METECH 2023

MIDDLE EAST TECHNOLOGY FORUM FOR REFINING & PETROCHEMICALS

16–18 May | Dubai, UAE

POST EVENT REPORT

ORGANISED BY EURO PETROLEUM CONSULTANTS

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Euro Petroleum Consultants

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INTRODUCTION

While challenges like the pandemic and fluctuating oil prices persisted over the past 12 months, the Middle East refining and petrochemical industries demonstrated resilience, adaptability, and a continued focus on sustainable growth and diversification.

With this as the backdrop, there was a lot to be shared, and much to be learned, so the industry was understandably expectant, and once again ME-TECH 2023, the region's premier technical event for the downstream industry, delivered.

Disruptions to global oil flows and climate goals are forcing the Downstream industry to embrace a new journey of reinvention. ME-TECH 2023 discussed and debated important topics like the big petrochemical push in the Middle East, the need for deeper integration between refining and petrochemical assets, optimisation of existing production assets, achieving better energy efficiency, improving reliability, approaches for reducing emissions, catalytic technologies, incorporating renewables, biofuels and maximising the co-processing of alternative feeds, and further innovations in petrochemicals and fuels production.

Following the tried and tested format that has served the downstream industry so well for the past 13 years, ME-TECH 2023 opened proceedings with two highly engaging and insightful pre-conference seminars, hosted by Wood and Honeywell UOP.
See details

The two-day conference then sought to address the greatest challenges, and the most promising opportunities, facing the downstream industry, with compelling contributions from an esteemed and influential group of thought leaders and domain experts, notably: **Richard Charlesworth** (*S&P Global Commodity Insights*), **Olivier Saincry** (*TotalEnergies*),

Keith Couch (*Honeywell UOP*), **Luca Mancuso** (*Wood*), **Charlie Chou** (*Sulzer Chemtech*), **Chuck Ekeocha** (*W.R. Grace&Co*), **Vinay Joshi** (*Axens*), **Jay Jeong** (*Alfa Laval*), **Sanjay Lodha** (*Tubacex Group*), **Andrey Kostyukov** (*Dynamics Scientific*), **Alessandro Riva** (*Ketjen*), **Hernando Salgado** (*BASF*), **David McNamara** (*ExxonMobil Catalysts and Licensing*), **Mohamed Janahi** (*TOPSOE*), **Gurminder Singh** (*Shell Catalysts & Technologies*), **Andrea Maione** (*Evonik*), **Tie-Pan Shi** (*HCpect*), **Jeremy Spinks** (*Univation Technologies*), **Maurizio Bacci** (*LyondellBasell*) and **Martin Rizo** (*KOCH Technology Solutions*).

In addition to the impressive speaker line-up, the conference also benefitted from the expert moderation of **Fabien Lundy** (*Axens*), **Scott Kendrick** (*Crystaphase*), **Miro Cavkov** (*Euro Petroleum Consultants*), **John Murphy** (*The Catalyst Group*), and **Anne-Sophie Amiot** (*Wood*).

It was standing room only for the two interactive panels: **Süleyman Ozmen** (*3P18 Independent Consultants*) took the helm of the Keynote Panel. The panel, consisting of **Dimitris Orfanidis** (*ARAMCO*), **Saeed Al-Hajri** (*SATORP*), **Is'haq Al Sarhni** (*OQ8*), **Güven Kaya** (*SASA POLYESTER*), **Keith Couch** (*Honeywell UOP*), **Damon Hill** (*Wood*) addressed production strategies to 2030 and beyond, more specifically the multi-billion-dollar petrochemical push in the Middle East and producers' strategies to meet the expected increase in demand for petrochemicals.
Read the panel takeaways

Valentin Kotlomin was on hand to conclude proceedings with the final act of the conference, the Closing Panel, which sought to "Prepare the Downstream Industry in the Middle East for tightened Export-Import requirements", preceded by a scene-setting presentation from the moderator. Valentin was joined in this captivating discussion by industry stalwarts, **Abdullah Al Ameri** (*ADNOC REFINING*), **Robert Achleitner** (*BAPCO*), **Fabien Lundy** (*Axens*), **Sander van Donk** (*Sulzer*) and **John Murphy** (*The Catalyst group*). The panel discussed, from both a strategic and technological perspective, the current specifications for liquid fuels in view of gasoline, diesel and aviation fuel, the tightened export-import regulations and how the downstream industry in the Middle East can adapt to these specifications, while meeting the carbon intensity reduction targets and contribute to global climate goals.
Read the panel takeaways

The ME-TECH 2023 community - speakers, moderators, panellists, delegates, sponsors, and exhibitors - rekindled old acquaintances and made new connections, networked and exchanged knowledge and ideas, and most importantly, played their own invaluable part in ensuring the downstream industry continues on the path towards greater integration, better efficiency, higher profitability, and long-term sustainability.

PRE-CONFERENCE SEMINARS

Kicking off ME-TECH were two pre-conference seminars hosted by leading technology and solutions suppliers, **Wood** & **Honeywell UOP**.

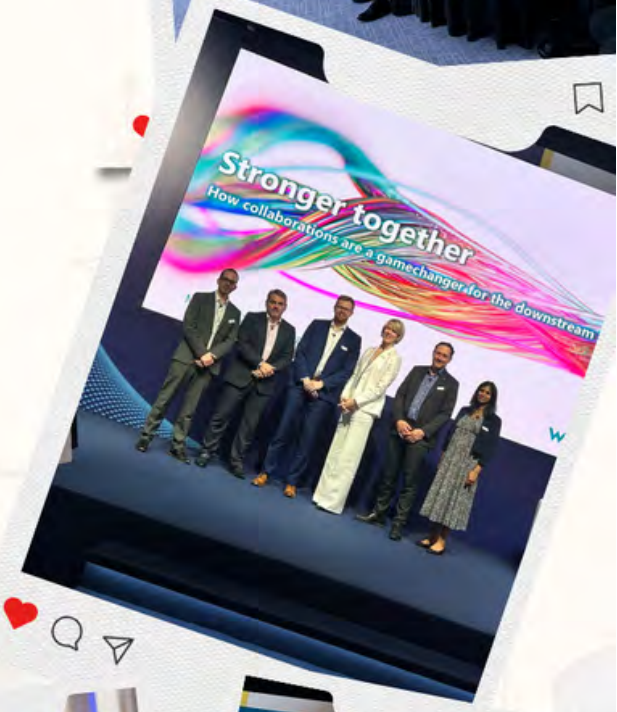
wood.

Stronger Together: How Collaborations are a Game-Changer for the Downstream Industry

Wood's experts explored how a combination of skills, capital, and technology can bolster the development of the region.

Topics included:

- Driving successful project delivery when managing multiple project partners
- Enabling a successful discussion between chemists and refiners: opportunities and challenges for refining & petrochemical integration
- Connecting majors of the digital world with energy reference players to reach best-of-class solutions
- How agencies, governments and public opinion steer for 'low-carbon' as the new status quo
- When established licensors support new technology developers - Example with plastics recycling



Anne-Sophie Amiot
Vice President, Business Growth Planning, Pro...

Really thrilled once again by the seamless organisation by Euro Petroleum Consultants, #METECH23 pre-conference seminar is such a great platform to enable #teamwood to showcase our capabilities and experience in the region!
Maryanne Morris, Debbi Limond Wood

Honeywell UOP

Transforming the Future of Refining and Petrochemicals

Amidst the global thrust towards renewable energy sources and decarbonization, being able to adapt, continue to change and innovate, while ensuring sustainable growth and profitability has become increasingly important within the industry.

Honeywell UOP experts showcased their latest technologies, innovations, and best practices designed to address these needs and challenges.

Topics included:

- Refining & Petrochemicals integration to improve asset utilization, benchmark investments competitively, and diversify where needed
- Improving ROI, increasing operating profits and reducing CO2 footprint by putting the right molecules in the right place
- The latest innovations in Honeywell UOP's portfolio of adsorbents and hydrotreating catalysts
- Emission reduction and clean-up solutions using nViro technology


wood.


wood.


EVONIK
HCspect
lyondellbasell
SULZER
TCG
TOPSOE
TUBACEX
Univation
EPC
Euro Petroleum Consultants

ME-TECH IN NUMBERS

2
SEMINARS

100+
ATTENDING COMPANIES

40+
SPEAKERS & PANELLISTS

10+
HOURS OF CONTENT

10+
HOURS OF NETWORKING

300+
REGISTERED DELEGATES

115
PRE-ARRANGED IN-PERSON MEETINGS

WHAT DELEGATES SAY

SEE IT, HEAR IT, READ IT!

VIEW THE VIDEO ON YOUTUBE

ME-TECH is the perfect platform to know about new and currently available technology, to remain competitive in the oil/gas & petrochemical business, also to enhance the processes and produce cleaner fuels.
In addition, this event gives the opportunity to meet people and companies that will add value.

BAPCO

Such great discussion and interactions this year, supported by a really enganged audience and a common desire to tackle today's challenges together

WOOD

Rewarding two days, fostering opportunity for collaboration between end-user, technology providers, Engineering, and equipment manufacturers.

VALMET

As a young professional, it was fascinating to see future technologies from various companies in the industry, and hearing about exciting case studies and applications. Meeting with fellow peers from different countries made me feel the liveliness of the Downstream industry, and how it is adapting to future requirements and challenges

BAPCO

Thanks for a great event that is very well organised and consists of many great presentations from different fields, experience and technology. It was a great experience for me and will do it again next year

SAUDI ARAMCO

As a regular attendee to METECH, I see it the most relevant conference, one can attend to know about the process industry. Good work & Good luck ME-TECH Team.

KHALIFA UNIVERSITY

I participated in the METECH 2023 event and found it to be a valuable experience. The event was focused on downstream activities, and the diverse audience and presenters provided a great opportunity to learn about the latest solutions and technologies in the field. The networking opportunities were also exceptional, allowing me to connect with industry professionals and expand my professional network.

KIPIC

It was a wonderful event for networking and new applied concepts.
It motivated me to work on some projects on decarbonization and bio-fixed processing in existing assets.

ADNOC Refining

This is my first time attending this conference with many precious insight to make better life and environment.

PT KILANG PERTAMINA INTERNATIONAL

ME-TECH 2023 was very well organized and well-balanced in terms of presentation time, networking with customers. The pre-arranged meetings proved very useful and well done.

SULZER CHEMTECH

#METECH IN THE MEDIA

Debbi Limond
Sales Marketing & Enablement Lead at Wood

And that's a wrap! #METECH 2023 has come to a close, and what an eventful couple of days it has been. Big thank you to the Euro Petroleum Consultants for hosting another fabulous event. Next up for the Wood team is #ESFNorthAmerica! Register now to secure your place to our seminar: https://lnkd.in/e3GRngK7

Sulzer Chemtech
14,276 followers

We are live at the 13th Middle East Technology Forum for Refining & Petrochemicals in Dubai! With panel participation from Sander van Donk and a presentatic from Taili Charlie Chou! More information and registration here: https://lnkd.in/gk8SRNJc

#technology #dubai #middleeast #metech

Saleh Al Murbati
Mechanical Engineer at Bahrain Petroleum Company

Attending #METECH organized by Euro Petroleum Consultants was a great opportunity to network and share experiences with colleagues and experts from the refining and petrochemical industries, especially that integration/partnerships between the two industries being a foreseeable opportunity.

With environmental challenges arrising, the global community is heading towards sustainable solutions to reduce carbon emissions to net zero through different technologies that professionals from different organizations shared during the conference.

Christian Peter
Business Director - Refining Catalysts Europe, Middle East and Africa at B...

How does the refinery of the future look like in Middle East? Great exchange with customers and partners at #METECH in Dubai today.
BASF Refinery Solutions & BASF Chemical Catalysts and Adsorbents looking forward to day 2 incl. keynote by Hernando Salgado.

#basfcatalysts #sustainability

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Markus Hartung
FOLLOW ME! - Teams make the differe...
What a great line up! ✌️👍

You and 179 others 8 comments • 8 reposts

hte GmbH
3,022 followers

Wolfram Stichert and Fabian M. Schneider were happy to meet you in person during #METECH 2023 in #Dubai. Thanks for visiting our booth, the good discussions and the great organization of the Euro Petroleum Consultants team!

Mohamed Janahi · 2nd
Account Manager at Topsoe
+ Follow

I had a great time participating in #METECH earlier this week! It was a pleasure to share insights on hydroprocessing renewables using Topsoe's HydroFlex™ technology and connect with so many talented professionals in the industry.

A special thank you to my colleagues Yaqoob Kamal and Mahmoud Abu-Salem for their support throughout the event. It's always great to have a strong team by your side.

Thank you also to the organizers Euro Petroleum Consultants for putting together such a great event, and to everyone who attended for their engaging questions and feedback. Looking forward to staying connected and continuing the conversation!

Valentin Kotlomin
Consulting Manager at Argus Media

What a panel! Great thanks to Euro Petroleum Consultants and the distinguished panellists - Abdulla Al Ameri, Fabien Lundy, Robert Achleitner, Sander van Donk, John J. Murphy - for interesting discussions on the prospects of the Middle eastern refining industry, alternative fuels and refining and petrochemicals integration.
Great thanks to Euro Petroleum Consultants for the opportunity to moderate the closing panel at the #METECH - 13th Middle East Technology Forum for Refining & Petrochemicals which was held on May 16-18 in #Dubai, #UAE.
Among speakers, sponsors and exhibitors are ADNOC Group, Alfa Laval, aramco, Argus Media, Arthur D. Little, Aspen Technology, Axens, Bahrain Petroleum Company, BASF, Borouge, Daily Thermetrics, Eni, Evonik, ExxonMobil, Honeywell, KBC A Yokogawa Company, Koch Technology Solutions, LyondellBasell, Nayara Energy, OMV, OQ, OQ8, Petkim, Petrobras, PT Pertamina (Persero), Reliance Industries Limited, Shell Catalysts & Technologies, SOCAR Türkiye, Sulzer, Technip Energies, The Catalyst Group and The Catalyst Group Resources Inc., Topsoe, TotalEnergies, Wood, Yanbu Aramco Sinopec Refining Company (YASREF) Ltd.

Manish Saraswat
1515+ Followers

Indeed #Europetroleumconsultants discussions were very insightful at #METECH wherein #lybproud shared latest developments in #Polyolefin #Catalysts & #Technologies.

Euro Petroleum
15,079 ...

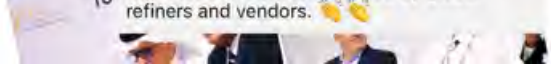
Suleyman Ozmen
Refining & Petrochemical Industry Advisor . Retired from Shell.(47y ind...

Thanks to all the panelists and attendees.

Euro Petroleum Consultants
...73 followers

Sanjay Lodha
Global Business Director - Tubacoat, Tubacex...

Thank you EPC for the opportunity to present Advanced Tubacoat Technology to reduce CAPEX, OPEX and CO2 emissions in refining and petrochemical plants.
Conference very well attended by global refiners and vendors. 👏👏



You and 139 others 7 comm

Olivier Saincry
Amiral Exécution Director for TotalEnergies

Excellent day and exchange at METECH. It was a pleasure to be able to present Amiral projet and its current status.

John J. Murphy
Chief Executive Officer at The Catalyst Group...

Congrats, Euro Petroleum Consultants team! You really do make it look easy (but we all know the amount of hard work and attention to detail these require).

BASF Refinery Solutions
18,467 followers

The BASF team had a great week at #metech 2023 in Dubai. We always appreciate the chance to get together with leaders in the Middle East Refining and Petrochemical Industry. It was particularly interesting to hear our own Hernando Salgado discuss how BASF Refinery Solutions is working with customers to support coprocessing of renewable and recyclable feeds in FCC. It is another example of the exciting innovation still happening in the FCC industry!
https://lnkd.in/eFRzD-Jv

#BASFCatalysts #basf #refining #catalysts

Blair Fraser
Technical Business Manager at Wood | Carbon Advisory
+ Follow

Brilliant to be back at Euro Petroleum Consultants METECH in Dubai presenting as part of team Wood.

I presented on Decarbonising the Downstream Industry how policy concepts are transitioning to actionable roadmaps. Highlighting how Wood can support our clients on their decarbonisation journey, every step of the way.

#metech #decarbonisation #energytransition #collaboration #teamwood

TUSHAR SUTHAR
SPECIALIST-TPL, KNPC. More than 18 years of...

I want to take this opportunity to express my sincere gratitude to Euro Petroleum Consultants for organizing such an excellent conference and providing nice platform to us. The conference was well-planned and executed, and I am sure that everyone gained a lot from #metech2023.

Reaction Engines Ltd
@ReactionEngines

Today is the final day of ME-Tech in Dubai, meaning it's your last opportunity to visit our booth and discuss our super-efficient, super-lightweight and super-sustainable thermal management solutions for the energy sector. Make sure you don't miss out! @EuroPetro #METECH

Dr. Marcio Wagner da Silva, MBA...
Transfer and Stockpiling Manager at Petrobras

Fantastic event! Congratulations

Ketjen Corporation
2,101 followers

It was a pleasure connecting with so many talented professionals and industry leaders at #METECH. We appreciate everyone who took the time to visit with us and engage in thought-provoking discussions. We are excited about future collaborations and the positive impact we can create together.

#catalysts
#refining
#petrochemicals

Abdullah Almindeel · 2nd
Coordinator, Translator & Interpreter

Thanks Euro Petroleum Consultants for organising #metech 2023 conference, I've enjoyed the insightful sessions & had the pleasure of networking with the esteemed members of the industry at the event.

Jay Jeong
Refinery Market Manager at Alfa Laval

It was really a great session in a wonderful conference.

Richard Charlesworth
Executive Director, Process Economics Progra...

Brilliant organisation as always. Thanks EPC!

TUBACOAT S.L.
140 followers

This week, Tubacoat was present at the #MeTech2023 organized by Euro Petroleum Consultants. We were invited to participate at the panel for OPTIMISATION – BETTER ENERGY EFFICIENCY, IMPROVED RELIABILITY & REDUCED EMISSIONS together with other energy leaders. Our Global Business Director Sanjay Lodha, presented Tubacoat as an SMART & Multifunctional Ceramic Coating Technology for CAPEX & OPEX Reduction and announced our partnership with Wood for Improved Solutions for Fired Heaters (to learn more click the link below). Kudos to the EPC Team for anoth successful event!

https://lnkd...

Joseph Ibrahim ·
Managing Director at Axens
+ Follow

Valuable participation of Axens VP Commercial EMEA Mr.Fabien Lundy to discuss about;
-The rise of refining capacities and supply demand balance changes
-The influence of global political uncertainty on ref product trade flows
-The role of Middle East to meet fuel demand

Thank you to EPC team for the organization of METE 2023.

Anastasia Vorobyeva
Customer Marketing Specialist

What an engaging pre-conference seminar we hosted today at #METECH! This year's event topic was "Transforming the future of refining and petrochemicals", where we shared UOP's latest technologies, innovations, best practices designed to address the customers' needs and challenges.
Well done Honeywell UOP team:
Ranjit Kulkarni Naji Abou Chedid Yalda Daghi Aravindan K. Leo Bresler Youssef S. Fraiwat Janet Ruettiger

Deniz Keleş (He/Him)
Delivering sustainable solutions to assist with...

Glad to be a part of this session which hopefully was of interest and benefit. And thanks Euro Petroleum Consultants for another great conference. #METECH

Daniel Jordan · 2nd
Project Sales Manager at Honeywell UOP

I was fortunate to attend the #METECH conference last week. Some very interesting presentations and seminars gave good insight into technology development and company aspirations.

Looks like I also made it into a photo summary posted by the hosts!

#technology #development #oilandgas #decarbonization

Euro Petroleum Consultants
15,078 followers

If you are not networking... you're not working
Check out some of our favourite #METECH moments outside of the conference hall! ...see more

Maryanne Morris · 1st
Conference Director at Euro Petroleum Consultants Ltd

Well done EPC Dubai Team
Miro Cavkov well done on first ME event, more to come....
Such a great team, wouldn't be that successful without of you
Big thank you to all our sponsors, exhibitors, speakers, panellists and delegates - see you all next #metech in May 2024!

Dorota Zoldosova
Head of Marketing and Communications at Sulzer

You know a conference is good when you have Sulzer Chemtech x Sander van Donk in the closing panel

Euro Petroleum Consultants
15,078 followers

Last but not least, #METECH c... it discussions with the "Preparing the D... Industry of MENA Countries for the

Sander van Donk
Senior Vice President & Business Unit Head at...

Thank you #metech for the invitation to join the closing panel discussion and for a wonderful event in Dubai, also on behalf of my other colleagues representing Sulzer Chemtech

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KEY SPEAKERS

Saeed Al-Hajri
Vice President, Manufacturing

SATORP

Dimitris Orfanidis
Head of the Investment & Portfolio Analysis Division

ARAMCO

Robert Achleitner
General Manager Engineering

BAPCO

Is'haq Al Sarhni
General Manager Engineering

OQ8

Abdullah Al Ameri
Vice President Asset Development

ADNOC REFINING

Olivier Saincry
Amiral Execution Director

TOTALENERGIES

Richard Charlesworth
Executive Director

S&P GLOBAL
COMMODITY INSIGHTS

Fabien Lundy
VP Commercial - EMEA

AXENS

Keith Couch
Vice President - Business Development & Integrated Projects

HONEYWELL UOP

Sander van Donk
Senior Vice President & Head of Clean Fuels & Chemicals Licensing

SULZER

John Murphy
CEO

THE CATALYST GROUP

Damon Hill
President - Growth & Development, Projects

WOOD

Güven Kaya
Member of the Board

SASA POLYESTER

KEYNOTE PANEL

LOOKING AHEAD TO 2030 & BEYOND:

THE MULTI-BILLION DOLLAR PETROCHEMICAL PUSH

Süleyman Özmen, Managing Director, **3P18 Independent Consultants**, expertly moderated a distinguished line-up of panelists including key regional producers and global solutions providers – discussing the GCC producers' strategies to meet the expected increase in the demand for petrochemicals, the regional competitive advantages, as well as emissions reduction approaches and the key technology enablers which will support the region's objective to strengthen its position as the leading global producer and supplier of clean liquid fuels, petrochemical building blocks, and energy.

Panelists:

- **Dimitris Orfanidis**, Head of Downstream Investment Analysis Division, **ARAMCO**
- **Saeed Al-Hajri**, Vice President, Manufacturing, **SATORP**
- **Is'haq Al Sarhni**, General Manager Engineering, **OQ8**
- **Güven Kaya**, Member of the Board, **SASA POLYESTER**
- **Damon Hill**, President - Growth & Development, Projects, **WOOD**
- **Keith Couch**, Vice President - Business Development & Integrated Projects, **HONEYWELL UOP**

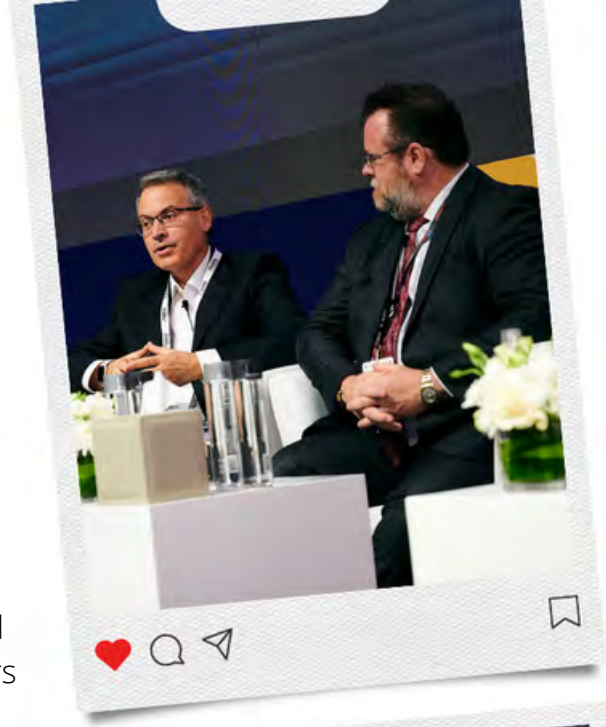
COMPETITIVE ADVANTAGES

The panel commenced a discussion on the regional competitive advantages, with unanimous agreement among the panelists that the Middle East's geographical landscape and abundant availability of both lower carbon natural fossil and renewable resources present unparalleled opportunities compared to the rest of the world.

SASA has established itself as a leader in the field of polyester production, leveraging over 50 years of industry experience. With a current polyester capacity exceeding 1.4 million tons per year (mpty), SASA aims to further increase it to approximately 5 million tons per year (mtpy) by the end of the decade. Notably, SASA is also investing in a Phthalic acid purifier unit, set to be operational in the coming months.

KEYNOTE PANEL

These strategic investments align with market needs in Turkey and the growing demand for petrochemical imports in Europe, as well as the overall demand within the polyester value chain. Anticipated demand is expected to exceed 20 million tons per year (mtpy) in the near future, creating numerous collaboration opportunities for SASA with GCC producers. This will enable SASA to meet both local and export demand for polymers and base chemicals.



The discussion continued around the common strategies employed by GCC countries to address the increasing demand for petrochemical products. **SATORP** identified three key pillars that underpin these strategies. Firstly, the practice of flaring natural gas from national fields, which was prevalent in the 1970s, has been significantly reduced. This shift towards the proper utilisation of this hydrocarbon feedstock, specifically for gas to petrochemicals production, has not only contributed to emissions reduction but also enabled the capturing of a larger share of the global market.

The second pillar is characterised by collaborations and partnerships among regional producers, taking the form of joint ventures (JVs), technology providers, marketing entities, and distribution companies. GCC countries have emerged as leaders in leveraging the expertise of local professionals in plant operations and maintenance within the petrochemical industry. Lastly, there is a concerted effort to adapt production routes towards the direct conversion of crude to chemicals. SATORP, in line with this approach, is currently undergoing a transition that will enable the optimal utilisation of feedstock resources.

During the panel, **OQ8** provided insights into the progress of the Duqm Refinery project and highlighted the forthcoming opportunities it holds. Currently, the core CDU/VDU unit has been successfully commissioned, marking a significant milestone. As an interim achievement, the refinery has produced its first batch of high sulfur fuel oil. However, it is important to note that this product is temporary and will be phased out in the near future with the introduction of the refinery's hydrocracker and delayed coker units. These advanced units will effectively eliminate fuel oil production. Moreover, Duqm Refinery is actively exploring additional options, including petrochemical integration, renewable processing, carbon capture, and other synergistic opportunities. These endeavors align with the refinery's overarching goals of achieving growth and meeting sustainability targets.

During the discussion, **Honeywell UOP** addressed a question regarding the region's competitive position in light of the lower cost of hydrogen. The response emphasized the significance of supply and demand dynamics in shaping the industry's scaling efforts. A comparison was drawn with China's crude-to-chemicals production, which predominantly relies on aromatic complexes instead of olefinic ones. The key differentiating factor was attributed to the cost of hydrogen and China's ability to extract it from their feedstocks. In contrast, the GCC region enjoys a significant advantage, with hydrogen costs ranging from $12 to $1,600 per ton lower than those in China. This cost disparity positions the GCC to leverage its abundant feedstocks and low-cost hydrogen in a unique manner. The focus is primarily on maximizing olefins production, complemented by the utilisation of captured carbon molecules.

EMISSIONS REDUCTION AND TECHNOLOGY ENABLERS

Additional insights were provided by Aramco, the world's largest energy company. Aramco recognises the urgency of addressing climate change and acknowledges the importance of restoring the global carbon balance. Their efforts extend beyond making oil and gas operations low carbon intensive, encompassing the entire life cycle of petrochemicals and plastics. Aramco identifies two key areas of focus in reducing the carbon footprint. The first lies in the production of feedstocks, while the second involves the actual manufacturing of petrochemicals. They firmly believe that regional players possess a significant advantage in producing petrochemical feedstocks with substantially lower carbon intensity compared to the global average. This advantage positions them to potentially eliminate up to half of the current CO2 emissions associated with petrochemical production.

The industry is moving towards a more balanced and agnostic approach when categorising carbon intensity, distinguishing between non-fossil sources with high carbon intensity and fossil sources with low carbon intensity. Aramco, as a leader in petrochemical feedstock production from wells, boasts one of the lowest carbon intensities in the world. Coupled with their low Scope 1 and Scope 2 emissions from production designs, these low-carbon feedstocks enable their petrochemical assets to compete effectively in a carbon-conscious world.

In terms of technical expertise and project delivery, one of the biggest concerns lies in the supply chain. It is crucial to closely evaluate concepts, feasibility studies, and the entire Engineering, Procurement, and Construction (EPC) process to ensure that teams can provide comprehensive support, enabling clients to fully understand the benefits of a particular project. **The three main pillars for investment in the region are considered to be the strategic location, the availability and accessibility of feedstock, and the stability of the market.**

The discussion continued to evolve around the challenges faced by GCC countries in their pursuit of becoming leading producers and suppliers of liquid fuels, petrochemicals, and energy. **SATORP** confirmed the statements made in the conference's downstream overview presentation by S&P Global, highlighting the current market stress as the biggest short-term disruptor. However, the long-term projections are more optimistic, with petrochemical commodities expected to dominate the market by 2030. Another challenge identified is the regulatory instability surrounding carbon emissions and carbon capture, as adapting to regulatory changes can be difficult for production companies. Additionally, the cost of new technologies for complex sustainability projects poses a challenge. While producers are well-prepared and share expertise in refining and petrochemical production, the focus now lies on addressing uncertainties in carbon capture and recycling.

During the ongoing discussion, **ARAMCO** emphasised the importance of specific technologies for driving the GCC's petrochemical advancements. It was confirmed that the implementation of low-carbon electricity and the establishment of carbon capture, utilisation, and storage (CCUS) hubs in the region would serve as key enablers for low-carbon deployment. Producers are encouraged to focus on precise molecular management when processing fossil feedstock into petrochemicals, ensuring that valuable carbon molecules are not released. Furthermore, the region's competitive advantage extends beyond technology, as investments are made in the development of human assets and the workforce to support the transition and foster growth. This comprehensive approach is considered a recipe for success.

On the petrochemical front, **OQ8** provided insight into the current production capabilities at the refinery, which involves exporting naphtha as a temporary solution. However, with the upcoming development of the Duqm facility, a more integrated and flexible production approach will be implemented. The produced naphtha will be either processed into the gasoline pool or utilised in a mixed feed cracker, depending on factors such as future economics, market conditions, and demand for these products. Additionally, LPG is considered a suitable lighter feedstock for further integration, such as in an ethylene cracker.

OQ8 identifies additional integration opportunities in the utilities sector, considering the refinery's significant natural gas consumption for energy purposes. As the refinery progresses, the incorporation of renewables and green hydrogen as refinery fuel will be a significant step forward. In alignment with these objectives, Duqm refinery is actively working to enhance the energy efficiency of rotating equipment, recover flare gases, recycle wastewater and sludges, and implement other sustainability solutions. These measures aim to enhance the refinery's overall sustainability and pave the way for a more environmentally friendly operation in the future.

Further in the discussion, **Honeywell UOP** provided insights into leveraging the Six Efficiencies framework to achieve lower carbon intensity in fuels and petrochemicals. The framework encompasses various components such as carbon, hydrogen, utilities, emissions, water management as a scarce resource, and capital. While efficiency is a desired goal for producers, its definition may vary across different facilities

The focus lies on strategically placing carbon molecules, minimising the work required while maximising the value of the resulting products. Although hydrogen is currently expensive, combining it with carbon can generate valuable products that can help offset the cost of hydrogen. By optimising the arrangement of molecules, utilities consumption decreases, emissions are reduced, and water management becomes a crucial consideration as water transitions from being treated as a utility to a scarce resource.

The significance of saving energy, reducing the carbon footprint, and mitigating emissions in water management has long been underestimated, and GCC countries have extensive experience in this regard. These factors need to be carefully balanced with capital considerations. Leveraging the Six Efficiencies framework empowers producers to make informed decisions based on their objectives, whether it involves being fuel producers, petrochemical producers, or emerging energy producers in various forms.

Last but not least, **WOOD** discussed the close relationship between decarbonisation and digitalisation in project delivery in the 2020s. It is now essential for every project to have an enhanced digital strategy that supports the life cycle carbon footprint. Similar to setting a construction strategy and determining the degree of modularisation, the best time to initiate this is during the initial concept and study phase. Having a consistent mindset and methodology throughout the study phase, along with the application of a digital strategy, are both crucial. Digital platforms enable the design, construction, commissioning, and startup of plants, integrating technology into all project phases. Digital twins play a significant role in unlocking enhanced asset functionality when implemented from the project's inception. Similarly, for low-carbon solutions, evaluating options to reduce the carbon footprint during the concept and study phase brings valuable approaches to achieving the project's low-carbon objectives.

The downstream industry offers substantial opportunities, but it has become more complex than ever before, requiring precise consideration of various elements. Therefore, maintaining a healthy supply chain, technical expertise, and project resources will be critical constraints in the next 10 years.

The panel concluded with the moderator summarising that the discussion provided valuable insights into the current state of the region. The moderator emphasised the significance of market dynamics, feedstock availability, efficient project execution, and the recruitment, development, and retention of young specialists to drive the transition and reduce decarbonisation costs. The moderator also highlighted the importance of embracing circular economy principles and reducing water consumption.

The panel discussion demonstrated the challenges faced by operators, investors, and technology providers in an unprecedented manner. It shed light on the multifaceted nature of the industry and the need for innovative approaches to address the evolving landscape.


TOPSOE
TUBACEX

CLOSING PANEL

PREPARING THE MENA DOWNSTREAM INDUSTRY

FOR THE TIGHTENED EXPORT-IMPORT REQUIREMENTS

Following two eventful days at ME-TECH 2023, filled with valuable technical downstream content and productive business networking opportunities, the conference concluded with a closing panel discussion focusing on the specifications of the liquid fuels produced in the MENA region.

Panelists:

- **Abdullah Al Ameri**
  Vice President, Asset Development Division,
  ADNOC REFINING

- **Robert Achleitner**
  General Manager Engineering,
  BAPCO

- **Fabien Lundy**
  EMEA Commercial Vice President,
  AXENS

- **Sander van Donk**
  Senior Vice President & Head of Clean Fuels and Chemicals Licensing,
  SULZER

- **John Murphy**
  CEO,
  THE CATALYST GROUP (TCG)

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The session was skillfully moderated by **Valentin Kotlomin**, former Director of Strategic Studies & Downstream Economics at Euro Petroleum Consultants (EPC). Prior to the start of the discussion, Mr. Kotlomin delivered a concise scene-setting presentation, highlighting the market trends for liquid fuels. The presentation covered a range of topics, including the increasing refining capacities, shifts in demand balances, the impact of global political uncertainty on refined product trade flows, and the crucial role of regional producers in meeting these demands.

Following this, the moderator and panelists engaged in a comprehensive discussion that delved into the key topics. These discussions revolved around the existing specifications for liquid fuels, with a specific focus on gasoline, diesel, and aviation fuel. Moreover, the panelists explored how the downstream sector in the MENA region is effectively adapting to these specifications, all the while aiming to achieve targets for emissions reduction in alignment with the broader climate goals.

Priority was given to representatives from producer companies during the panel discussion, with **ADNOC REFINING** being among the first to share valuable insights. They provided information about their modernization plans for refining assets and ongoing projects. ADNOC REFINING takes a forward-looking approach, closely following energy transition trends, and is committed to implementing more sustainable solutions while optimizing efficiency and flexibility of its production assets. In line with their emissions reduction goals, ADNOC REFINING is investing in a waste-heat recovery project that will add approximately 230 megawatts of new electricity with zero additional emissions, utilizing existing energy from production processes. The company is also focused on the valorization of refinery off-gases into valuable products such as liquid fuels, LPG, and Hydrogen.

Despite the varying pace of the energy transition across different regions, it is evident that energy demand will continue to exist in the future. While some regions may face stringent regulations, emerging markets in Africa and Asia are expected to maintain substantial demand for conventional energy in the form of liquid fuels. ADNOC REFINING remains dedicated to pioneering innovative solutions and ensuring they meet the evolving demands of their customers around the globe.

Next up was **BAPCO,** providing updates on its multi-billion dollar modernization program. This ambitious project, which began with a master plan in 2009 and entered the EPC phase in 2018, is nearing completion despite the challenges posed by the COVID pandemic. The project is expected to be fully operational by 2024. One of the key achievements of the modernization program is the significant increase in Sitra refinery's capacity, from 267,000 barrels to 380,000 barrels throughput. Like many regional producers, BAPCO's refinery is primarily an export-oriented facility, with up to 90% of its final products being exported. However, gasoline is retained for the local market, complying with stringent specifications of 10ppm sulfur content. BAPCO's export production is mainly focused on kerosene middle distillates, which are ensured by the implementation of LC-Fining technology. This technology involves new and intricate ebulated bed reactor systems, which have a substantial footprint of approximately 260 by 260 meters. Despite the challenges, BAPCO remains committed to enhancing its capabilities and securing its position as a significant player in the downstream sector.

Next, **The Catalyst Group** brought valuable insights into how improved refining technology, catalysts, and processes can address the challenges posed by tighter fuel specifications. Catalysis plays a central role in meeting these specific fuel requirements. The constant development and enhancement of catalyst technologies have been driven by the high demand for process catalysts. One of the key challenges in catalysis is maintaining the reaction equilibrium to operate at the cutting edge, where the catalyst meets or even surpasses the demands while remaining cost-effective. To address this, efforts are being made to make catalysts more sustainable and affordable through recycling and rejuvenation. This includes recycling important building blocks such as inorganic raw materials and precious metals, ensuring a circular approach to catalyst usage. By focusing on refining technology advancements and innovative catalyst solutions, the downstream industry can successfully meet the ever-evolving fuel specifications and contribute to a more sustainable and environmentally friendly future.

Then a question came from the audience regarding Tier 3 US gasoline requirements for 10ppm Sulfur content. It stated that some refiners are facing difficulties reaching these specifications, especially those relying on FCC Naphta as a main octane booster, so the main question was how will Middle East refiners deal with such issues?

AXENS was well-positioned to address the audience's question as they are the pioneers behind a widely applied technology that effectively resolves FCC gasoline desulfurization challenges in the region. Presently, the majority of refineries have the capability to meet the 10ppm sulfur requirement for their final gasoline products. However, it is important to note that achieving 10ppm in the gasoline pool itself may vary depending on the overall gasoline components used in the blending process. Nevertheless, with the implementation of the appropriate and proven technologies within the typical refinery configuration, reaching 10ppm sulfur content in the FCC Naphta is achievable.

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Adding to the discussion, **SULZER** emphasized the importance of maintaining flexibility in FCC units, especially considering the projected surplus of gasoline in the Middle East region. To stay competitive, refiners need to invest in their FCC units, which play a crucial role in refining operations. The decisions regarding feedstock and product distribution, whether prioritizing petrochemical production, or boosting octane in the gasoline pool, will influence the refinery's strategic direction.

Both **AXENS** and **SULZER** presented a combined solution of technologies for FCC gasoline desulfurization while simultaneously recovering and extracting valuable BTX aromatics. These valuable BTX aromatics can be further processed and added as octane boosters in the gasoline pool, providing additional benefits and opportunities for refineries to optimize their production schemes.

During the discussion, **TCG** was asked to share its insights on how fuel and petrochemical producers in the Middle East can learn from the approaches and mistakes made by others outside the region. Drawing from their experience working with clients, TCG highlighted that the industry often faces common challenges that can be addressed more efficiently and cost-effectively if information from others' mistakes and approaches is readily accessible. To facilitate this knowledge sharing, TCG has initiated the Catalytic Advances Program, a consortium-style platform where major refining and petrochemical producers can collaborate and exchange insights. Through the Catalytic Advances Program, participants not only share their successes but also openly discuss failures, allowing others to learn from these experiences. By leveraging the collective expertise of the consortium members, the industry can avoid repeating mistakes and accelerate the adoption of proven solutions. This collaborative approach fosters a culture of continuous improvement and enables quicker advancements in addressing current challenges. TCG emphasized that this sharing of knowledge and experiences is not limited to the MENA region alone. There are valuable opportunities for producers outside the region to learn from the experiences within MENA, and vice versa, leading to faster and more cost-effective solutions in tackling the industry's pressing issues.

Next, an intriguing question was directed to **BAPCO**, inquiring about the lessons learned from delivering BAPCO's residual project. As expected, Front End Engineering Design (FEED) was highlighted as a crucial aspect of any project, but it was emphasized that it is not the only key factor. Being a 90-year-old refinery, undertaking revamping elements also necessitates a thorough condition assessment of existing assets. This often requires on-site inspections, placing scaffolding where needed, and conducting first-hand status checks to gather vital information that cannot be solely derived from project drawings. This crucial information is then shared with the contractor, particularly during the bidding phase of a Lump Sum Turnkey (LSTK) project. Having a comprehensive understanding of the condition of existing assets is essential to avoid unexpected project changes that can lead to additional costs and delays, which is undesirable for all parties involved. Therefore, during the FEED phase, clear strategies must be implemented in the execution plan to manage risks effectively. The BMP project at BAPCO was supported not only by a PMC listed in the public domain but also by an extensive integrated project team comprising around 400 people and an additional 20,000 manpower onsite. Such a vast execution team requires diligent supervision from both the contractor and the owner to ensure smooth project progress.

The panel then shifted the discussion towards co-processing and alternative fuels, a global trend, and how Middle Eastern refiners are responding to this. ADNOC REFINING was asked about its future plans concerning biofuels production, green hydrogen, and derivatives like ammonia.

ADNOC REFINING is actively exploring various options and approaches to meet market demand for low-carbon fuels. Currently, the company is conducting a comprehensive Life Cycle Assessment (LCA) of low-carbon fuels, as it intends to produce such fuels in-house. To assess the viability of production, ADNOC's research center has already tested some bio-feedstock samples. One of the crucial factors the company is considering is the sourcing of bio-feedstock since the region lacks natural bio-feedstock sources. Importing feedstock, processing it, and then exporting the final product may significantly contribute to the carbon footprint and product pricing. ADNOC REFINING is carefully evaluating the sourcing options while keeping in mind its commitment to the sustainability agenda for 2050. Despite the challenges, ADNOC REFINING is dedicated to exploring available options, conducting tests, and evaluating different approaches. The company is working in close alignment with shareholders, global trading flows, various company entities, and marketing teams to ensure a sustainable and feasible path forward. The goal is to strike a balance between environmental impact, cost-effectiveness, and market demands, ultimately contributing to a more sustainable energy future.

Regarding the co-processing and production of biofuels, **AXENS** highlighted that the main challenge in the region lies in sourcing the feedstock material, rather than adapting the process units. The process units can be easily adjusted to operate with different types of catalysts, allowing for efficient conversion and impurity removal. While used cooking oil (UCO) may be somewhat accessible in the region, the real challenge lies in vegetable oil, which needs to be imported. The carbon emissions associated with transporting such feedstock from distant regions, like Southeast Asia, could outweigh the benefits of using it as a low-carbon feedstock.

An alternative feedstock option in the region is pyrolysis oil from plastic waste. Implementing this feedstock would require investments in process units and a well-organized waste plastic collection and supply chain to ensure a stable feedstock source. When it comes to synthetic fuels, the region lacks biogenic CO2 sources. To address this, carbon capture will play a crucial role in lowering emissions from existing assets and combining captured carbon with green hydrogen can enable the production of e-fuels. While the region faces some challenges in sourcing feedstock for co-processing and alternative fuels, there are promising options that can be pursued with careful consideration of the economics and carbon emissions. Innovative solutions, such as pyrolysis oil and carbon capture, can play a vital role in achieving sustainable energy goals in the Middle East.

Furthermore, **SULZER** emphasized the significance of real business cases and regulations to drive the implementation and upscaling of alternative feedstock processing. Without clear incentives or mandates, fossil feedstocks will continue to be more profitable and yield stronger margins compared to their sustainable counterparts. It is essential to have supportive regulations in place to accelerate the transition towards greener alternatives.

Another crucial aspect in the decarbonization journey of refineries and petrochemical plants is the availability of green electricity. Access to renewable energy sources will play a pivotal role in reducing emissions and achieving sustainability goals. By integrating green electricity into their operations, downstream companies can significantly contribute to the overall decarbonization efforts in the region.

BAPCO, as a national oil company, is fully committed to Bahrain's goal of becoming carbon neutral by 2060 and achieving a 30% reduction in overall emissions by 2035. Despite being a small country, Bahrain is well-positioned to pursue sustainability initiatives. BAPCO recognizes its responsibility in emissions reduction and is actively working on new projects to achieve these targets. In the coming years, Carbon Capture will play a crucial role in BAPCO's overall strategy.

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The company plans to capture carbon from production assets and store it in underground reservoirs, leveraging the kingdom's available storage volume. However, the challenge lies in ensuring energy and CO2 savings during the process. The captured carbon needs compression for injection into the reservoirs, which will require energy and could result in additional CO2 emissions unless sourced from renewable sources like wind, solar, or nuclear power. Despite the complexities, BAPCO is determined to take on this journey and actively address the challenge of achieving its sustainability goals. With a strong commitment and willingness to explore innovative solutions, the company is poised to make a significant impact on the path to a more sustainable future.

The discussion moved to a critical technology and strategy question: the integration of refining and petrochemical production routes and assets. Panelists unanimously agreed that in the face of a declining market for liquid fuels and a growing demand for petrochemicals, the key to ensuring competitiveness and profitability lies in smart integration. Many ongoing projects are now prioritizing integration to achieve higher petrochemical yields and maximize the utilization of fossil carbon resources. To make petrochemical production more sustainable, the industry is exploring circularity as a viable option, which will also contribute to emissions reduction. The focus on reducing our carbon footprint is gaining widespread acceptance, and financial investors are increasingly considering the environmental impact of projects before making investment decisions.

As the industry moves forward, integrating refining and petrochemical assets in an environmentally conscious manner will not only drive competitiveness and profitability but also contribute to the collective efforts in achieving a more sustainable future. The push for circularity and a reduced carbon footprint reflects the industry's commitment to adapt and thrive in a complex and ever-changing landscape.

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