Gas Processors Association – Europe

promoting technical and operational excellence throughout the European Gas Industry

27th Annual Conference 2010
September 22nd – September 24th

Lisbon, Portugal

Venue: Lisbon Marriott Hotel
Avenida dos Combatentes 45,
1600-042 Lisbon, Portugal.

GPA EUROPE - LISBON CONFERENCE - PROGRAMME

Thursday 23RD September 2010 – Morning

	Morning Session: Moderator – Simon Crawley-Boevey, Cameron, UK
09:00	**Welcome Address – Justin Hearn, Chairman, GPA Europe**
09:15	**Gas Industry in Portugal** *Carlos Martins Andrade, GALP Energia, Lisbon, Portugal* The Gas Industry in Portugal has been developed over the past 17 years to a network now stretching throughout the entire west of the Iberian Peninsula. GALP has, throughout this period, been the leading developer of gas infrastructure from gas sourcing and distribution through to development of the industrial and retail markets. The paper will illustrate how the Portuguese Market is structured physically and commercially, the main sources of gas supply and how these are distributed. In particular it will show the unique problems that have to be faced in Portugal being at the farthest edge of Europe's gas infrastructure.
09:45	**Sines LNG Facility** *Harry Isalski, TGE Gas Engineering, UK* The paper will present an overview of the local Sines LNG Plant and a summary of the changes and revamps that have been incorporated over the years.
10:15	**From Long Term Contracts to Spot Gas & LNG Arbitrage** *Olivier Courrieu, Gas Portfolio Manager, Supply Division - Global Gas, GdF Suez, Paris, France* The European gas business has been structured to help promote gas end-usage and securing countries supply. To meet these objectives, producers, midstreamers and utilities signed long term supply and purchase contracts whose prices are indexed on other commodities prices. The last evolutions, aiming to increase transparency and competition between European utilities, lead to the creation of gas market hubs (gas pools) and better interconnection between European countries. Nevertheless, neither the commodities prices nor the different national gas markets are perfectly correlated, introducing Arbitrage opportunities: geographical, time spread and cross commodity. Moreover, the development of LNG trading is extending these opportunities worldwide. After explaining the origin of these opportunities, the paper will present how to capture them without jeopardizing the financial result: risk mapping & management, asset back trading and financial hedging.
10:45	**Coffee Break**
11:15	**Improving Energy Efficiency of LNG Plants** *Christophe Thomas and Denis Chrétien TOTAL E&P, Paris. France* Plant owners have historically preferred robust and dependable facilities rather than highly efficient process with stringent operating constraints. Improving energy efficiency is a major focus for Operators due to higher price of feed / sales gas; reduction of feed gas supply in some LNG Plants; worldwide pressure to reduce the GHG footprint and CO2 taxes The paper will review options to increase the energy efficiency for a new plant for a given liquefaction process. Options scrutinized include heat recovery (combined cycle and others); Large frame or aero-derivative drivers for refrigerant compressors or power generators; electric drivers for refrigerant compressors or E –LNG; heat absorption systems / chilled water loop duty; cooling of gas turbine air inlets or combination. A 30 % energy improvement compared to robust and simple LNG facilities can be achieved. For existing facilities practical efficiency improvements can be implemented. The second part of the paper will present a revamp of an existing LNG facility, using heat absorption systems. The criteria for selection and the expected improvement will be summarised together with some project implementation and operating aspects.
11:45	**NGL Recovery: Evolution and New Generation Processes** *Vanessa Gahier, Technip, Paris, France* Natural Gas Liquid recovery processes were initially developed for technical reasons: for gas plants - to avoid condensation of liquids in export pipelines; for LNG plants - to avoid freezing of hydrocarbons during liquefaction. In the 1960's, cryogenic NGL recovery process development was for economic reasons - increased NGL recovery compared to conventional, e.g. oil absorption process, increased revenue. In the 1980's, development of turbo-expanders and plate-fin heat exchangers resulted in recoveries of up to 99% propane and 80% ethane depending on feedstock. From the end of the 1980's up to the mid 1990's, high value of ethane as liquid promoted expansion of Enhanced Ethane Recovery processes by several Licensors. Today, major challenges in NGL recovery processes are on one hand the reduction of power consumption to reduce greenhouse gas emissions and designing environment friendly processes and on the other hand, flexibility on ethane recovery while maximising propane recovery. Gas Processors face a fluctuating ethane demand linked with steam cracker operation or with differing LNG specifications depending on the markets. This paper describes the evolution of NGL Recovery Processes from 1970's and the new generation processes and technologies to meet the above challenges.
12:15	**Networking Lunch**

GPA Europe reserves the right to alter the timings of the papers presented or to substitute alternative papers should circumstances so dictate.

GPA EUROPE - LISBON CONFERENCE - PROGRAMME

Thursday 23rd September 2010 – Afternoon

	Afternoon Session: Moderator – Jason Frost, Offshore Design Engineering, UK
14:00	**Economical Glycol Contactor Design determined by Novel Column Internals** *Daniel Egger and Kurt Breu, Sulzer Chemtech Ltd, Winterthur, Switzerland* For gas dehydration with glycol the contactor consists of inlet scrubber, contacting section and outlet scrubber either in separate vessels or integrated. The contacting section is equipped with trays, random or structured packings and the outlet scrubber with a knitted wire mesh pad, a vane pack, a swirldeck or multi cassettes and sometimes with a combination. The design of the scrubbing section strongly depends on the equipment in the contacting section. The requirement for a separate feed inlet scrubber depends on the gas / liquid composition and operating conditions. In general, a standalone feed inlet scrubber gives the highest operating flexibility. An integrated outlet scrubbing section in the glycol contactor vessel gives sufficient operating flexibility while being most cost efficient. The challenge is to choose the right and most economical combination of internals in the contacting and scrubbing section for the specified gas, liquid flowrates, compositions and operating pressures. This paper shows design characteristics for the different mass transfer and demisting internals and compares capacity, efficiency, pressure drop, glycol loss, sensitivity to fouling and moving conditions, operating pressure and costs.
14:30	**Mercury Removal Unit - Process, Operation and Bed Replacement Experience** *Omar M. Baageel, Saudi ARAMCO* Mercury is present in most produced natural gas streams. The presence of mercury in natural gas can have catastrophic effects on gas plants. At levels higher than 10ng/Nm3, corrosion damage to aluminum heat exchangers can occur due to mercury amalgamating with the aluminum, causing embrittlement, reducing mechanical strength and resulting in unexpected failure and gas leakage. The mercury also attacks low temperature components of liquefied natural gas refineries, poisons catalysts and causes reduction in the quality of refined products. Mercury and mercury compounds are also extremely toxic. They may enter the body by inhalation, ingestion or penetration through the skin. Mercury can damage lungs, central nervous system and kidneys. It may accumulate to such elevated levels that it adversely affects workers and environment, particularly when pipelines and equipment are opened for maintenance and/or cleaning. Mercury is found in vapor and liquid forms in condensate transport pipelines and process equipment and also mixed with sludge. This paper discusses Berri Gas Plant Mercury Removal Units' performance, bed replacement, commissioning and operating experience.
15:00	**Application of OMNISULF for Comprehensive Gas Treatment -Projects Update and Start-up Experiences -** *Max-Michael Weiss, Uwe Bäder – Lurgi GmbH, Germany* Lurgi has been developing a comprehensive sulphur management package for upgrading natural gases to pipeline or liquefaction (LNG) qualities. This proprietary concept is being marketed by BASF and Lurgi under the trade name OmniSulf®. This concept has been deployed to several world class LNG plants at the Persian Gulf. The presentation will highlight the OmniSulf® concept and an update on the status of the different projects will be given. Some lessons-learned during the commissioning / start-up will also be shared.
15:30	**Coffee Break**
16:00	**Post-combustion CO2 Capture with Amino-Acid Salts** *Ralph H. Weiland, Nathan A. Hatcher & Jaime L. Nava, Optimized Gas Treating, Inc., USA* This paper benchmarks the performance of a conventionally-configured 3,000 tonne/day CO2 capture plant using NaGly and MEA-promoted KDiMGly against the standard, 30 wt% MEA. The results are striking—the regeneration energy required appears to be only slightly more than half that required for MEA in an identical plant. Furthermore, solvent rates are considerably lower. Combined with a neutralized amino acid's complete lack of volatility and its natural resistance to oxidation and thermal degradation, this finding puts caustic-neutralized amino acids into a class of solvents of great potential commercial interest. The paper provides a detailed explanation of how and why a process based on NaGly or MEA-promoted KDiMGly is likely to perform well.
16:30	**Capacity increase included: A new generation of promoter for selective H2S removal** *Gerald Vorberg, Torsten Katz, Georg Sieder, Justin Hearn BASF SE, Ludwigshafen/Germany,* The selective removal of H2S has become important over the last twenty years. This is driven by several factors, including 1) production of an H2S enriched, a high quality Claus gas, in widespread MDEA-based Acid Gas Enrichment (AGE) units and 2) for the monetization of sour gas fields with sweet gas resources becoming limited. Savings in energy and circulation rate and a reduction in equipment sizing are the obvious benefits of enhanced selective treatment. The principles for AGE or selective removal of H2S with amine-based solvents follow three major routes: (a) hindered amines, controlling the selectivity primarily in the absorber; (b) various design options and absorber internals, affecting the difference in CO2 and H2S mass transfer kinetics and (c) promoted tertiary amines, focusing more on the regeneration, and thus leading to higher H2S selectivities. Compared to conventional technologies, this advanced solution is a considerable leap forward in the selective treatment of gases. This paper will consider the existing "rules of thumb" for designing selective applications and explain the effect of a new class of promoter.
17:00	**Molecular Sieves Troubleshooting** *Peter Meyer, CECA SA, Paris, France* Molecular sieves are very often considered by operating people as a black box. Usually they are working well but what to do in case of premature breakthrough or other incidents? The below paper gives a small introduction about molecular sieves and discusses then how to follow up a molecular sieve plant and different examples showing how to detect a malfunction of different parameters such as bed loading configuration or regeneration procedure.

GPA Europe reserves the right to alter the timings of the papers presented or to substitute alternative papers should circumstances so dictate.

GPA EUROPE - LISBON CONFERENCE - PROGRAMME

Friday 24th September 2010 – Morning Session

	Morning Session: Moderator – Murtaza Khakoo, BP, UK
09:00	**Shale Gas – European Resource Potential** *Conrad Blumhagen, Wintershall AG, Kassel, Germany* Shale gas has started to change the global gas markets and will have implications for the European market. In this paper the potential for shale gas is analyzed and with potential to annually contribute 15 to 30 bcm to the European gas supply by 2025. A short overview is given to delineate shale gas from other unconventional gas resources. Data and knowledge for shale gas potential outside the US is still very limited. North America is currently the only area with commercial shale gas production and is used as an analogue for similar plays worldwide. Activity in unconventional gas resources in Europe has significantly increased in the past two years. In some countries, the most prospective areas have been licensed, or are under application. Poland and Germany are regarded as the most prolific countries, with potential in Austria, Scandinavia and Benelux countries. Feasibility of commercial shale gas projects in Europe will depend on: the first drilling campaigns; technology implementation; establishment of a competitive service industry, and the ability to adapt to the regulatory environment.
09:30	New Design for High Pressure Reclamation of DGA® Agent Solutions *Patrick Holub, Huntsman Corporation, Texas, USA* This paper will discuss the operating experience of 2 commercial reclaimers that have been designed using the new operating conditions. Plant data is provided showing the results of operations. Economics of the installations and their benefit to unit operations is also be discussed. A discussion of the BHEEU formation is included along with lab data generated to assist in the design of the reclaimer. A third unit is currently being designed for installation. Further development work is expected to provide improvements in size requirements based on rate of reversal data and optimum operating conditions.
10:00	**Contrasting Techniques for Periodic Review of Process Hazards** *Gerry Brennan, ABB Engineering Services, Teesside, UK* It is widely accepted that in order to manage process safety it is necessary to have a periodic review of hazards on existing installations and this is required in some regulatory authorities' guidance, typically with a five year interval. In the UK Oil and Gas Operators have mainly employed one of two risk assessment techniques for carrying out periodic hazard review. This paper will briefly describe the nature of process hazards, then describe both HAZOP (Hazard and Operability) and PHR (Process Hazard Review) and contrast experiences of applying the techniques in a number of installations. Strengths and weaknesses will be considered including resource requirements, duration of study and the recommendations for improvement. Some findings from review of outcomes in recent applications will be presented, including one case where both HAZOP and PHR were applied to the same installations. The paper will aid Oil and Gas Operators in selecting the appropriate technique for periodic hazard review of their installations.
10:30	**Coffee Break**
11:00	**Pitfalls in the Design / Operation of Relief / Flare System** *Chris Harding, Colin Deddis , BP, UK* Multiple layers of protection prevent hazardous conditions arising in process plant. The relief system is often the final safeguard. Every demand placed on a relief system indicates that other layers of protection have been compromised. A study by the Institute of Petroleum in 1998 and a recent review show that incidents affecting the integrity or capacity of the entire relief system continue to occur. This paper discusses incidents resulting from blockage or restriction of the relief system, considers their root causes and offers suggestions to help recognise and avoid potential future incidents.
11:30	**The Future of Flare Design looks Dynamic** *James Marriott, Process Systems Enterprise Ltd., UK, Brian Marshall and Alexis Haro, Softbits, UK* Determining the minimal required Flare System size, layout and equipment during the early stages of the design is essential in order to minimize costs and avoid late design changes. Existing Flare and Relief Systems are often potentially bottlenecked when considering plant upgrades and expansions. Conventional steady state calculation methods can result in Flare Systems being over designed requiring larger and more costly flare stacks, tips, network headers and relief valves. Revamp and expansion projects may be jeopardised by this unnecessary higher cost. This paper shows how up to date computer dynamic analysis and detailed evaluations of Flares can yield significant savings in both weight and cost of Flare and Relief systems.
12:00	**Closing Remarks** *Justin Hearn, Chairman GPA Europe*

Thanks to our sponsor at this event

GPA Europe reserves the right to alter the timings of the papers presented or to substitute alternative papers should circumstances so dictate.