



# OPEX MENA 2023

HSE & OE Conference & Awards

*Excellence in Safety & Operations*

28 February – 2 March 2023 | Bahrain



## OPEX MENA 2023

### HSE & OE CONFERENCE & AWARDS

*EXCELLENCE IN SAFETY & OPERATIONS*

## ADVISORY MEETING REPORT

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## ADVISORS

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- Haifa Almarzooq, Manager Operational Excellence, **BAPCO**
- Emil Paquet, Manager, **dss+**
- Jamal Al-Shawoosh, Safety, Security, Health & Environment Manager, **GPIC**
- George Makhoul, Senior Manager – Operations, **PETROFAC**
- Geoff Fennah, Managing Partner, **PROCYON GROUP**
- Uboud Nasser Al-Ghamdi, Senior Manager Turnaround & Major Maintenance, **SABIC**
- Roger Bresden, General Supervisor Downstream Operational Excellence & Compliance Division, **SAUDI ARAMCO**
- Kevin McQuillan, Senior Consultant, **SOLOMON**

## CHAired BY

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- Abdulla AlThawadi, Manager of Field Operations, **TATWEER PETROLEUM**

## EURO PETROLEUM CONSULTANTS

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- Svetlana Kudasheva, Conference Director, **EURO PETROLEUM CONSULTANTS**
- Mark Grennell, Commercial Director, **EURO PETROLEUM CONSULTANTS**

## APOLOGIES

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- Abdulrahman AlBanna, Acting Manager HSE, **TATWEER PETROLEUM**

## EXTENDING MAINTENANCE CYCLES - A RISK, OR A REWARD

The OPEX MENA 2023 Advisory Meeting began with our experienced and energetic moderator taking a novel approach to introducing the key themes of the agenda, treating the distinguished Advisory Committee to a sneak-peak at what his own organisation is currently doing.



From an Operations perspective, the current focus is on Shutdown activity, more specifically ensuring zero downtime in production, a task made more difficult while trying to limit redundancies on one hand and work with complex, connected and interconnected systems on the other. This is currently being carried out on a trial basis, complementing different production systems with temporary, mobile systems that can be employed where needed.

Turning to Operational Excellence (OE), the organisation has begun to review Environmental, Social, and Governance (ESG) concepts, conducting a gap analysis and nominating a campaign champion to coordinate between the different functioning departments.

And lastly, on the Health Safety and Environment (HSE) front, as an extension of the pandemic, the company shifted from a paper-based work permit system to a semi-electronic one (approx. 50%), with a plan already in place to introduce the paperless, 2.0 version of the system.

The panel, having been warmed to the topics for discussion, began with a post-covid perspective of sustainable customer support. One unique initiative identified is the Technical Hub, where a support team of experienced specialists based in one location, with access to the necessary infrastructure, can service customers in multiple regions and countries worldwide without the need to mobilise resources. This is particularly valuable for customers based in more remote locations and a perfect example of how an organisation can capitalise from the pandemic and overcome logistical challenges to provide an innovative, customer-oriented service that is truly sustainable.



Another post-covid benefit is the end-users' acceptance of remote working. Pre-covid, this was not really an accepted work practice, but now, rather than sending a team to a client for 6 months, it is possible for a team to go onsite for one week, review systems, collect data, analyse it externally and submit the results online, which is more efficient and provides a considerable cost-saving.

Looking at Maintenance and Reliability, COVID may have had a similar effect on Preventative Maintenance that the most recent oil price crash did, with some operators opting to extend the cycle to save cost. The danger lies in the fact that the impact may not be felt in the short term, but longer term, you are left with an unreliable plant that ultimately requires shutdown and repair. Maintenance and Reliability are interdependent - you cannot cut maintenance without impacting reliability. A good Maintenance and Reliability programme will often be the result of a very good asset management programme, asking the questions; do you know your asset strategy, the critical equipment you have and need to maintain, do you test performance aspects, and do you have a strategy for replacing assets before failure.

***The bigger question in the Middle East, especially in older plants that have employed the same staff for 20+ years is, what is good? Do they know their Preventative Maintenance (PM) to Corrective Maintenance (CM) ratio? Do they know when to focus more on OPEX, or CAPEX, what's the right balance? So, if COVID has had a negative impact on Preventative Maintenance, the true cost may not be known for a few years.***

Another important point to recognise is, in the last 10 years Maintenance adopted technologies that were not available before the drive for Predictive Maintenance (PdM) increased, however, the true benefits of PdM may be less obvious - it would be interesting to analyse and discuss further the proven benefits of these activities.





One regional operator, whose Turnaround activity (TAR) came to an abrupt halt when specialist staff had to leave the country due to COVID, was inspired by the crisis to think and work differently. To bridge the skill-gap, the producer turned to his licensors and OEMs for online support. Using video conferencing technology, and by sharing photos and videos with key specialists in Germany and Japan, the operator was able to commission the plant remotely. The positive experience has changed how the organisation plans and now, before commencing new maintenance they consider the potential impact of not having certain expertise available onsite and update processes accordingly. Procedures, planning and milestones - all have been updated to consider online support as a contingency plan.



***"And for another regional operator, Covid was a real eye-opener..."***

And for another regional operator, covid was a real eye-opener. Looking at TAR cycle optimisation post covid, after careful evaluation and accounting for all risks, they discovered they could safely extend the TAR cycle for their methanol plant from four to four and a half years, which added huge value - more than \$10m in one cycle.

So, operators need to start questioning the validity of their current Turnaround cycles - why is it 24 months and not 36? It will take careful analysis to identify the most efficient Turnaround timescale which in most cases is driven by the catalyst change cycle - perhaps operators can look at taking a single unit out and changing the catalyst rather than shutting the whole plant down. This has been an ongoing debate between operations and maintenance departments, with multiple factors affecting decision-making, but the impact of covid brought them to the same table, made them challenge everything, consider risk-based approaches instead of following old habits and focus on the end results.

This segment of the panel discussion was brought to a close with words of caution. When you contemplate extending your TAR cycle you should consider the actual design basis of your equipment - pressure safety valves (PSVs) is one area for consideration, but solubes is another because they have failure and demand, and reliability links to testing and inspection frequencies, so it is extremely important that you do a proper analysis of both, the solubes and the PSVs that need to be tested. There are clients in the region that do not know their requirements, they haven't done their verification studies and they do not adhere to the licensing agreements for testing of solubes. When they start to plot their KPIs and question why they have interlocks that do not activate on demand, the answer is, because they did not test and inspect them, or have the proper frequency in place. So yes, it is possible to extend the TAR cycle, but it is imperative you understand the risk posed to the safety critical equipment.



For example, if you use the bow tie method to determine how many layers of protection you have, for a cause to lead to an event, you should ensure those protective barriers are healthy. Clients conduct Hazard and Operability Analysis (HAZOPs) however, in some incidents, the specialists employed will assume that the equipment is designed correctly and in good condition, but when they verify the safeguards, they find there is a design issue (the equipment may not have been tested in accordance with the manufacturers' recommendations) which opens the client to risk and because the safeguards have potentially deteriorated, then the client is now in a high-risk scenario.

So again, the risk is that the effect is not always visible immediately, but potentially the integrity of the systems has been compromised and the true impact may not be discovered for up to 10 years. Recently, with a shortage of resources and a higher demand for products, there has been an increased appetite to defer shutdowns and turnarounds, but this leads to greater risk, and the risk needs to be calculated carefully to safeguard the integrity of the plant, is processes and products and ensure the safety of its staff.



## OPERATIONAL EXCELLENCE - IS IT WHAT YOU GET, OR IS IT WHAT YOU DO?

The committee then turned its attention to Operational Excellence with insight into a current modernisation programme being implemented at one regional refinery. The objectives of the programme are to increase refining capacity, enhance the product slate, improve energy efficiency, and emerge as one of the most competitive and environmentally compliant refineries in the Middle East. They are building new units which include new resid hydrocrackers. The project began in 2018, but faced delays with the delivery of equipment and resources due to the pandemic. The operator is still running the existing plant which began production in 1936 and still has units running from that time however, the plant also has newer units - for example, the lube unit that started in 2012. The programme's Operational Excellence focus is project-wise, centred around quality and conformance to standards and for the refinery operations, the focus is on quality and reliability. The parent company determines the ESG strategy and ensures the programme is compliant with COP 26 and the country's 2035 targets. There is a particular focus on energy consumption, operational efficiency and minimising cost.



One perspective shared was to benchmark Operational Excellence based on what performance achieves - so benchmarking what you get, not what you do. Some organisations focus on the performance, while others look at what clients do to achieve the performance - one of the challenges the industry is facing is trying to correlate the two. How does the industry decide if the best practices applied are delivering the level of performance that will differentiate you from your professional peers. This is a general topic on Operational Excellence - for example, what are good practices and how does performance demonstrate that these practices lead to excellence.



Another theme that is generating considerable interest within the industry is Sustainable Operations. One regional operator implemented an Operational Excellence programme with sustainability and efficiency as the key drivers - doing things as efficiently and consistently as possible to achieve desired outcomes in HSE and Operations. For example, there were significant issues with work permits not being filled in consistently, so the focus was on rectifying the big issues that could cause problems and making the plant more efficient.



Another insight came from the Downstream Operational Excellence & Compliance Division of another regional operator. This division has a huge support base with 22 subject matter experts working in HSE and OE Enterprise Division Management. The primary function is to support the entire downstream portfolio, including in-country assets (staffed by approx. 15,000 people) the in-country joint ventures (7-8 large refining entities), as well as wholly-owned international affiliates. The total support base is approx. 30,000 people.

In terms of Operational Excellence, in 2014 the division created a comprehensive programme that requires all departments (approx. 40 in total) to self-assess and undergo a corporate Operational Excellence assessment. In 2018 there was a complete revision of the programme re-focussing on four pillars; HSSE, Operational Efficiency, Business Sustainability and Value Creation and three key areas; Optimisation, Integration and Digitalisation, designed to help these departments examine the 13 elements of the OE programme and evolve from a lower to a higher performing OE culture.

There have been challenges with buy-in and there are other corporate programmes that tend to duplicate certain aspects of the Operational Excellence programme, so the division has worked hard to sort out these issues and get the organisations to understand this is a holistic approach to HSSE, Operational Efficiency, Business Sustainability and Value Creation, and there has been great progress made. People understand more, participate better, OE scores are rising, and this results in better performance in all KPI areas.

Another challenge was the reporting structure - the division reports to the Senior VP, Downstream, which is a business line level, but the Operational Excellence programme is corporate level, driven down to the department level, so typically the communication remains within the corporate group, so the division is not privy to the assessment results. The division managed to rectify this and better understand their performance. They also added their subject matter expertise to the evaluation process and now have a better understanding of the challenges and culture which has resulted in improved performance in all KPI areas.



Another perspective looked at three areas; knowing the gaps, undertaking a detailed diagnostic, and having a proper Operational Excellence pipeline to help you prioritise the benefits based on what is most easily achievable. Clients face challenges - sometimes the Operational Excellence department does not have the influence to implement its recommended improvements, possibly because of conflicting interests, or the business line does not buy into it, because they are not driving the process. So, setting goals and targets is extremely important. First of all, you have to have a good data source in place, you have to set the right KPIs and you have to help the person operating the shift to realise the impact of the initiatives. Often there is a disconnect between what the business line is asking for and what the front line thinks they should focus on. So, you need to know your gaps and have a proper system in place. You should focus on non-CapEx options first and then allocate CapEx in line with the business strategy, establishing a checklist that helps you to set objectives that are achievable.

More and more companies are now questioning their operations culture in safety, process safety, and other areas of Operational Excellence. They want to know their level of maturity, but when they drill down further, these organisations are unable to articulate their targets and objectives. They want to be among the best in the world, or the best their budgets will stretch to, but they cannot set a target to measure themselves by.



***So Operational Excellence is about knowing where you are, how ready you are for change, and what exactly you want to achieve. It is important to have a roadmap that drives your organisation towards Operational Excellence. One of the key drivers to reaching Operational Excellence is people - it is about culture, readiness and competency.***

One regional operator noticed a significant increase in incidents this year related to safety and breakdowns. They decided to pinpoint the cause and found it was a result of a drop in competency levels. A high number of very experienced personnel left during the pandemic and with budgets cut, training programmes were postponed, and some maintenance work cancelled - this led to a drop in the competency levels and an increase in breakdowns.

Digitalisation has helped greatly in overcoming challenges and limitations and driving Operational Excellence. Real gains have been made in Operations, particularly with the analysis of the large amounts of data available in the Distributed Control Systems.

One particular regional operator has implemented multiple digital programmes - flagship programmes that look at digital use cases in all areas covered by Operational Excellence. They are very structured themes and processes that involve stakeholder input to identify where custom-developed solutions can help to achieve optimal performance in all main areas. They work together, with various programme directors on different stakeholder teams, to ensure there is no duplication of efforts. The focus is to improve the bottom line, make sure maximum value is extracted from the various processes, improve environmental performance, and utilise technologies to help HSE. The platform identifies how much value is being extracted from the digital use cases and the numbers keep growing.

## LEADERSHIP COMPETENCY AND VISIBILITY - THE KEY INGREDIENTS FOR A HEALTHY HSE CULTURE

Turning to the last topic for discussion, the committee was given an overview of the current HSE status at one regional refinery. They have reached 37 million man-hours, fast approaching 38 million, without a TAR and they have not had a major incident, or accident involving contractors, or employees since 2002. The main focus of their HSE philosophy is honesty.

Due to their processes, they generate a lot of CO<sub>2</sub>, but they understand the importance of complying with the 2030 net zero targets and they even have their own 2040 net zero strategies in place. When they were producing only methanol and ammonia, all of the CO<sub>2</sub> was emitted into the atmosphere, but then in 1998 they began to produce urea which, only 13 years later was utilising the majority of the CO<sub>2</sub> produced, and with the introduction of MHI technology, they are also capturing the carbon from their flue gas.

Since 2012 ESG has been a key focus area and they have now published their 5th sustainability report (it is released every 2 years). They are already meeting 80% of their requirements and they engaged somebody to conduct a gap analysis and implement an ESG framework. They have just had CAPEX approval to implement a new digitalisation platform to improve OE and HSE. They have connected their Distributed Control Systems (DCS) and are analysing safety and field data to improve operational efficiency.

Another focus area is the loss of competency and the high proportion of young engineers. Culture plays a big role - they are actively trying to integrate the young professionals into the existing organisational culture, but at the same time, encouraging them to have their own ideas that will contribute positively to improving the culture.

At another regional refinery, leadership accountability and engagement are at the core of their OE system. It is very important that leaders are visible in the plant and this regional operator mandates that their leaders conduct regular site visits on their areas of responsibility - these visits are tracked and reported to the OE and HSE teams. They instill a Positive Practice Engagement culture - if a leader sees something positive, they encourage it, it is called Positive Capturing - they have a good digital platform to capture these positive practices, which are tracked as KPIs and audited to determine the effectiveness of the activities and engagement.



For yet another regional refinery, the leadership focus is a passion. As they see it, the important aspect of leadership is having the appropriate level of leadership competency at all levels; frontline, mid and senior executive levels of the ladder. Most leadership skills are not inherent, they are learnt. As a result, this operator puts a lot of effort into creating initiatives to develop leadership skills. For example, they have a weeklong bootcamp for frontline downstream leaders. They bring 24 leaders together at one time for a safety leadership forum and they conduct 12 each year. They are hosted by the local manager, endorsed at the corporate level and external speakers are invited.

## GETTING HSE RIGHT

Key components of Success



They explain to these leaders that there is a pyramid with 5 levels: at the bottom - the mission, vision, and values that are ingrained in the organisation. At the next level - a hazard-free workplace where risk is effectively managed. Then - a management system that is effectively implemented within the organisation. Then the workforce - that they are fit for duty and informed about the importance of safety. They need education, understanding, and buy-in to make this part of their culture and finally, at the top level, is leadership. Leadership is responsible for ensuring all 5 levels work effectively. A lot of responsibility and accountability is placed on frontline managers, so it is important they are provided with competency development opportunities and that they are regularly assessed to determine their level of competency and to identify and address any gaps.

Leadership is fundamental and crucial for success and giving the frontline manager responsibility is paramount. It is the frontline manager who is sent to the shopfloor, so this person must deliver the right message, and it is important the right message has been cascaded down. Visible, effective leadership comes from different levels and departments being on the same page, knowing what to focus on and what message to share.

An aggressive and diminishing management style will destroy the safety culture, so sending the right message, in the right way and having a clear, collective vision that is communicated through a uniform message from various levels is fundamental.



**All this and more will be discussed and debated at the upcoming OPEX MENA 2023 - HSE & OE Conference & Awards, taking place in Bahrain from 28th February to 2nd March 2023.**

**We invite you to take part in the event and learn first-hand from the industry's leading Thought Leaders and Domain Experts.**



[View OPEX MENA Awards Details](#)

OPEX MENA has increased the number of Awards Categories to recognise and reward a broader scope of the exceptional talent, both organisational and individual, that exists within the region's **HSE** and **OE** communities.

- **SAFETY AWARD**
- **OE AWARD**
- **INNOVATION AWARD**
- **WOMAN OF THE YEAR**
- **YOUNG PROFESSIONAL OF THE YEAR**

By sharing the examples, and showcasing the achievements of the **OPEX MENA AWARDS** winners, we hope to drive innovation and change, promote best practice, and help shape a better future for our region.

## CONTACT THE TEAM



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