The Middle East is the top petroleum producing and exporting region in the world. In addition to having the world’s largest crude oil reserves, the Middle East also has vast natural gas reserves. The region is presently a net exporter of refined products; however, petrol in some areas is in short supply. Because of these reserves and production, the Middle East will continue to play a pivotal role in supplying the world’s crude oil requirements as well as filling the global shortfall in refined products. The region is expected to provide as much as 60% of the world’s forecasted increase in crude and condensate requirements through 2025.

The Middle East has no regional quality standard for petrol and each country has its own set of petrol specifications that are primarily established by the processing capability of the country or the imports received from other areas. Domestic petrol supplies are tightening as the rate of consumption increases, with economic growth and prosperity as well as the resultant increase in petrol powered passenger vehicles. Iran is the second largest importer of petrol in the world after the United States. Recently imposed petrol rationing in Iran, however, has resulted in the country’s imports declining by nearly 50% since the first quarter of 2007 (compared to the similar period in the previous year). The Gulf Co-Operation Council countries, which comprises the Persian Gulf states of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, have been net exporters of petrol, but recent history has shown a reduction in export volumes, particularly from Saudi Arabia. This growing shortage of petrol is one of the factors that prompted the introduction of a new regular grade (RON 91) of petrol in both Saudi Arabia and the United Arab Emirates (UAE) in late 2006.

The shortage will also make other petrol quality improvements more difficult without developing new refinery projects, something that is starting to occur in the region.

Leaded petrol has been mostly eliminated in the region; however, select countries continue to use it. Leaded petrol currently represents no more than 10% of the region’s petrol pool and the average lead content is estimated to be less than 0.3 g/dm³. In the region, Jordan, Syria, Yemen and Iraq still have leaded petrol, although Jordan has introduced unleaded premium petrol to the marketplace. Jordan continues to expand the availability of unleaded petrol with the intention to move to unleaded petrol next year as refinery concession ends. Syria continues to move to fully unleaded petrol with less than 3% of its petrol pool containing lead additives.

Yemen is considering an approach to phase-out leaded petrol; however, specific timelines are unclear. The average lead content in Yemeni petrol is 0.4 g/dm³ and octane quality is typically RON 84. Any effort to phase-out lead would likely involve introducing at least one new grade of unleaded petrol with higher RON level.

Iraq has both leaded and unleaded petrol; however, with the present situation in the country, specific qualities are difficult to determine. Plans by Iraq’s Ministry of Oil to eliminate leaded petrol have been presented and ultimately the country intends to follow European equivalent specifications. Continued refinery reconstruction and upgrading are required to make the implementation of product quality improvements feasible.

Current petrol sulphur specifications in the Middle East region (Continued on p.3)
Interview with Mr Ubaidallah S. Alghamdi, President, Arabian Fuels Technology Centre

Mr Ubaidallah S. Alghamdi is president of the Arabian Fuels Technology Centre (AFTC), located in Dhahran, Kingdom of Saudi Arabia. He has been involved in petroleum product specification, quality and technology for 35 years. He is a graduate of King Fahd University of Petroleum & Minerals (KFUPM) in Dhahran and is currently working on an advanced degree in aeronautical science. He previously worked for the Saudi Arabian Oil Company (Saudi Aramco), where his responsibilities included automotive and aviation fuels operations, technical management, engineering and technical support services for refineries and distribution business line for multiple fuels products. He also chaired the Petroleum Products Specification Committee for many years.

Could you briefly tell us about your background and experience in the fuels area? And about AFTC Activities?

I am actively involved in many of the international petroleum products and lubricants technical organizations including ASTM D02, the CRC Aviation Fuels Committee, IATA Aviation Fuel Working Group, IASH-the International Association for Stability & Handling of Liquid Fuels, UK E.I. (IP) Energy Institute, and UK Aviation Fuels Committee. Other activities include automotive & aviation fuels specifications and quality assurance and control. Currently, I am a member-at-large of the ASTM International D02.90 Executive Sub-Committee. I have chaired the AACO (Arab Air Carriers Organization) Aviation Fuels Technical Committee (2001-2005).

What are the activities of the Arabian Fuels Technology Centre (AFTC)?

The AFTC was established in 2003, the year following my service with Saudi Aramco. The AFTC is recognized as a leading technical support services centre for applied fuels technology in the Middle East and the Arab world. Our vision is to be the foremost provider of optimum technical support services related to quality and safety of petroleum transportation fuels: gasoline, diesel and aviation fuels for civil and military aircraft. Our overall mission is to work with our partners to promote and sustain the awareness and importance of quality and safety of transportation fuels during their manufacture and blending, transportation, storage, handling and use. We strive to help ensure that clean, dry and on-specification fuels are delivered to end users.

The AFTC is a leader in providing information and technical support related to all transportation fuels, including gasoline, diesel fuel and aviation fuels. These supports involve:
• specifications and test methods technology,
• quality and system safety,
• storage and handling of petroleum products,
• technical inspection and auditing of fuels systems,
• ASTM D02 petroleum professional training courses, and
• meeting the highest international specification standards: ASTM D02, Def Stan and IATA Guidance Materials.

Several countries in the Middle East region continue to use leaded petrol. What plans do you see moving forward and how long do you believe it will take for these markets to change to unleaded petrol supplies?

I think in most of the Middle East region, countries have moved to unleaded gasoline, especially here in the GCC region, which is now 100% unleaded. The few countries in the Middle East that have not yet moved to fully unleaded gasoline are under great pressures from the public and media to accelerate their policy and strategy to implement unleaded gasoline as soon as possible. I think that the 2005 UN Environment Program Cairo Workshop, organised by the UNEP and ACFA, provided an excellent venue and great chance for information and technology exchange among the attendees and experts to help advance this implementation in several countries, such as Yemen and Syria. From my point of view, I think in few years time, the whole Middle East will be a lead-free region. If these countries choose the right octane ratings for their actual current and future vehicle pool requirements, they can get there before 2010!

Octane replacement and quality improvement to petrol supply will be necessary with leaded-additive removal. Do you expect oxygenates will be the replacement products of choice and what benefits do you see with this option?

I think the move to unleaded gasoline will provide several advantages for clean air and provisions for using clean vehicles also. Using catalytic converters in vehicles to reduce emissions is a major advantage in that regard. I expect oxygenates to help in accelerating the move to implement the unleaded gasoline concept by reducing the pressure on the refineries severity, helping in cleaner engine fuel combustions. If the economical price is right, then oxygenates will be the right choice for octane enhancement for years to come. This is especially so when they also boost gasoline production volume by the same percentage, for example, by adding 10% MTBE by volume, you boost the gasoline production volume by 10%.

The Middle East continues to experience strong economic growth, which has added demand for energy. What (Continued on p3)
Interview with Mr Ubaidallah S. Alghamdi,
President, Arabian Fuels Technology Centre

(continued from p2)  impact has the trend to discontinue fuel subsidies had on petrol and other fuel consumption?

This economic growth resulted in an increase of inflation that is hitting the public sector badly. In the near future, I do not see the trend to discontinue fuel subsidies. Our Great King Abdullah made the gasoline cost the lowest in the world to support the people in Saudi Arabia. We look forward to sustaining that trend in order to ease the impact of inflation rates. I think other countries in the Middle East deserve a similar policy.

Additional gasoline quality specifications are being implemented over the coming year in several countries, including lower sulphur content limits and maximum benzene content limits. Can you briefly summarize these changes and tell us if even stricter quality standards are being planned further in the future?

I think our area is unlikely to go ahead and impose stricter quality standards at this time. Producers are working to achieve the current international standards. I hope to see a wise move in our region to reduce the sulfur content to less than 10 -15 ppm in gasoline and road diesel fuel, get average benzene content to 1% or lower and lower aromatics content to less than 35 vol%. I would like to see our region move forward and continue to advance public health needs by accelerating the implementation of the clean fuels/clean vehicles concepts as soon as possible. With our current strong economic situations, these concepts must take high priority.

With greater emphasis on improved environmental and urban air quality, how do you see the use of cleaner fuels helping to meet these goals?

In my view, the use of “Cleaner Fuels and Cleaner Vehicles” is the main milestone for improving the environment and urban air quality. They should be on the top of the list with the highest priorities for implementation for the benefits of the public at large.

Middle East Fuel Quality - Improving, but Challenges Remain

(continued from p1)  are shown in the figure. Kuwait currently has a 500 ppm sulphur content limit for petrol, whereas Qatar and UAE have set petrol sulphur specifications at 100 ppm. With existing refinery configurations and the prevalence of MTBE blending in the region, modest amounts of petrol can currently be made in some Middle East countries with the quality corresponding to the Euro III-equivalent standards, even though it is not always specifically mandated.

Several other countries are moving toward implementation of lower petrol sulphur content along the lines of Euro III- and Euro IV-equivalent quality standards. Kuwait plans to be below 50 ppm by 2010. Qatar is moving to implement specifications similar to Euro IV standards by 2010. Syria is expected to be fully unleaded by 2010 and intends to achieve Euro IV-equivalent quality shortly after that time frame.

High sulphur content components in the petrol pool are untreated straight-run petrol/naphtha and FCC petrol (which represents limited regional feedstock to petrol). Pre-treating straight-run petrol can help lower sulphur content. Installation of isomerization and reforming capacity that requires pre-treatment of straight run petrol and naphtha, and installation of facilities to split and post-treat FCC petrol are necessary to lower average pool sulphur levels. Increased blending of low sulphur components can also serve to lower benzene and aromatics concentrations as well.

Although quality improvements in the region are progressing, further efforts and refinery enhancements are needed for substantial reductions in average sulphur content to be achieved and for quality specifications to become more aligned with other regions.

While there is currently no regional mandate for petrol specifications, the Gulf Standards Organization is cooperating with local standards authorities to encourage Euro III-equivalent standards for clean fuels by the end of decade. Further improvements in the region — lower sulphur, benzene and aromatics content — are projected to phase-in gradually through 2020–25. At its annual World Refining and Fuels Service, Hart Energy Consulting shared that they believe it will be necessary for the region to continue upgrading petrol quality in order to improve the deteriorating air quality in the major cities and maintain export capability to many parts of the world for any excess petrol volumes produced in the future from new export refinery projects.
The Asian Clean Fuels Association was a co-sponsor and session moderator at the Hart World Refining & Fuels Conference: Asia, held 6-8 November 2007 in Beijing. This broadly-represented conference focused on understanding the dynamics affecting Asian and Middle Eastern fuels industries. Presentations ranged from transportation and clean fuels, sustainability for markets, product demands and challenges, to development of future energy technologies and fuels. Roundtable discussions noted the continued importance of addressing air quality and climate change, coordinating efforts of countries within the regions, and the linkage between vehicle advances and fuel quality improvements. Some of the key presentations are summarized below.

Mr Yang Yuangi, deputy chief engineer and director of Science & Technology Development Program with SINOPEC, gave a keynote address on the “Challenges Faced by China’s Refining Industry and its Strategies.” His speech focused on clean transportation fuels as well as recent efforts and future plans for upgrading quality. Mr Yang indicated that Beijing will implement new fuel standards (DB11/238-2007) specifying a sulphur content of 50 ppm maximum starting 1 January 2008. He presented a company petrol quality survey from 2006, showing they are well within specifications for sulphur, aromatics and benzene. He noted that the company will continue to blend MTBE (methyl tertiary butyl ether) as part of their improved fuel quality strategy and it represents almost 3% by volume of SINOPEC’s petrol pool (see figure). Future challenges will include maintaining product quality while significantly expanding production to meet ever increasing demand.

Another keynote address was delivered by Mr Ashok S Krishna, vice president of technology with Chevron Global Downstream. His address was on the “Global Refining Sector: Challenges and Opportunities.” Mr Krishna stated that there is a “new energy equation” in which the era of easy oil is over. Global energy demand growth and supply constraints as well as geopolitical dynamics on energy security and environmental issues will challenge the industry. Mr Krishna indicated that the industry’s opportunities include process development and (Continued on p.5)
engineering advances, changes to the energy portfolio landscape (such as new types of fuels and vehicles), further revolution in information technology to help manage business and changing roles of people engaged in the industry.

Mr Clarence Woo, ACFA executive director, served as moderator for the panel session on “Refining Technology for Future Energy and Economic Growth.” This session included a presentation by Mr Steven-Yi Chang Han, business development manager with CDTech. Mr Han spoke about “Refining Technologies at Molecular Level for Profitable Production of Clean Fuels.” He stated that cleaner-burning petrol is a global trend being advanced through the Worldwide Fuel Charter and similar regional/country standards settings. He showed that for China, octane-barrel retention is crucial. He demonstrated the use of combined process technologies such as etherification units with isomerization processes to help reduce sulphur and olefins content while maintaining octane levels.

During the same session, Dr Anurag A Gupta, general manager of research & development with the Indian Oil Corporation Ltd, and Mr Sundip More, director with SGS India, both presented on programs in India to monitor and prevent fuel adulteration. This is an unfortunate problem that sometimes occurs in India and other countries and government initiatives as well as company measures are being coordinated to ensure product integrity and quality.

The last speaker of the session was Mr Chris Kuehler, FCC product development manager for Albemarle Catalysts Company. He spoke about “Comprehensive Sulfur Control in the FCC.” China’s refinery industry relies extensively on FCC technology for fuels production; one of the issues with sulphur reduction is the potential octane loss that can occur. Mr Kuehler showed how technology advances are helping achieve sulphur removal and yield losses.

Dr Maizar Rahman, commissioner for Pertamina Board and OPEC governor for Indonesia, spoke about “Fuel Production and Outlook on Asian Oil.” Asia is projected to account for 54% of the worldwide growth in oil demand through 2030. The ability to satisfy this growth will be important to economic performance and domestic development. As imports to the region expand, OPEC is expected to become the dominant supplier by 2025. Dr Rahman further noted that substantial regional refinery investment is going to be necessary to handle the crude processing to meet demands and highlighted plans by Pertamina for production and processing.

Mr Mengliang Li with the Committee for Vehicle Emission Control in China talked about “Chinese Fuel Strategy Based on Vehicle Emission Control.” He reviewed results of a petrol quality survey that showed substantial variation in product quality that contributes to higher vehicle emissions. This demonstrates the importance of considering the vehicle/engine and fuel together as a system to control emissions. Based on the survey and testing, Mr Li suggested better enforcement of quality standards, simplifying the variety of fuels offered, use of economic incentives to help encourage improved fuel quality and performance, and finally, continued strengthening of specifications to eventually align with world norms.

ACFA and UNEP-PCFV are planning a Gulf Cooperation Council (GCC) Policy Development Meeting on Clean Fuels and Vehicles in Bahrain on 12-13 March 2008. The UNEP-PCFV aims to assist developing countries to reduce vehicular air pollution through the promotion of clean fuels and vehicles.

If you are interested in participating in this important initiative, please contact ACFA by going to our website at www.acfa.org.sg
US CONGRESS PASSES NEW ENERGY LEGISLATION

Just two years after energy legislation was adopted, the US Congress passed a new energy bill that substantially increases the country’s Renewable Fuels Standard (RFS) and for the first time in nearly 25 years will require significant increase in vehicle fuel economy standards (known as CAFE). The US Senate accepted the energy bill only after controversial provisions were dropped that would have required 15% of electricity generation from renewable sources (wind, solar, etc.) and increased taxes on the oil and gas industries. The US House of Representatives approved the measure on 18 December, which the president is expected to sign into law.

The key provisions of the “Energy Independence and Security Act of 2007” include:

- increasing the RFS, starting in 2008 with a requirement for 9 billion gallons of renewable fuel, progressively increasing to 36 billion gallons by 2022 and requiring specific amounts of advanced biofuels, including biomass-based diesel and cellulosic biofuels, and
- increasing vehicle fuel economy standards (CAFE) to a fleet-wide requirement of 35 miles per gallon in 2020, allowing separate standards for passenger cars and light-duty vehicles.

BEIJING SET FOR 50 PPM SULPHUR FUELS BY JANUARY 2008

The Chinese government announced that 50 ppm sulphur fuels will be enforced in capital city Beijing starting 1 January 2008. Specifications are expected to be published shortly as the government and fuel producers complete pricing structures. Euro IV-equivalent emission standards will take effect starting January 2008 as well, though some fuel being delivered to Beijing is already meeting Euro IV-equivalent standards. The higher quality fuels will be important to help the city reduce air pollution concerns, especially with the upcoming Olympic Games this summer.

NEW ZEALAND INVITES PUBLIC COMMENT ON BIOFUELS BILL

Following introduction into the New Zealand Parliament and referral to the local government and environment committee, public comment is being sought on Bill No. 148-1. This bill would establish the Biofuels Sales Obligation (BSO) policy by adding Part 3A to the existing Energy (Fuels, Levies, and References) Act of 1989.

Under the bill, oil companies will be required to sell a minimum percentage of biofuels in transportation fuels based on the gross volumetric energy content of petrol and diesel in New Zealand. In effect, the government aims to implement the biofuels sales obligation starting in 2008, which is expected to comprise 3.4% of fuel sales by 2012. Public submissions are being accepted until 31 January 2008.

Upcoming Conferences & Events

- Asia Pacific Methanol & MTBE Conference
  3-5 March 2008
  Ho Chi Minh City

- GCC Clean Fuels & Vehicles Policy Meeting
  12-13 March 2008
  Bahrain

- 14th Annual Fuels & Lubes Asia Conference
  5-7 March 2008
  Seoul

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