BBTC MENA 2021
MIDDLE EAST BOTTOM OF THE BARREL AND CATALYST TECHNOLOGY CONFERENCE

ADVISORY MEETING REPORT

13 JULY 2021 // HOSTED BY EURO PETROLEUM CONSULTANTS

EPC
Euro Petroleum Consultants

IN ATTENDANCE

- Andrew Inglis, VP of Energy & Fuels, EMEA Refinery &Refined Products, **NEXANT**
- Süleyman Özmen, Managing Director, **3P18 INDEPENDENT CONSULTANTS LLC**
- Hafedh Al Qassab, BMP Project Director & Acting Deputy Chief Executive, **BAPCO**
- Mobarak Al Mutairi, Manager Technical Services MAB, **KNPC**
- Mariano Del Pozo, Technical Manager, **SATORP**
- Abdulsalam Al-Saif, Ras Tanura Refinery Operation Manager, **SAUDI ARAMCO**
- Massimo Pessina, VP – Operation Performance, **ENI ABU DHABI REFINING & TRADING SERVICES**
- Alexander Zaytsev, Deputy General Director for Commercial Affairs & Business Development, **GAZPROMNEFT - CATALYTIC SYSTEMS**
- Steve Beeston, Vice President – Technology Licensing, **WOOD**
- Mohammed Benchekchou, VP New Bus. Development EMENA, **SHELL & AMG RECYCLING**
- Lucas Groeneveld, Sales Director EMEA, **ART HYDROPROCESSING**

CHAIRED BY

- STEFAN CHAPMAN, VICE PRESIDENT, **EURO PETROLEUM CONSULTANTS**

THE MARKET OUTLOOK AND IMPACT OF COVID-19

Looking ahead to our annual Bottom of the Barrel Technology Conference (BBTC) for the MENA Region and the key topics to cover, many questions come to mind given the drastic changes witnessed over the last 18 months. What role does bottom of the barrel (BOB) and residue upgrading play given the changing demand and refining landscape? How have existing assets been operating over the last year? Are operators still looking to invest in capital intensive BOB projects given the acceleration of the energy transition?

To ensure our conference in December 2021 focuses on the most pressing topics and trends, we brought together our long-term partners of the event for a virtual meeting to discuss and exchange the key challenges and opportunities ahead.

The meeting began reviewing the last 18 months and how the markets have reacted. It has certainly been a difficult period with the Covid-19 pandemic and its wide-reaching impacts accelerating and amplifying certain trends. A lot of questions have been raised regarding the best adapted routes and solutions for bottom of the barrel and upgrading residue. The industry experienced a drop in oil price fuelled by global lockdowns and consequently decreased demand. The first wave was by large the most dramatic in terms of duration and impact; the second and the third waves were less significant in comparison, however all three drastically changed the refiners outlook on the markets both short and longer term.

In addition, the pandemic accelerated many aspects of the energy transition and this evolution presents both challenges and opportunities for the Middle East's downstream sector. The region currently occupies an advantageous position and will continue to do so. Other regions such as Europe have seen an increase in plant closures, asset transformation and some third party sales. Should this trend continue, the Middle East can strengthen its position, with impressive assets in terms of scale and complexity, access to feedstock, and access to export markets – all factors contributing to long-term success.

UPDATE ON REGIONAL PROJECTS

The focus of the discussion then switched to how the Middle East's refiners adapted their operations to meet current market conditions and fluctuating demand in transportation fuels. It was highlighted that traditional refining is no longer seen as the only way of achieving profit targets and that integration and diversification is increasingly playing an important role in balancing the economics. As many refineries in the region struggle with feedstock flexibility, coupled with the ongoing challenging fuel markets and changing specifications, an interesting idea was shared for refiners to look at the option of using fuel oil as a possible feed for the crude oil distillations to help meet changing demands and improve margins. This of course depends on market conditions but is an option to explore.

The pandemic demands creative ideas for diversification, and we heard how traders have an interest in buying intermediate products and paying a better price for the benefit of blending themselves. Asset availability is equally important, as refiners need to be able to quickly react when margins improve, even if this lasts only two or three months. There are many programmes being developed and implemented to improve availability, avoid shutdowns and decrease the time of planned shutdowns – whilst building upon the digital transformations already in place. These programmes are costly but can highlight each element where financial and efficiency value can be increased. The meeting heard about the Downstream Transformation Program, recently initiated by Saudi Aramco, which includes a comprehensive review of all downstream assets conducted by selected consultants. The review was made to ensure that all improvements are consistent and implemented throughout various sites of the company and JV's. This enabled multiple plants globally to better cooperate with each other to improve efficiency and profitability.

Looking to the longer term, the conversation moved to the role of fossil fuels in the energy mix as a result of the energy transition. Modern society has an insatiable appetite for energy, therefore the distillate market as well as hydrocarbon and liquid fuels demand will remain for the foreseeable future. Once all travel restrictions are lifted, the industry is still expected to supply transportation fuels, but value needs to be there.

The meeting heard from Bapco on their modernization project (BMP) which is focused on bottom of the barrel upgrade with additional environmental compliance and energy efficiency at its core. For stand-alone refineries, competitive advantage is key and projects such as BMP will have the flexibility to meet demand well into the future as the energy mix evolves. With changing fuel specifications, this is an opportunity to continue to improve environmental standards and supply regions that are struggling with high sulphur outputs.

The Italian energy company Eni is uniquely positioned as one of the leaders of the energy transition in Europe, a provider of residue upgrading technology as well as partners in a joint venture with ADNOC and Eni Abu Dhabi Refining & Trading Services. It is strongly recognised that upgrading the bottom of the barrel remains a key solution for the region with CAPEX investment continuing - an example shared was ADNOC's Crude Flexibility Project.

With Eni's experience from their European activities, it was highlighted that CCUS is critical to implement with deep conversion and that the region should look at this very seriously.

The importance of prolonging the life of hydrocarbon molecules was highlighted several times during the discussion, as one can say fossil fuels are the world greatest feedstock. Will petrochemicals be the preferred route for bottom of the barrel? In Kuwait, integration is key for their Al-Zour Complex which features Phase I front refinery units nearing completion and Phase II Petrochemicals units planned to start operation in 2026-2027.

We also heard from SATORP, an integrated and advanced refinery about their operations, implemented programmes and updates on their petrochemical expansion with the Amiral Project due to start in 2026.

Saudi Aramco like other fellow regional end-users advocate for further refining and petrochemicals integration and upgrading the bottom of the barrel. Focus is on the different opportunities to enhance contribution and improve carbon footprint. At the Ras Tanura refinery, Saudi Aramco's largest refinery in the Kingdom, they are addressing efficiency opportunities and working on upgrading their sulphur recovery facilities to meet new regulations. They are in the middle of finalising a Gasoline Clean Fuel project, having completed the ultra sulphur diesel upgrades and are on track to produce clean fuels.

Although foreseen, refiners in reality have been hit hard by the reduction in fuel demand which happened much faster than anticipated. The trend towards integration has been further cemented over the last year as we see the companies that embraced integration early are faring much better. However, the question was raised that there is a risk of certain markets for petrochemical products becoming saturated – like we have seen in the past for certain refinery products. A detailed market analysis is required to better forecast demand and become more flexible to absorb market fluctuations. Having the optimal configuration in existing assets rather than installing new capacity is recommended, as many big investments take at least 5-10 years to be realised.

NEW TECHNOLOGIES & CATALYSTS FOCUS

The meeting heard from technology providers that there is interest and new investments in new bottom of the barrel processes, as well as revamps and operational improvements to existing units. New projects are still going ahead particularly in the Middle East and Russia with a lot of options available especially within thermal, ebullated, fixed-bed and slurry hydrocracking technologies. A big focus has been on crude to chemicals which can limit refiners to olefins and aromatics routes and we heard some opportunities about the ways to produce different types of chemicals and energy resulting in further diversification. Technology providers have an important role to play in giving refiners the flexibility to change their routes depending on their market position, as well as develop new innovative operations to optimise assets and configuration adjustments to comply with regulations for CO_2 whilst maximining margins. CO_2 reduction restraints are coming so it is important that companies implement mapping programmes and have a clear view of scope 1 and 2 contributors. 'We all dream of CO_2 to chemicals technology' stated one refiner but this dream seems a long way off due to costly investments required which is not possible after a very challenging period. The cost of technology must come down and a way to do this is through collaboration between all involved.

How to close the loop in catalytic processes in bottom of the barrel is an area of focus for many. There is a huge volume of catalysts used in these processes resulting in an opportunity to not only focus on the disposal of spent catalysts but to reclaim vital metals such as vanadium for batteries which have an infinite life cycle compared to lithium and creating synergies with other industries. Requests for co-processing are rising, for example processing plastic waste back into the fixed bed units. This results in the need for a tailored catalysts design depending on crude flexibility and what needs to be co-processed. Looking ahead, we can see demand rising for the homogeneous catalyst, making use of solar energy to split water into oxygen and hydrogen, which can then be used as an energy source in many different ways.

In summary, petrochemicals are one route for bottom of the barrel. However, we also need to keep providing transportation fuels and we have the tools to do both as part of optimisation programmes. Refiners are very experienced in optimising every molecule based on the added value and an additional route will extend the life of the molecule, a key objective for our industry moving forward.

'Preparing soup as the dessert is being served' was the metaphor shared to describe a situation if everyone was to move to petrochemicals route at the same time. 'Important to prepare your soup at the right time and be the first' was the message.

When asked what the future refiner will look like in 20-30 years, the team shared their thoughts on how refineries will become more complex, produce many products – a mix of new, speciality and traditional; operations will be powered by renewables; co-processing will be a feature. But one thing is for sure, the Middle East is in a prime position to diversify now, embrace flexibility and continue to meet market demands.

Join us at the BBTC MENA 2021 – Bottom of the Barrel and Catalyst Technology Conference in Bahrain on 14-15 December 2021.