



METECH 2022

MIDDLE EAST TECHNOLOGY FORUM FOR
REFINING & PETROCHEMICALS

14–17 February 2022 | UAE

ADVISORY COMMITTEE MEETING REPORT

13 SEPTEMBER 2021 // HOSTED BY EURO PETROLEUM CONSULTANTS

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ORGANISED BY:



IN ATTENDANCE

- Hafedh Al Qassab, BMP Project Director, **BAPCO**
- Francesco de Francesco, Deputy Managing Director - Operations & Performance, **ENI ABU DHABI**
- Mathew George, General Manager – Petrochemicals, **INDIAN OIL CORPORATION**
- Ishaq Al-Sarhni, General Manager – Engineering, **OQ8**
- Marcio Wagner da Silva, Process Engineer and Project Manager, **PETROBRAS**
- Mohammed H. Al-Hazmi, Leader, Chemical Sciences MEA, **SABIC**
- Bashir Dabbousi, Director - Technology Strategy & Planning, **SAUDI ARAMCO**
- Raphael Duflos, Vice President Manufacturing, **SATORP**
- Fabien Lundy, Sales Director, **AXENS**
- Udo Hüniger, Vice President Market Area Middle East, **BASF SE**
- Julian Lambert, General Manager, Middle East, **COPPERLEAF TECHNOLOGIES MIDDLE EAST**
- James Moshi, Regional General Manager, **HONEYWELL UOP**
- Richard Charlesworth, Executive Director, **IHS MARKIT**
- Imre Csoti, Vice President Onshore Operations, **McDERMOTT MIDDLE EAST**
- Gurminder Singh, Director-Technology Licensing MENA, **SHELL CATALYSTS & TECHNOLOGIES**
- Sanjay Lodha, Global Business Director, **TUBACEX GROUP**
- Malcolm Cook, Vice President - Business Development, **THYSSENKRUPP**
- Daniel Carter, Global Director, Decarbonisation & New Energies, **WOOD**
- Nathan Ergonul, Vice President Marketing, FCC, **W.R. GRACE**

CHAired BY

- Süleyman Özmen, Senior Consultant, **3P18 INDEPENDENT CONSULTANTS**
- Stefan Chapman, Vice President, **EURO PETROLEUM CONSULTANTS**

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APOLOGIES

- David Marion, VP Manufacturing Africa, ME, Asia & Pacific for Refining & Petrochemicals, **TOTALENERGIES**
- Gabriele Omassi, Head of Business Development Downstream Abu Dhabi, **OMV DOWNSTREAM MIDDLE EAST & ASIA**
- Nadia Bader Hajji Yousef, Deputy CEO Projects & Business Development, **PIC**
- Hasan Al Mansoori, Director of Engineering, **ENOC**
- Mobarak Mesfer Al Mutairi, Manager Technical Services MAB, **KNPC**
- Abdullah Fahad Al-Osaimi, Manager Corporate Planning, **KIPIC**

BUSINESS OVERVIEW: COVID-19 PANDEMIC DISRUPTION

The impact of the COVID-19 pandemic on the Oil & Gas industry has differed from one country to another. Top on the list of challenges was the decline in demand for refined products. With no operating flights and fewer cars on the road due to restrictions, the demand for Gasoline, Diesel and Jet Fuel fell off. Being a fuel refinery is a challenge in itself.

Refining margins are currently low and were even lower during the peak of the pandemic. On the other hand, the industry experienced a significant increase in petrochemicals demand, especially plastic polymers which can be directly linked to rise in domestic demand during lockdown periods. Unlike traditional refineries, petrochemical complexes are often considered easier to manage during periods of change.



The COVID-19 period has resulted in growths in some areas, balanced by drops in other areas – the main challenge experienced by many producers has been how to best manage these constant changes in demand.

Project implementation was also impacted by the pandemic – the start of many projects were delayed, as well as delays to those already executed due to supply issues and the difficulty of mobilising international workers. Some projects were more fortunate and were able to maintain their supply chains and minimise delays.

However, the principal common issue was manpower; mobilising skilled workforce during the pandemic and lockdowns was a major headache for all. These difficulties pushed the industry to think outside the box and implement new concepts and new methods such as assembling project parts outside of the country and then importing as modules – it also meant working differently and connecting with vendors, specialists and technologists online and solving all issues without having them physically on site.

With today's uncertain demand in liquid hydrocarbon fuels and the increasing pressure to provide cleaner energy, the downstream industry must work together to implement new strategies, innovate and build a sustainable model. Traditional hydrocarbon fuels and refined products will continue to play an important role in the future energy mix. As the pandemic period has shown, flexibility, reliability and the ability to quickly adapt to market demands have all been key to remaining competitive.



INDUSTRY OUTLOOK: WHAT'S THE FUTURE FOR THE MIDDLE EAST DOWNSTREAM SECTOR?



The Middle East has a great competitive advantage, the region is equipped with many complex refineries, and therefore can accommodate the growing demand in petrochemicals. We also should not forget that Middle East refiners have the ability to step into the demand of refined products in Europe.

All refiners are involved in the transition we are currently going through, and refined products will still have a role to play even with the new emerging energy sources such as hydrogen and LNG; projects such as Crude Oil to Chemicals and Bottom of the Barrel must still go ahead.

Competition is likely to come from the Asian region – there is a number of complexes that have or will come online in the near future. We have all heard of the Crude to Chemical investments made in the region, notably in China.

For refiners, 2022 is expected to be a year with ‘relatively’ poor margins but refineries integrated with petrochemicals, will cope better during this period. The COVID crisis has reinforced the idea of integration between petrochemicals and refining assets. Less integrated refineries are left more exposed to these challenges.

Technology licensors have felt a certain level of hesitancy in the Middle East with regards to investing in projects. This may be due to the uncertainty and lack of clarity regarding the impact of the energy transition in the region. The sector needs clarity about the future of diesel and gasoline so that investors can start again supporting the projects.

As mentioned above, the Asian Region is undoubtedly a strong player on the market – one advantage that is observed, notably in China, is the time needed for implementing projects. For example, a COTC project in the Middle East can take up to 7-8 years to be completed, whereas in China the same project can be completed within 3 years.

Such an advantage makes a significant difference in terms of project economics and viability. Another major factor is the CAPEX for such big projects – there is often a huge difference between costs in the Middle East compared to costs in China (up to 50%).

Looking ahead to 2035, it is predicted that there will remain strong demand for diesel and gasoline and that the growth of EVs (which everyone is expecting to happen) will be gradual and will only accelerate once they become more affordable and when the infrastructure is in place e.g. network of charging stations.

The year 2020 has taught us that it is difficult to predict the future and that the industry needs to remain flexible, efficient and reliable. Fossil fuels will continue to play an important role in the energy mix for the foreseeable future.

THE REGION'S ROLE IN THE FUTURE ENERGY MIX

There has been an increase in demand for alternative fuels technologies. We have seen a number of announcements for HVO projects to produce Bio Diesel and Bio Kerosene from vegetable oil – this trend is expected to continue during the transition period. However, looking to the longer term, projects related to Sustainable Aviation Fuel (SAF), E-fuels and Green Hydrogen will be on the increase, but at the moment their costs remain high. The idea of clean fuels and low carbon fuels will remain important and it will accelerate with the growth of demand. The main challenge for these projects to take off in the Middle East will be the availability of feedstock (vegetable oil, cooking oil etc.).

The Oil and Gas industry will start playing a big role in the production of Synthetic fuels, Hydrogen as well as Bio Fuels, though it might be less competitive in the latter.

This brought the conversation onto the next subject - Hydrogen. In the Middle East region, the production of blue hydrogen and blue ammonia is currently high and it is believed to increase significantly starting from the next decade, which will make the Middle East a very strong player in this field globally.

Middle East producers are partnering together in megaprojects to produce green hydrogen because of the high capacity of wind and solar power in the region. Green hydrogen will be produced competitively, to produce synthetic fuels, which have a much lower rate of carbon intensity as opposed to hydrocarbon-based fuels. These blended together can produce low carbon transportation and aviation fuels for export to Asia and Europe. Biofuels could be the most practical alternative fuels for the aviation sector, whereas for maritime it could be LPG and LNG.

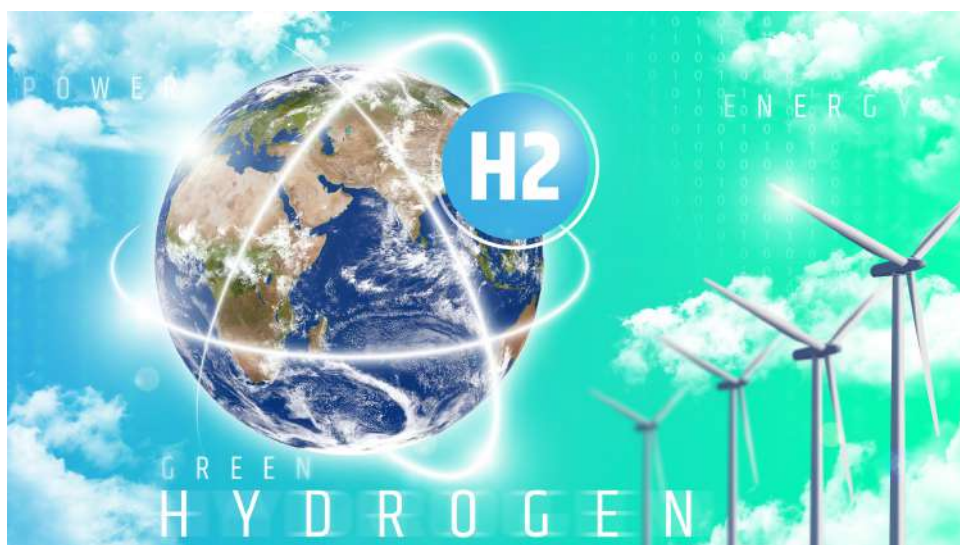
Some end users say that there is still a level of incoherence in different parts of the world in terms of sustainability regulations, which majorly affect the cost of projects and the speed of their transition.

The main difficulty faced by one of the biggest producers of biofuels in Europe is the cost of regulations & applications. There is a need for a global strategy to give a framework to producers to be able to invest in and develop a proper strategy to push these products onto the markets.



From technology providers' point of view, there is absolutely no doubt that Hydrogen will have a central role in the energy mix. The Middle East Region has a rising interest in green and blue hydrogen projects due to the abundance of solar energy.

Blue Hydrogen can play a significant role in the Middle East, not only for the hydrogen export market (though with the right export rate the region can easily become a major global player), but also for decarbonisation of the existing assets. From 2035 onwards, a strategic investment plan should be in place to shift away from traditional refined products.



The Middle East has an abundance of both solar energy (which can produce green hydrogen) and fossil fuels (which can produce blue hydrogen). If carbon capture technologies are present in the region, investors should look into investing in blue hydrogen, otherwise, if solar costs drop they could look into green hydrogen, as the Middle East has a great potential of becoming the world's Hydrogen Energy Centre.

MAXIMISING POTENTIAL OF EXISTING ASSETS

To ensure that assets remain profitable, some refiners implemented programmes in which the main focus is on maximising availability and reliability. These programmes include different aspects such as critical equipment, organisations, HR, training, turn-arounds and integrity amongst many others. In such challenging economic conditions, COVID-19, for instance, refiners believe that they need to have their assets available at all times. Availability together with safety is the main priority and focus for refiners to ensure profitability of their assets.

Another approach could be to convert everything into a math problem, as that will enable the application of artificial intelligence (AI), use of software focused on power generation, utilities, transmission, distribution, and it will enable refiners to understand the value that any investment can deliver to them, hence, the possibility of applying constraints (CAPEX constraints, OPEX constraints, resources, shut down time...etc.).



Another vital point is the speed of the energy transition, which has some limitations, such as the availability of green energy and secondly the willingness of customers to pay. In both downstream and upstream, the investments needed to transform the industry are huge. It remains unsure whether customers are ready to pay for any additional cost repercussions.

REFINING PETROCHEMICALS INTEGRATION ROUTE



Growth is still expected in petrochemicals, especially in olefins and polyolefins. There is a positive outlook about the petrochemical industry, as the benefits should outweigh the risks, as long as the best routes are selected, markets are identified and assets remain flexible.

Looking at certain markets specifically, it is expected that China will become self-sufficient in paraxylene in the near future. Paraxylene capacity in China is expected to reach 5-10% of the global market.

It is not foreseen that COTC plants will be implemented outside of China due to the high CAPEX – the economics are not favourable. The Middle East region may choose to focus on different FCC technologies, to enhance ‘olefins’ production, and integrating new technologies into their existing refineries.

High CAPEX has killed many projects in the region. Bottom of the Barrel (BOB) technologies, combined with other factors, can drive the refining and petrochemical projects capital expenditure down by maximising the feedstock going into the steam cracker.

With all the uncertainty and risk associated, it is very hard today to find an investor for a \$20 Billion project. So, CAPEX needs to be brought down and refiners should make their refineries smarter (whether by using digitalisation, new catalysts or a stronger integration).

'FCC - Flexibility, Complexity & Capacity' should become today's refiners' motto. Producers should be able to promptly react to market changes – for example, a decline in gasoline and diesel demand, can be tackled with a shift to SAF and using some of the refined products for the petrochemical production by inbuilding flexibility into hydrocrackers to produce naphtha for the crackers.

It is safe to say that refiners have officially begun the long journey of “reinventing” their business; Whether it is by using Biofuels from waste; CCUS; COTC (through key technology components such as resid hydrocracking, hydrocracking, hydrotreating, and steam/thermal cracking.) or, Hydrogen.

Join us at ME-TECH 2022 where leading refining and petrochemical professionals will discuss and share their valuable knowledge on the very latest industry innovations, market trends, challenges and the continued importance of integration for competitive advantage.

See you at #METECH2022 in February 2022 in UAE!

If you or your company would like to give a presentation at ME-TECH 2022, please submit your abstract by 28 October 2021 [here](#) or contact Maryanne Morris, Conference Director via email: events@europetro-me.com, T: +971 4 421 4642

