization, policy backing, and collaboration. SAF prices are influenced by factors such as technologies, feedstock, policy, market drivers, and scalability.

- Today, various technologies with feedstocks are employed to produce Sustainable Aviation Fuel (SAF). First-generation feedstocks, like sugar-based and starch-based crops, along with palm oil or oil-based crops, are used to reduce carbon intensity. Second-generation feedstocks, derived from agricultural and municipal wastes, waste crops, cultivated inedible waste oils, residues, and biogenic compounds, achieve a carbon intensity reduction of 45-50%. Third-generation feedstocks involve non-bio-origin feedstock, recycled carbon fuels, synthetic or e-fuels, and power-to-liquid processes, achieving a substantial carbon intensity reduction of 90%. An example is direct air capture technology, which captures CO2 at desired levels. Although third-generation feedstock projects are more complex, they are expected to dominate SAF production in the coming years.

- Comprehending costs, technological plans, R&D investment, overcoming barriers, and exploring value chain options can create co-processing opportunities. This involves leveraging existing plant assets, dividing the value chain into intermediate product producers and processors.

THANK YOU!

A huge thank you to all of our speakers, sponsors, and attendees who joined us and contributed to the success of ESF MENA 2023. We will continue the discussions next year...

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See you next year!

EPC
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