The 16th Annual Technical Conference of the Gas Processors Association - GCC Chapter was successfully held on Wednesday May 7th, 2008 at the Doha Marriott Hotel under the patronage of H.E. Abdulla Bin Hamad Al-Attiyah, Deputy Premier and Minister of Energy & Industry, State of Qatar.

The theme for this year’s Conference was “Natural Gas is the Fuel of Choice for the Future” where ten technical papers were presented from all over the GCC. There were four papers from Saudi Aramco, two papers from Qatar Petroleum, in addition, papers were also presented by GPA-USA, Banagas and Bapco from Bahrain. The papers covered a wide range of topics related to the gas processing industry highlighting the latest developments and available technologies in this important industrial sector in the region.

The opening session of the conference included a speech from the Chairman of the Chapter, Mr. Saad A. Turaiki, Executive Director of Southern Area Gas Operations-Saudi Aramco. The keynote speech of the conference was provided by Mr. Eid Mubarak Al-Muhannadi, Operations Manager -Gas Operations, of Qatar Petroleum.

Environmental Challenges in Gas Processing

Third Technical Specialized Session

The GPA-GCC Chapter successfully held its 3rd Technical Specialized Session under the title “Environmental Challenges in Gas Processing”. More than 90 delegates from all over the GCC attended the seminar which was held on November 5th, 2008 at the InterContinental Doha Hotel in the State of Qatar.

Five technical papers were presented covering a wide range of topics on environment issues and its control measures in gas processing industry. The session was commenced with an opening remarks by the Chapter Chairman Mr. Turaiki followed by the technical papers:

1. The Potential of Applying Carbon Capture and Storage Technology in the Petroleum Industry of Qatar by Dr. Joe Asamoa from Qatar Petroleum.

2. Emission Reduction Efforts at UGP “Near-Zero Flaring Strategy” by Mr. Hijji A. Al-Alawi from Saudi Aramco.

3. CDM Case Study – Lessons Learned from Al-Shaheen (ALS) Oil Field, Gas Recovery and Utilization Project by Mr. Adnan Fahad Al-Ramzani from Qatar Petroleum.

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Environmental Challenges in Gas Processing (from Page 1)

5. Industries Flaring Control by Mr. Fahad Al-Khaldi from Saudi Aramco.

The papers touched on subjects of high interest to the audience which provoked good interaction between presenters and participants, sharing their knowledge and experience.

The success of the third specialized session proved the importance of the selected subjects and the need to continue with these specialized sessions focusing on areas of high and common interest to the GPA-GCC Chapter member companies.

These successful achievements demonstrated the valuable and effective efforts of the GPA-GCC Chapter in expanding its activities to better serve the oil and gas companies of the region by providing the platform for the professionals to share the knowledge, experience and industry best practices.
At the opening session of the 16th Annual Technical Conference held on Wednesday May 7th 2008 at Doha Marriott Hotel-Qatar, the Chapter’s Chairman, Mr. Saad A. Turaiki (Executive Director of Southern Area Gas Operation-Saudi Aramco) presented awards to Banagas representatives Dr. Sh. Mohammed Bin Khalifa Al-Khalifa, Mr. Ahmed Yousuf Majid and Mr. Mohammed Burashid in recognition of their support to the chapter over the years.

Also, an award was presented to Mr. Fahad Abdulla Al-Subaiey (Manager Gas Processing-QP) for his support and cooperation with the GPA-GCC Chapter to make the 2008 Annual Conference a success.

In his speech, Mr. Saad said: “In June 1992 Vincent Doyle of CCC initiated the idea of forming a GCC chapter for the GPA. He contacted various Oil & Gas companies in the Gulf and called for an introductory meeting in November 1992 in Bahrain. Mark Sutton, GPA President and other guests were available in this introductory meeting to give background and information about GPA. In addition to the main Oil & Gas companies in Bahrain other major Oil & Gas companies in the Gulf e.g. Saudi Aramco, ADCO and BP-Sharjah were also present. In April 1993 the first organization meeting of GPA-GCC Chapter was held. During this meeting the official formation of the chapter was announced and the first Executive Board was elected.

Banagas was a key supporter of this organization from day one. Banagas representative was elected for the position of Secretary-Treasurer. The tremendous support for the Chapter’s activities by allocating their resources to the fullest extent was always noticeable. In particular their Public Relations department assistance in arranging for brochures, gifts, plaques, banners, etc. is appreciated. Banagas also devote a team of their employees to help in conference registrations activities. This support has been taken up even if the conference was not in Bahrain. In addition Banagas handles the Chapters accounts and any other administrative issues.

The key players in Banagas who devoted a lot of their time for the Chapter’s activities are: Dr. Sh. Mohammed Bin Khalifa Al-Khalifa (General Manager) Mr. Ahmed Yousuf Majid (Deputy GM-Administration and Finance) and Mr. Mohammed Ahmed Burashid (Deputy GM-Production)”. 

Thank You!
This year the GPA Annual Convention was held in Grapevine, Texas during March 2-5, 2008 with a theme of “Shaping our Role in Natural Gas Industry”.

Mr. Turaiki, Chapter’s Chairman & Mr. Burashid, GPA International Committee member attended and represented the GPA-GCC Chapter.

They have attended the International delegates breakfast where Mr. Turaiki presented a paper with the title of “Opportunities and Challenges for Gas in the Middle East”. He has also presented a short update on the main activities of the GPA GCC Chapter. The paper was well received by all.

They have also attended the International Planning meeting. The meeting was attended by representatives from all GPA international organization. (Association of Venezuela Gas Processors, Canadian Gas Processors, European GPA, USA-GPA, GPA-Gulf Corporation Council Chapter). The main objective is to strengthen the bond and interaction between GPA Organizations by sharing information and promoting networking.

The main issues discussed were:

1. ANNUAL BUDGET FOR SHARED ACTIVITIES:

It was decided that each organization shall cover their representatives’ expenses for any traveling and attending meetings.

2. PARTICIPATION IN OTHER TECHNICAL CONFERENCES:

All GPA organizations shall encourage/recommend best speakers to present their papers on other Chapters Conferences and sponsor their expenses if required.

3. PUBLICITY:

Although that information is available in the website, it is recommended to communicate through emails with each other to publicize chapter’s activities.

It was also recommended to include other Chapter events in each GPA Organization newspaper / magazine.

4. MEETINGS:

The committee shall meet annually at the USA GPA annual convention.

Mr. Burashid received a Recognition Award from The GPA President Mr. Gene Thomas during the GPA membership meeting and President’s luncheon for being a consistent link between the GPA USA and GPA GCC Chapter for more than 10 years. He continues to serve on the chapter’s Technical Committee since 1998. Additionally, he has been invaluable in providing unselfish assistance in GPA’s globalization efforts, including the international Strategic Planning.
A key role of the Gas Processors Association (GPA) is to collect the basic data needed for the safe, efficient, and environmentally-sound design of gas processing and treating facilities. GPA is a non-profit industry association with more than 100 international member companies and regional affiliations in Canada, South America, Europe, and the Middle East.

Since its inception in 1921, GPA has issued 191 Research Reports and 29 Technical publications on data for the industry. Volunteers from the industry steward the work. They ensure that the work is of value to the membership and that the data are of high quality. Early reports included data for light hydrocarbons at cryogenic conditions. They were used in the design of expander plants and LNG facilities. More recent reports focused on the behavior of sour gases in pipelines and treating systems. Examples of current research include mercury distribution in gas plants, the effects on salts on hydrate inhibitors, and the transport properties of rich glycol.

The bulk of GPA research data are used to validate the property models in process simulation packages. Another important way its value is delivered is by incorporating these data into a publication of its companion organization, the Gas Processors Suppliers Association (GPSA). GPSA publishes the GPSA Engineering Databook, an industry-recognized resource for design and operating data on all facets of natural gas handling and treating. The Databook is organized into Sections that range from NGL recovery to Hydrocarbon Treating to Product Specifications.

This paper has provided an overview of the GPA, highlight examples where its data has added value, and showed how the GPSA Databook can be used in the preliminary design of gas treating facilities.

In conclusion, the GPA research program has been a successful model for leveraged research and has helped provide the basic data needed to increase the efficiency and environmental performance of gas processing facilities. The key has been the combination of stewardship by dedicated professionals on the research committees and high quality laboratories. Data from the program has been used in all facets of gas processing and treating design and operation with an estimated value >10x than its $14MM investment. The value has been delivered through technical reports, incorporation into design tools, and inclusion in the GPSA Databook.

De-Bottlenecking of NGL-2 Stripping Unit through Process Troubleshooting

It has been observed that there exists a high pressure drop of (3.6 barg) in feed gas condensers (E-2002 A/B) against the design/simulation pressure drop of 1.6 barg (including glycol flow) at feed rate of 4000 T/Day (150 MMSCFD). Due to this limitation, though the unit is designed for processing 5280 T/D (198 MMSCFD), QP was constrained to process only 4000 T/day OFFSHORE gas at steady state conditions. Due to the above mentioned problem OFF RAG had to be flared at offshore platform. The operating procedure of platform was modified as follows to maintain crude oil production to meet target. "If offshore gas export gas availability exceeds 160 MMSCFD, PS-2 will flare the gas at their end to meet oil production target, though this is not the preferred option for offshore operations due to the new enforcement of Supreme Council Environmental regulations".

The issue was studied by a consultant thoroughly by taking out the glycol lancers from the chiller to outside and checked the flow pattern by using water spray. After the study the consultant gave following suggestions /findings for the higher pressure drop in the chiller.

1) Hydrate formation in the tubes.
2) Fouling of the exchanger.
3) Poor Performance of the refrigeration system.

In the following months the work was concluded as follows to maintain crude oil production to meet target.

- Due to the reduction of pressure drop in the chiller, the processing capacity of the unit has been increased and reduced flaring at OFFSHORE without any hardware modifications. In conclusion, the main savings are reduction in flaring at OFFSHORE due to capacity limitation (86 Million QR per year).
Process Selection and Economic Evaluation for an Integrated NGL Recovery/NRU Plant

Presently, a sweet gas is dew-point controlled at a gas plant in Saudi Arabia to meet the sales gas quality requirement. It was proposed to recover the NGL product while meeting the required higher heating value (HHV) of the sales gas.

This study has evaluated the extraction of valuable NGL product from Khuff HP sweet gas at Shedgum gas plant in Saudi Arabia. The installation of proposed NGL recovery facility results in lowering of the higher heating value of Khuff sweet gas below 930 Btu/Scf. To maintain the required heating value spec of the sales gas, the proposed NGL facility will be integrated with a nitrogen rejection process, integration of the NGL recovery facility with NRU, and the impact of NGL recovery level and sales gas shrinkage on the economics of the proposed facilities. The sensitivity analysis of the NGL product and sales gas corporate pricing forecast on the NPV of the project has been analyzed using a Monte-Carlo risk simulator.

NGL/LPG Recovery and Technology Selection

Monetizing associated gas or offgas from refineries and petrochemical plants by recovering heavy hydrocarbon liquids and providing “cleaner” natural gas for downstream usage is becoming ever more prevalent. Foster Wheeler has been working for some time with BANAGAS to provide support to revamp its LPG facilities in Bahrain by making the best use of the existing facilities, augmented with new technological solutions to improve NGL/LPG recovery. The planned expansion of BANAGAS’ facilities will allow the plant to increase its gas throughput, which is planned to reach 530 MMSCFD by 2020.

The BANAGAS LPG facilities currently process 300 MMSCFD of gas in two gas/condensate reception plants with associated LPG recovery, product treatment and LPG/naphtha export facilities, located at the Bahrain oil field, south of Awali, and refrigerated product storage and loading areas at Sitra, 15 kms south of Manama, the capital of Bahrain. The BANAGAS LPG facilities are projected to accommodate a planned increase in throughput from the current 300 MMSCFD to 530 MMSCFD (including 500 MMSCFD associated gas and 30 MMSCFD refinery offgas (ROG), rich in LPG liquids) by 2020. Currently a lack of gas processing capacity is causing upstream production cut-backs as non-emergency flaring is prohibited.

In this paper an overview of the project was explained in the context of the oil and gas production plans for Bahrain. It discussed how models were developed based upon this to select the best solution for Banagas and also, generically, how such an approach could be used for any facility with NGL recovery.

In summary, the techno/economic assessment process for NGL processing facilities can be long and arduous. In this paper, a methodology for NGL/LPG technology screening and plant design has been outlined, which aims to align the evaluation criteria with the owner’s objectives, and to streamline and quantify all evaluation criteria. Two BANAGAS development options were evaluated in the case study to demonstrate how the methodology developed could lead to the optimum solution. The information shared in this paper could potentially be applied to similar NGL/LPG projects.
LPG-rich off gas produced from various process units in the Refinery of the Bahrain Petroleum Company (BAPCO) has been used as fuel gas in the fired heaters, since the Refinery was commissioned in mid 1930’s. Around 1999, the idea of recovering the potential liquid LPG from the various streams was raised by the Refinery Process Engineers. Several scenarios and options were studied by both BAPCO and engineering consultants. The study revealed that the LPG recovery and storage were very limited in the Refinery and to install complete LPG recovery facilities including refrigerated storage system would be very costly. This prompted the idea of utilizing the nearby gas processing facilities of Bahrain National Gas Company (BANAGAS). The two companies jointly studied the feasibility of the concept and concluded that the project had significant economic benefits. A 15-kilometer long pipe line was built to route the LPG-rich off gas from BAPCO to BANAGAS. In parallel, an engineering consultant was commissioned to study the optimum scheme of increasing BANAGAS’s capacity in order to process all off gas from BAPCO.

The project was implemented in three phases based on gas being available in three steps. Initially, 7 millions standard cubic feet per day (MMSCFD) off gas from the existing process units were exported to BANAGAS to recover the liquid LPG in May 2005. The export rate was increased to 13 MMSCFD after the commissioning of the Low Sulphur Diesel Production Project (LSDP) in July 2007. The export rate will be further increased to 25 MMSCFD when the Refinery Gas Desulphurization Project is commissioned by the end of 2008.

After the implementation of the third phase the net revenue from the project would approximately be US$ 100 million per year. All of this revenue will be a contribution to the Bahrain national economy. The project was implemented with minimal capital investment.

This project has demonstrated how basic and simple engineering ideas can generate significant revenues.
A Success Story: Extending Molecular Sieve Life by Double

The Uthmaniyah Gas Plant (UGP) has achieved 100% additional service life of the gas molecular sieve desiccants. This new record in gas desiccants service life was a result of modification in the bed configuration and the regeneration process. Careful data monitoring and online sampling were also used to gain confidence to continue using the desiccant despite the vendor’s advice of changing it. The paper has focused on the performance of the subject desiccant over the 7 years in the gas dehydrator system at the UGP Liquid Recovery Unit. Type of desiccant, historical data and results, loading plan, and the factors helped in increasing the desiccant service life were discussed.

The performance of the desiccant depends upon two main factors: the water adsorption capacity and the pressure drop. This paper has then explained the factors that led to the extension of the service life of the desiccant. The factors are the loading plan, two step regeneration, risk taking, close monitoring, and finally online sample taking.

Monetizing the Environmental Benefits of Flare-Reduction Technologies

Efforts to reduce/eliminate hydrocarbon flaring face numerous obstacles, including lack of awareness, high costs associated with implementing technological solutions, and concerns about financial viability of such investments. This paper has discussed a financial mechanism that can help companies overcome these obstacles by monetizing the environmental benefits associated with flare reduction technologies and other investments that reduce emissions of greenhouse gases (GHGs). The Kyoto Protocol, the treaty to combat global warming, has created a large and growing market for GHG emission offsets. Companies in developing countries can qualify certain investments with the United Nations to earn carbon allowance credits called Certified Emission Reductions (CERs). These credits can be sold by project developers to organisations in industrialised countries to help them meet their GHG reduction targets. For oil & gas companies, these credits offer a strong financial incentive to invest in technologies that reduce emissions of GHGs. In addition to combustion in flares and incinerators, oil and gas operations present numerous opportunities to reduce GHG emissions, including from the following: Physical or chemical process emissions such as from gas processing, oil refining, and petrochemical manufacture; fugitive losses from equipment leaks (e.g., gas pipeline transmission, valves); production of steam heat or electricity; and production of work by engines and turbines (e.g., drive pumps/compressors). This paper has discussed also how oil & gas companies can monetize the environmental value of their investments to reduce emission of GHGs and has illustrated the process using a case study in Qatar.
BEST PAPER AWARD 2007

The GPA – GCC Chapter “Best Paper Award” is given to recognize outstanding technical presentations which are delivered during the Annual Technical Conferences.

The best paper of the 15th Technical Conference held on 9th MAY 2007 in Bahrain, as ranked by the audience is:

_Saudi Aramco Eliminates Claus Catalyst Deactivation Caused by Aromatics Using Activated Carbon._

**Authors:**
Mr. Pierre P. Crevier; Mr. Abdulhadi M. Adab; Mr. Hassan M. BaAqeel; Mr. Ibrahim A. Hummam & Mr. Adel S. Misfer, Saudi Aramco, Saudi Arabia.

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Site Visit to OryxGTL in Ras Laffan Industrial City

As part of the 16th Technical Conference program, the organizing committee arranged a site visit to OryxGTL complex in Ras Laffan Industrial City in Qatar on Thursday May 8th, 2008.

ORYX GTL is a joint venture between Qatar Petroleum (51%) and Sasol of South Africa (49%). The first of a series of planned GTL production facilities that will deliver on the declared ambition of the State of Qatar to become the GTL capital of the world. It was established with the directive to develop, construct and operate the world’s first commercial-scale GTL plant in Qatar for converting natural gas into an ultralow emissions GTL diesel and other high-quality GTL hydrocarbons.

Developed at a total cost of about $1billion, Oryx GTL has a nominal capacity of 34,000 barrels per day and is producing about eight-million barrels a year of GTL diesel.
The GPA GCC Chapter in collaboration with John M. Campbell & Company from USA has organized a training course on Technology and the LNG Chain from 4-6 May 2008 in Doha. The course was well received and attended by a group of the member companies engineers.

The Board Members of the GPA GCC Chapter wish to extend their thanks and appreciation to Qatar Petroleum (QP) for sponsoring the 16th Technical Conference in Doha.

The vital role of nonmetallic composites in existing plant applications

Oil, gas and petrochemical industries have critical process equipment that experienced deterioration to varying extent due to several factors. The options widely utilized to address these concerns include conventional repair, replacement or upgrade. However, these options are often expensive and also require longer down time of the critical equipment for repair. On the other hand, nonmetallic composites can be utilized as the most cost effective option to restore the integrity within a short duration. This option not only helps to maximize the nonmetallic enrichment within the operating plants but at the same time also promotes opportunities for the creation of additional petrochemical industries.

This paper has focused on the experience in Uthmaniyah Gas Plant of Saudi Aramco, where nonmetallic composites have been used to restore the integrity of certain critical components. The components discussed in this paper included cooling water system (CWS) and critical hydrocarbon pipelines. The CWS is critical for almost all process industries. The corrosivity of water and deterioration of materials in CWS is often complex due to variation in the water chemistry and other factors. The core elements of a cooling water system such as cooling tower and associated heat exchanger that experienced deterioration were upgraded with nonmetallic composites to avoid recurrence and achieve longer life cycle.

In addition, each operating plant has numerous pipelines for transporting the feed and as well as the end-products. Each pipeline has transition points (above/below ground) and their external protection in asphalted/concreted areas remained a challenging task. Industries experienced significant external corrosion due to shielding and abrasion at these transition points. Nonmetallic composites installed as field trails in this application functioned satisfactorily and enhanced the external protection.

This paper has outlined also the practical experiences in material degradation aspect in a gas processing plant on the referenced systems and how nonmetallic composites can play a vital role in corrosion protection and life extension of core components.

Corrosion under insulation (CUI) at Qatar Petroleum NGL Plants

Qatar Petroleum (QP) has been operating two NGL Plants at its Mesaieed facility for more than 25 years. The plants were originally constructed to the specification of one of the International Oil Majors. To limit corrosion under insulation the prevailing best technology at the time was a coat of primer. It was apparent for a long time that the plants were suffering corrosion problems and were at risk of the insidious corrosion under insulation (CUI); problematic because it occurs “out of sight and therefore out of mind”. A screening programme was set up using “windows” let into the insulation. This was not successful in locating CUI problems. New technologies, with the promise of locating CUI without removing the insulation, were trialed. These were not satisfactory either. Finally, the decision was taken to progressively replace all the insulation and reinstate after application of a paint coating for prevention of CUI. The refurbishment works were carried out over three consecutive shutdown periods. Corroded pipelines and static equipment was repaired or replaced as necessary. This paper has discussed the failed screening methods for CUI and presents some of the findings from the refurbishment works.

This paper has discussed also the approaches to tackling the problems of CUI at the two older NGL processing plants operated by Qatar Petroleum (QP), Gas Operations, at the Mesaieed Facility. The corrosion mechanism was outlined together with the normal method for prevention. A few typical CUI experiences at QP are presented and the paper then discussed the rationale used to identify which assets are at most risk, the various inspection techniques used to identify CUI and the decision to essentially replace all the insulation and renew the protective coatings on the piping and equipment to prevent CUI.
Our Mission

To serve as a Forum for the exchange of ideas, technology, and information that will benefit both the upstream and downstream Gas Processing industries, and their Suppliers, with a view toward improving Plant Operations, and Health, Safety and Environmental performance in the GCC countries.

Our Vision

To be the focal point and the main source of information on the Gas Processing industry in the Gulf Cooperation Council Countries.

Membership

Membership in the GPA-GCC Chapter is open to GCC representatives of:

- Companies owning and or processing gas. These shall be classified as "Members".
- GCC based organisations involved in the supply and/or services to the gas industry. These shall be classified as "Associate Members" and are entitled to vote on all matters in the Organisation Annual Meeting except for the Executive Committee elections.

All membership applications shall be considered and approved by the Executive Committee.

Executive Committee

Chairman  Mr. Saad Turaiki  SAUDI ARAMCO
Vice-Chairman  Mr. Abdullah Al-Ajmi  KNPC
Secretary-Treasurer  Mr. Ahmed Y. Majid  BANAGAS
Member  Mr. Khalid Taher  BAPCO
Member  Mr. Abdulla Musabeh  DUGAS
Member  Mr. Yusuf Abdulla Yusuf  GPIC
Member  Mr. Fahad Al-Subaiey  QP
Member  Mr. Samir Khoury  CCC
Member  Mr. Goetz Kassing  LINDE

Technical Committee

Mr. Mohammad A. Al-Abdulmoghi  SAUDI ARAMCO
Mr. Kefah A. Al-Faddagh  SAUDI ARAMCO
Mr. Adel Al Jabri  ADCO
Mr. Abdulla Musabeh  DUGAS
Mr. Ahmed Khaja  QP
Mr. Mohammed Bu-Rashid  BANAGAS
Mr. Khalid Taher  BAPCO
Mr. Yusuf Abdulla Yusuf  GPIC
Mr. Michael Scott  RASGAS
Mr. Abdullah Al-Ajmi  KNPC

For more information please contact: Abdulla Al-Ansari. Executive Officer
Email: abdulla@gpa-gcc-chapter.org • Website: www.gpa-gcc-chapter.org
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Media Coverage of 16th Technical Conference & Environmental Challenges Seminar