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ANNUAL NEWSLETTER OF THE GAS PROCESSORS ASSOCIATION - GULF CO-OPERATION COUNCIL CHAPTER

www.gpa-gcc-chapter.org

Message Of New Chairman



Saad A. Turaiki
Chapter's Chairman

I would like to thank all members for their trust in selecting me as the chairman of the Gas Processors Association GCC Chapter. I would like to take this opportunity to extend my sincere thanks to Dr. Sh. Mohammed Bin Khalifa Al-Khalifa, the past chairman, for his strong leadership and great effort in supporting the GPA-GCC Chapter for the past couple of years. Lastly, I would like to thank the Executive Committee, the Technical

Committee and all the members that volunteered a considerable amount of their time, which significantly contributed to the success of all GPA-GCC activities.

In looking forward, our Chapter will be working towards strengthening its relationship with the GPA Chapters to increase their support to the GCC Chapter and promote more involvement in our local activities. Our aim is to encourage more collaboration between members of our Chapter with all the other GPA Chapters worldwide. We will also work on encouraging more active participation of our member companies and their employees into GPA -GCC activities.

The GPA-GCC Chapter will aim to enhance its communication with the member companies and employees in order to solicit more participation into the Chapter's activities and events. The main objective of this step is to bring the employees of member companies closer together to promote knowledge sharing and exposure to the latest technologies in the gas processing industry, coupled with improving networking between members, and promoting GPA to a wider gas processing audience, all aimed at strengthening the GPA Chapter in the GCC countries. (Continued on Page 2)

Biography

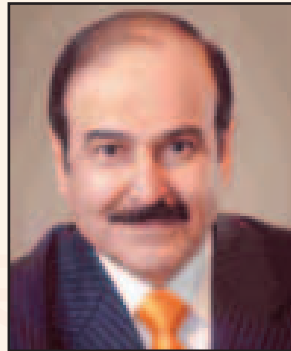
Saad A. Turaiki is the executive director of Southern Area Gas Operation in Saudi Aramco. Southern Area Gas Operation operates all the gas plants south of Abqaiq and produces sales gas, condensate, NGL and molten sulfur.

Saad graduated from King Fahad University of Petroleum and Minerals in Dhahran with a B.Sc in Chemical Engineering (College of Engineering Science) in 1975. He has over 30 years of oil and gas experience in both the upstream and downstream sectors. He worked in various organizations in the company such as Production Engineering, Drilling Engineering, Reservoir Engineering, and Gas and Oil Plant Operation Onshore and Offshore. He attended an executive program in Cornell University in 1994.

Saad serves on the Editorial Committee of the Saudi Aramco Journal of Technology and is a member of the International Society of Petroleum Engineers and a director in the SPE local Saudi section. He served in many international conference program committees and was the program chairman of the Middle East Oil Show (MEOS) in 2001 in Bahrain.

15th Technical Conference in Bahrain

Opening Remarks by Dr. Sh. Mohammed Al-Khalifa



H.E. Dr. Abdul Hussain bin Ali Mirza
Minister of Oil and Gas Affairs,
and Chairman of the National Oil and Gas Authority



Dr. Sh. Mohammed Bin Khalifa Al-Khalifa
Former Chapter's Chairman

On behalf of the Executive Committee of the GCC Chapter of the Gas Processors Association, I am delighted to welcome you again to the Kingdom of Bahrain for our 15th Technical Conference.

I would like to extend our thanks and appreciation to H.E. Dr. Abdul Hussain bin Ali Mirza, Minister of Oil and Gas Affairs, and Chairman of the National Oil and Gas Authority, for accepting our invitation to place this conference under his patronage and to be our distinguished keynote speaker.

I am very pleased to report that the Chapter continues to grow with even more attendees at our conferences, a greater level of services provided and an increase in the informal networking between members and participants attending these technical meetings.

We have continued to cooperate and work with the Gas Processors Association of the USA and other international chapters. We are proud to be an affiliated member of the GPA USA, which as a professional organisation is now 86 years old, having started in 1921 with its mission to serve the needs of its members companies and their personnel. (Continued on Page 2)

The Second Specialized Technical Seminar



The GPA-GCC Chapter has successfully held its 2nd Specialized Technical Session which was under the title "Corrosion Management in Gas Processing Facilities". More than 90 delegates attended the session which was held on November 28, 2007 in the Kingdom of Bahrain. (Continued on Page 7)

Message Of New Chairman (from Page 1)

The second specialized technical seminar will be held in Bahrain on November 28 with the theme of "Corrosion Management in Gas Processing Facilities". We are looking forward to making this event a true success by active participation by all members from all the GCC countries, in addition to inviting reputable commercial companies and consultants to the meeting to share with us the latest technologies in gas processing.

The 16th Annual Technical Conference will be held in Doha, Qatar on May 7, 2008. I would like to encourage our member to participate in this important event. I look forward to seeing you all there.

Saad A. Turaiki

15th Technical Conference in Bahrain (from Page 1)

These needs include the development and maintenance of industry standards, the generation and dissemination of technical knowledge while providing a forum for the interchange of technology and developments in the gas sector.

We, in the GPA-GCC Chapter, are proud to be one of four international chapters, the others being Canada, Venezuela and Europe, while a fifth chapter covering the Asia Pacific region is currently being developed.

Since its inauguration in the Kingdom of Bahrain on November 1993, hosted by Banagas, the Gulf Cooperation Council - GPA-GCC Chapter has successfully run 14 technical conferences.

I am very pleased to report that last year's conference held in Al Khobar - Saudi Arabia - was very successful. It was well attended, the papers presented provided considerable insight into the latest issues and the event was well organised. Thanks and appreciation goes to Saudi Aramco for sponsoring the event and also for offering all the assistance necessary to make last year's conference such a successful and special occasion.

Special thanks also goes to them for sponsoring the specialized technical session on "Zero Flaring" which was held on 29th November 2006.

I would also like to take this opportunity to extend our thanks and appreciation to the Bahrain National Gas Company (Banagas), the Bahrain Petroleum Company (Bapco) and Gulf Petrochemical Industries Company (GPIC) for sponsoring this conference.

Ladies and Gentlemen,

Today's event would have not been possible without the hard work and dedication of many individuals. I would like to thank all members of the technical and organizing committees of this conference for the tremendous work they have put in and all the speakers and the session chairmen for sharing with us their experience and knowledge.

Finally, thank you all for participating. I wish you a very successful and enjoyable conference.

Conference Papers

Liquid Distributors Failure in Packed Absorber Column

BANAGAS operates LPG plant facilities to recover LPG products and Naphtha from oil wells associated gas, Arab gas, and LPG rich Refinery Off Gas (ROG).

The two process trains are identical and use refrigerated lean oil system to recover LPG products & Naphtha from the feed gas. Naphtha and butane recovery is 100 %, whereas propane recovery is around 82 %, the remaining C3 is lost with residue gas.

Banagas has faced with flooding in the absorber column. The absorber is a packed column with two layers of Koch random packing (No.2 KOCH K-packing) made of Aluminum.

The column is designed to process 110 MMSCFD of feed gas with lean oil circulation rate of 250 BPH, however due to changes in gas quantity and quality it is being operated 30 % above its design without any problem.

Noticed sharp drop in the absorber column bottom level and an increase in the level in the accumulator connected to the top of the column. The column top packing differential pressure has increased from 1 inches of H₂O to 6 inches of H₂O. Propane recovery was dropped below 60% from 82 %. Gamma rays technique was used to pinpoint the area of flooding.

This paper addressed the possible causes of flooding and also the method used to resolve the problem.



Mr. Khalid Noor, BANAGAS, Bahrain

Ethane Supply And Demand, Past And Future Scenario In Kuwait



Mr. Kanagia Sabapathi & Mr. Nawaf A. Al-Sharhan, MAA Refinery, KNPC, Kuwait

As part of the Kuwait Gas utilization project, three LPG trains with refrigerated lean oil technology were built in 1979. It was designed to recover 55% of ethane in the feed and economically attractive technology was not available at that time to increase the ethane recovery. During late eighties PIC proposed to install cracker, based on the available ethane from the trains. However, due to political uncertainties, the Project was delayed and implemented as EQUATE in 1996. This first cracker was consuming most of the ethane produced in the trains.

Kuwait doesn't have natural gas production and its entire gas production is due to associated gas generated during crude production. Because of this ethane production was varying and is not sufficient to sustain Equate throughput during low feed. Normally, two of the three LPG trains are in operation and ethane produced from de-ethaniser overhead is being supplied to EQUATE. During 1998, due to KOC Booster station failure Gas plant feed was restricted to 700 MMSCFD. This had reduced the ethane production considerably. Equate could not be operated at its design capacity. Hence studies were carried out and it was concluded that ethane recovery can be increased by changing the metallurgy of absorber system.

Initial simulation study has indicated that enhancing Ethane recovery can be achieved by retuning the following key process parameters with the current process scheme of the Gas Plant, i.e., System temperature decrease, System pressure increase and absorbent flow rate Increase. Finally it was concluded that decreasing the temperature would be more attractive. It was

also found that ethane production can be increased by around 3.54 MMSCFD for one train operation, by decreasing the absorber feed temperature from -29°C to -35°C . In order to achieve the same, only a section of piping was to be changed to LTCS along with the related pump. Accordingly, Ethane maximization project was implemented resulting in increased ethane production.

However, still about 40 ~45% ethane was found to be not recovered. Hence, PIC and KNPC planned to recover the same and utilize it by constructing a new cracker (Olefin-II, OL2K). The proposed new Ethane Recovery Plant is designed to process 930 MMSCFD absorber overhead gas and 210 MMSCFD of stripper overhead gas from three existing LPG trains. The new ethane recovery plant shall achieve a high level of ethane recovery (approximately 96%). The ethane recovered forms the feedstock for a new petrochemical complex known as Olefins II. Estimated cost of about 118 MM KD of Ethane recovery unit i . olefin-ii (1 billion \$) project is also under execution.

Further, associated gas production is expected to be increased in future due to higher crude production and new gas wells are being explored. Accordingly KNPC is planning to install an additional train (fourth LPG train), which is designed to recover about 80 % ethane. Therefore, PIC is planning to look into feasibility of installing a third cracker complex in Kuwait. With this ethane supply and demand will match and precious ethane will not be burnt as fuel gas.

Saudi Aramco Eliminates Claus Catalyst Deactivation Caused by Aromatics Using Activated Carbon



Mr. Pierre P. Crevier, Saudi Aramco, Saudi Arabia

Saudi Aramco, like other operators with lean feed acid gas containing benzene, toluene and xylene (BTX) has dealt for years with chronic Claus catalyst deactivation, low sulphur recovery and frequent shutdowns to replace catalyst. After completing an exhaustive process selection study to identify the most cost effective solution to the problem, the company proceeded with installation of regenerable activated carbon beds upstream of the sulphur recovery units (SRUs) to remove aromatics contaminants before they reach the converter beds.

Saudi Aramco completed construction of seven BTX removal units to treat acid feeding downstream sulphur plants in December 2005. Commissioning took place in the spring of 2006. This paper discussed design issues, start-up and commissioning experience for the units, their performance and impact on the downstream Claus catalyst.

In brief, catalyst deactivation has been eliminated. This has set the foundation to allow Aramco to revamp the units to achieve higher recovery, which would not have been possible until catalyst deactivation had been resolved.

Reduce Gas Emission by Tracing of Energy Lost Due to Improper Matching of Cold-Hot Streams in Heat Exchangers

One of the challenges in designing heat exchangers for a power plant is selecting the cold and hot streams, this process usually goes through trial and error method between the different alternatives available. A lot of factors contribute to the optimum design and the main goal for the designer in such a process is to have minimum driving force to meet the required heat duty of the concerned heat exchanger that is because of the complexity of thermodynamic laws and the factors involved.

Falling in improper match trap will cause energy loss within the heat exchanger net works. The loss calculated in some plants reach to a figure up to 25% - 60% and this loss will reflect on high fuel consumption.

Recently a new technique appears to be an efficient tool to locate such a problem not only for a newly designed plants but also for modifications done to the existing plants. Pinch technology is a sensitive and accurate technique to find improper matches between hot and cold streams in heat exchangers or more often the location of heat exchanger itself in the plant.

Pinch technique converts the complex thermodynamic Laws to simple understandable data which give no-energy conservative expertise in decision making level to take the decision.



Mr. Mubarak Al-Kawari, Sitra Power & Water Plant, Bahrain

This paper presented a state of the-art technique about how to apply the pinch technique and examples of case studies done on recognized chemical or power organizations where this useful tool was tested.

Process Safety Management (PSM) Implementation

Since the introduction of the Occupational Safety and Health Administration's Legislation OSHA 1910.119 the Company has launched a program to implement all the elements of Process Safety Management (PSM).

This paper described the Company's experience in implementing the PSM system. This includes the initial evaluation of existing management systems that satisfied the requirements of PSM. This evaluation established which systems were already in place before the introduction of PSM and which new systems needed to be developed.

Two different approaches were followed in developing the PSM elements. The first was to form a Task- force, with members chosen from the different Company departments concerned. The other was to appoint a "champion" for each PSM element.

A PSM awareness campaign was launched as part of the implementation plan. The campaign included development of educational materials, training presentations as well as posters illustrating the various elements.

The company developed and implemented a Management of Change (MOC) procedure. This paper included some lessons learned during the it's development and implementation stages.

This paper concluded by giving details of progress made so far in the implementation of PSM and suggests ways to improve the Company PSM system.



Mr. Ahmed Khalil Ebrahim, Bahrain Refinery, BAPCO, Bahrain

Stabilizer Column: Different Modeling Concept and Finding Optimum Water Draw-Off for Efficient Water Separation

The stabilizer column is being used in oil and gas industry to reduce the light hydrocarbons, hydrogen sulfide and water content to meet the export oil specifications of vapor pressure, H₂S content and BS&W etc. Stabilizer is last stage of unit operation and its design / operation is very critical to meet the product specifications. The removal of light hydrocarbons and hydrogen sulfide specifications are easily achieved by using the reboiler / or stripping medium with efficient tray design. However, water separation from the stabilizer column to meet the BS&W requires robust design as improper water draw-off location results into inefficient water separation thereby not meeting the BS&W specifications.

Moreover, inefficient water separations leads to water accumulation in the column as it evaporates from the column bottom if the bottom temperature is too high and condenses from the top resulting into foaming / unstable operation. The trapped water will cause the column to flood unless it is removed via side draw off.

The prediction of water draw-off location in the stabilizer column by using commercial available simulation software depends upon type of algorithm used for stabilizer column modeling. This paper described the effective way of stabilizer column modeling using commercial available simulation software and how to find the optimum water draw off location in the column for efficient water separation to meet the BS&W requirement.



Mr. Robert Page, Pertofac, UAE

In addition, this paper covered different types of stabilizer column modeling concept considering desalter, feed bottom exchanger and reboiler/ stripping medium etc.

Zero Flaring in KNPC Refineries

Part of KNPC management commitment is to minimize the emissions to the environment through Zero Non Emergency Flaring Project.

In the last quarter of year 2004 the Diagnostic Team has been established and equipped with necessary tools to serve such target Zero non emergency flaring. Moreover, the team members had been trained and certified to use that equipment. The DT activities started by preparing a check list of all valves connected to the flare headers and the list of valves found opened (bad actors) to the flare during normal operations of the units due to many reasons such as upset due to high temperature in overhead receivers, malfunctions of gas traps, new modifications to improve production quality/quantity and revamp of the units. Then, the passing valves are handed over to the maintenance to be repaired/replaced and the valves found open to the flare (bad actors) solved by conducting a workshops with the units custodian, process engineering division, instrument division and others to find proper solutions than to be opened to flare and in many cases we succeed especially with the support of the managements and the operations.

In addition, KNPC conducted an awareness campaign to encourage the employees to stop bad actors and to share the best practices to stop flaring .Furthermore, cooperatively with the computer applications we established a software tool for daily monitoring of the control valves connected to the flare header and proposed an ultrasonic flow meters for each unit individually for quick identifying the sources of flaring then a quick solving solutions for flaring.



Mr. Ali Al-Otaibi, MAA Refinery, KNPC, Kuwait

Finally, it is so important to set a strategic plan for a couple of years depending on the number of the connections in the entire refinery which reflect the efforts needed to reach the target of zero flaring. The last item in the strategic plan is the Fuel Gas Recovery Unit as the last solution for flaring because the Zero Flaring suppose to be started first with the efforts in the refinery to reduce flaring, then to calculate the remain amount of gases to be recovered in the exists treatment units with consideration of required modifications such as resizing the overhead lines of the gas treatment units and last is proposing of the best FGRU technology.

Deterioration of Solid Desiccant Beds (Molecular Sieves) at Yanbu Gas Plant

This paper has briefly described Yanbu Gas Plant's Dehydration facility. It also highlighted the plant's recent encounter with solid desiccant deterioration, and identifies the main contributing factors that have resulted in the acceleration of bed decomposition.

Furthermore, it provided a list of the most common operational malpractices that eventually wind up as adopted practices for operating dehydration units. Finally it illustrated the proper configuration for loading different layers within the dehydrator beds.



Mr. Ahmed S. Ghazal, Saudi Aramco, Saudi Arabia

Best Paper Award

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

The best paper of the 14th Technical Conference, as ranked by the audience, is:

“Superclaus® Technology Along With Innovative Notions Play A Principal Role In The Berri Gas Plant”



Dr. Sh. Mohammed Bin Khalifa Al-Khalifa, Former Chapter's Chairman presented the best paper award to Mathkar Al-Otaibi from Saudi Aramco

Site Visit to GPIC Complex



As part of the 15th Technical Conference program, the organizing Committee arranged a site visit to Gulf Petrochemical Industries Company (GPIC) Complex on May 10th, 2007.

GPIC was established in December 1979 as a joint venture between the Government of the Kingdom of Bahrain, Saudi Basic Industries Corporation, and Petrochemical Industries Company, Kuwait for the manufacture of fertilisers and petrochemicals. GPIC uses natural gas which is readily available in Bahrain as a feedstock for the production of 1,200 tonnes daily of Ammonia, 1,700 tonnes daily of Urea and 1,200 tonnes of Methanol. In addition to the production plants the GPIC Complex, which was built in Sitra on a reclaimed area of 60 hectares, comprises utilities plants, maintenance workshops, offices, stores and laboratories. The company employs 474 people of whom 80% are Bahrainis.

Thank You!

The Board Members of the GPA GCC Chapter wish to extend their thanks and appreciation to Bahrain National Gas Company (Banagas), Bahrain Petroleum Company (Bapco) and Gulf Petrochemical Industries Company (GPIC) for sponsoring the 15th Technical Conference.



GPA Global Website

A Gas Processing Alliance on a Global Scale

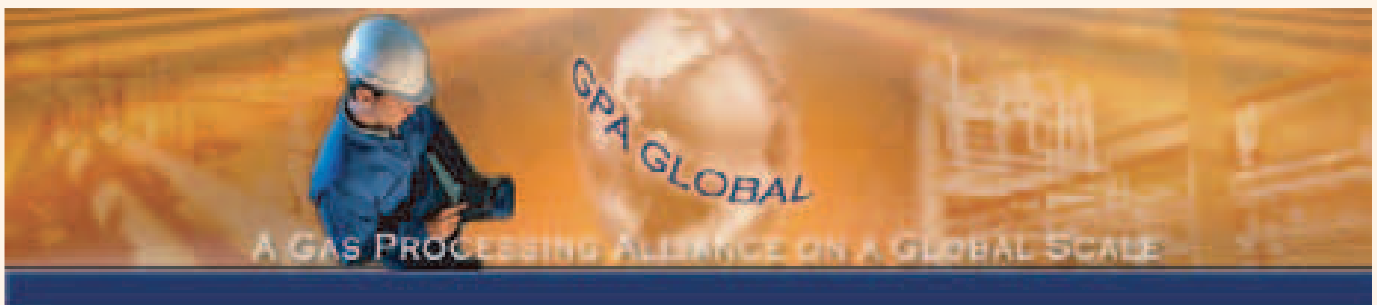
<http://:gpaglobal.org/>

Where gas processing organizations share their technical presentations/papers to their members via a combined database of papers.

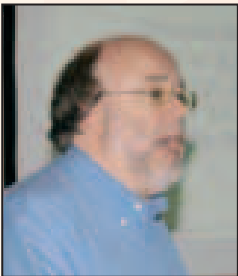
Participating groups are: GPA GCC, GPA Europe, GPA USA, GPA Canada and GPA Venezuela Chapters

Currently over 1,000 papers and presentations are available

Non Members are invited to join the GPA in order to access this service



The Second Specialized Technical Seminar (from Page 1)
“Corrosion Management in Gas Processing Facilities”



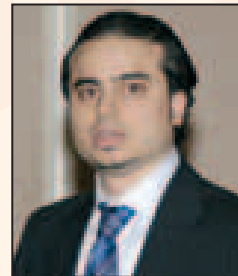
Mr. Robin Tems



Mrs. Maria L. Gonzalez-Barba



Mr. Muhammad Saleem



Mr. Shadi Al-Adel



Mr. Maher Nour

Five papers addressing different subjects on Corrosion were presented at the event :

- Corrosion of Electronic Control Systems in Gas Treating Environment by Mr Robin Tems from Saudi Aramco
- Corrosion Mitigation Strategies for Amine Gas Treating Plants by Mrs. Maria L. Gonzalez-Barba from Baker Petrolite Europe
- Managing Corrosion Challenges Associated with Heat Exchangers by Mr. Muhammad Saleem from Saudi Aramco
- Mitigation to Abqaiq NGL Recovery Plant Corrosion Problem by Mr. Shadi Al-Adel from Saudi Aramco
- Root Cause Analysis of Booster Station 150 Stainless Steel Piping Failure by Mr. Maher M. Nour from Kuwait Oil Company

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 second 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 and experience.

THANK YOU



The Executive Committee Members of the GPA GCC Chapter wish to extend their thanks and appreciation to Dr. Shaikh Mohammed Bin Khalifa Al Khalifa for his outstanding contribution as chairman of the Chapter from 1998 to 2007.

Dr. Shaikh Mohammed Bin Khalifa Al Khalifa, received a memento from Chapter's Chairman.

Calendar Of Meetings & Activities For The Year 2008:

Activity	Date	Venue
First Dinner Technical Meeting	5th Feb 2008	Saudi Arabia
Executive/Technical Committee Meeting	19th Mar 2008	Qatar
Annual Organization Meeting	6th May 2008	Qatar
16th Annual Technical Conference	7th May 2008	Qatar
3rd Specialized Technical Seminar	Nov 2008	Qatar

About the GPA - GCC Chapter



Some members of the Executive and Technical Committees.

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. Ahmed Al-Khan	BAPCO
Member	Mr. Abdulla Musabeh	DUGAS
Member	Mr. Yousif Abdulla	GPIC
Member	Mr. Fahad Al-Subaiey	QP
Member	Mr. Samir Houry	CCC
Member	Mr. Goetz Kassing	LINDE

Technical Committee

Mr. Adel Al Jabri	ADCO
Mr. Abdulla S. Musabeh	DUGAS
Mr. Ahmed Abdulla Khaja	QP
Mr. Mohammed Bu-Rashid	BANAGAS
Mr. Ahmed Al-Khan	BAPCO
Mr. Yousif Abdulla Yousif	GPIC
Mr. Mohammad A. Al-Abdulmoghni	SAUDI ARAMCO
Mr. Kefah A. Al-Faddagh	SAUDI ARAMCO
Mr. R. Sankar	Margham Dubai Establishment
Mr. Michael Scott	RASGAS
Mr. Abdulla Al-Ajmi	KNPC

For more information please contact:
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Website: www.gpa-gcc-chapter.org

**SCENES FROM THE
15th TECHNICAL CONFERENCE & CORROSION SEMINAR**

