

Gas Processors Association

87<sup>th</sup> Annual Convention of the  
Gas Processors Association  
2008

March 2-5, 2008  
Grapevine, Texas, USA

Volume 1 of 2

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

ISBN: 978-1-60560-489-3

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2008) by the Gas Processors Association.  
All rights reserved.

For permission requests, please contact the Gas Processors Association  
at the address below.

Gas Processors Association  
6526 E. 60th Street  
Tulsa, Oklahoma 74145

Gas Processors Association

87<sup>th</sup> Annual Convention of the Gas Processors Association  
2008

**TABLE OF CONTENTS**

**Volume 1**

**TECHNICAL SECTION F - TECHNICAL DATA DEVELOPMENT MEETING  
& FORUM**

|  |    |
|--|----|
| <b>A New Shortcut/graphical Method to Determine the Required Meg Injection Rate for Natural-gas Hydrate Inhibition</b> .....                           | 1  |
| <i>M. Moshfeghian, R. Taraf</i>  |    |
| <b>Determination of the Phase Envelope - Crucial for Process Design and Problem Solving</b> .....  | 17 |
| <i>B.H. Rusten, L.H. Gjertsen, E. Solbraa, T. Kirkerod, T. Haugum, S. Puntervold</i>   |    |
| <b>Nitrogen-rejecting Membranes to Increase Gas Heating Value: a Simple Wellhead Approach</b> .....  | 46 |
| <i>A. Jariwala, K.A. Lokhandwala</i>   |    |
| <b>Impact of Sulfur Solvent Or Corrosion Inhibitor Solvent Injection on Treated Gas Hydrocarbon Dew Points and Gas Treating Unit Performance</b> ..... | 64 |
| <i>I. Zhang, C. Graham, D. Nielsen, D. Schulte, M. Debest</i>  |    |

**TECHNICAL SECTION A – FACILITIES DESIGN FORUM**

|  |     |
|--|-----|
| <b>Molecular Sieve Dehydration Operational Problems and Solutions</b> .....                  | 74  |
| <i>R.J. Bombardieri, T. Elizondo</i>   |     |
| <b>Gas Treating Technologies: Which Ones Should Be Used and Under What Conditions?</b> ..... | 88  |
| <i>W.G. "Trey" Brown</i>   |     |
| <b>A Comparison of Physical Solvents for Acid Gas Removal</b> .....                          | 100 |
| <i>B. Burr, L. Lyddon</i>  |     |
| <b>Economic LPG Recovery from Stranded Low Pressure Gas</b> .....                            | 114 |
| <i>K.L. Currence, R.A. Mortko</i>  |     |
| <b>Recovery of Low Grade Heat at Enterprise's Hobbs Fractionator</b> .....                   | 122 |
| <i>B.W. Bello</i>  |     |

**GENERAL SESSION**

|   |     |
|---|-----|
| <b>Opening Remarks</b> .....                          | 129 |
| <i>G. Thomas</i>                                      |     |
| <b>Presentation of the Hanlon Award</b> .....         | 133 |
| <i>G. Thomas</i>                                      |     |
| <b>Hanlon Award Response</b> .....                    | 135 |
| <i>A. Tarbutton</i>                                   |     |
| <b>Presentation of the Donald L. Katz Award</b> ..... | 136 |
| <i>G. Thomas</i>                                      |     |

|  |     |
|--|-----|
| <b>Donald L. Katz Award Response</b> ..... | 137 |
| <i>P. Clark</i>                            |     |

## **INDUSTRY EXECUTIVE FORUM**

|  |     |
|--|-----|
| <b>2010: A Midstream Odyssey—or not</b> .....            | 140 |
| <i>F.T. (Tom) Whittinghill, J.W. Spann, R.A. Cargile</i> |     |

## **ENVIRONMENTAL ISSUES ROUNDTABLE**

|   |     |
|---|-----|
| <b>Achieving Zero Gas Flaring at ONGC Uran</b> .....  | 186 |
| <i>R. Kher, A Hosatti</i>   |     |
| <b>Integration of Power Plant and Process Models for the Simulation of Coal Fired Power Plant with Post Combustion CO<sub>2</sub> Capture</b> ..... | 198 |
| <i>J. Alin, C. Ness</i>   |     |
| <b>Development and Industrial Validation of a New Hybrid Solvent for Improved Mercaptan Removal</b> .....   | 208 |
| <i>F. Lallemand, D. Roquet, C. Weiss</i>  |     |
| <b>A Critical Look at TEG</b> .....   | 226 |
| <i>P. Clinton, R.A. Hubbard, H. Shah</i>  |     |

## **WORLDWIDE DEVELOPMENT FORUM**

|  |     |
|--|-----|
| <b>LNG Vaporization Turns Green</b> .....  | 245 |
| <i>P. Billman, D. Granger, L. Himmelberger, S. Wiley</i>   |     |
| <b>Technology Options for Securing Markets for Remote Gas</b> .....  | 265 |
| <i>D.A. Wood, S. Mokhatab, M.J. Economides</i>   |     |
| <b>The DAP and STREP Processes for Acid Gas Removal, Acid Gas Enrichment, and CLAU Tail Gas Treating</b> ..... | 275 |
| <i>C.H. Lawrence, V.W. Wong, J.Y. Mak, T.K. Chow</i>   |     |
| <b>Ethane Demand vs. C3+ NGL Recovery Economic Model</b> .....   | 287 |
| <i>A.A. Al-Harbi</i>   |     |
| <b>Natural Gas for the Development of the Orinoco Oil Belt in Venezuela</b> .....                              | 299 |
| <i>T. Rojas, M.G. De Leon</i>  |     |
| <b>Gas Reserves in Venezuela</b> .....   | 334 |
| <i>D.J.G. Cruz</i>   |     |

## **LEGISLATIVE, REGULATORY & SAFETY ISSUES FORUM**

|   |     |
|---|-----|
| <b>Getting Production in Motion Using Flexpipe Line Pipe</b> .....                  | 354 |
| <i>B. Small, B.R. Weller, J.R. Conley, E.J. Slingerland</i>                         |     |
| <b>A Survey of Contractor Safety Practices in the Gas Processing Industry</b> ..... | 364 |
| <i>B.G. Hutton, H. Gleitz</i>   |     |
| <b>What's Up in Washington DC? Legislative, Regulatory and Safety Forum</b> .....   | 385 |
| <i>M.W. Menezes, R.B. Hastie, F.E. Friedman</i>                                     |     |

## **MARKET PERSPECTIVE FORUM**

|   |     |
|---|-----|
| <b>Renewable Fuels is Anyone Making Money? Or Has the Money Gone Mad?</b> ..... | 405 |
| <i>A.M. Lipow</i>   |     |

## Volume 2

|  |     |
|--|-----|
| <b>U.S. Waterborne LPG Imports When Will the Trickle Become a Flood?</b> .....           | 423 |
| <i>D. Lippe</i>  |     |
| <b>US Ethane Outlook: Part III Will the Good Times Last for Ethane Extraction?</b> ..... | 439 |
| <i>P. Fasullo</i>  |     |
| <b>The Canadian Diluent Dilemma</b> .....  | 469 |
| <i>G. Goobie</i>   |     |

### **GPA MEMBERSHIP MEETING AND PRESIDENT'S LUNCHEON**

|   |     |
|---|-----|
| <b>President's Address, Citation for Service and Recognition Awards</b> .....             | 504 |
| <i>G. Thomas</i>  |     |
| <b>Outstanding Paper, Committee and Volunteer of the Year and GPA Safety Awards</b> ..... | 509 |
| <i>G. Thomas</i>  |     |
| <b>GPSA Safety and EPA Natural Gas Star Awards</b> .....                                  | 513 |
| <i>S. Munden</i>  |     |
| <b>President's Award for Safety Improvement</b> .....                                     | 515 |
| <i>G. Thomas</i>  |     |
| <b>Keynote Address: Defining Moments</b> .....  | 516 |
| <i>B.E. Davis</i>   |     |

### **MAINTENANCE FORUM**

|  |     |
|--|-----|
| <b>The DNA of Safety</b> .....   | 538 |
| <i>V. Holder</i>   |     |
| <b>Proactive Maintenance</b> .....   | 544 |
| <i>K. Christopherson</i>   |     |
| <b>A Statistical Method for Gas Compressor Performance Analysis with Application to Staging Design and Selection</b> ..... | 600 |
| <i>D. Scheianu</i>   |     |

### **LNG TECHNOLOGY FORUM**

|   |     |
|---|-----|
| <b>How Non-technical Issues Affect LNG Plant Technical Solutions</b> .....        | 608 |
| <i>D.L. Fuller</i>  |     |
| <b>Small Scale LNG Facility Developments in China</b> .....                       | 615 |
| <i>S.D. Hoffart, B.C. Price</i>   |     |
| <b>LNG Fractionation Process and Optimization of the Turboexpander Unit</b> ..... | 637 |
| <i>G. Nordwall, K.T. Cuellar</i>  |     |
| <b>Diverse LNG Pricing Arrangements in the Major Gas-consuming Markets</b> .....  | 645 |
| <i>D.A. Wood, S. Mokhatab, M.J. Economides</i>                                    |     |

|  |     |
|--|-----|
| <b>Global LNG Outlook and Impacts on the U.S. Gas Market</b> ..... | 655 |
| <i>D. Rogers</i>   |     |

## **COMPUTER TECHNOLOGY FORUM**

|  |     |
|--|-----|
| <b>Use of Multiphase Analysis to Enhance Production Operations in the Lobo Gas Gathering System</b> .....          | 682 |
| <i>T.J. Danielson, Q.T. Bui</i>  |     |
| <b>Industrial Design and Optimization of CO<sub>2</sub> Capture, Dehydration, and Compression Facilities</b> ..... | 699 |
| <i>A. Aboudheir, G. McIntyre</i>   |     |
| <b>Economic Optimization of Processing Facilities</b> .....  | 710 |
| <i>K.A. Lawlor, M.W. Conder</i>  |     |

## **TECHNOLOGY DEVELOPMENTS IN GAS PROCESSING FORUM**

|  |     |
|--|-----|
| <b>Stranded No More - Turning Sour Casinghead Gas Into Profits Using Shell-Paques® Bio-desulfurization</b> ..... | 729 |
| <i>A. Lanning, M. O'Brien, D. Mirdadian</i>  |     |
| <b>Supersonic Gas Conditioning - Commercialisation of Twister. Technology</b> .....                              | 739 |
| <i>P. Schinkelshoek, H.D. Epsom</i>  |     |
| <b>Customizing Membrane System Solutions for Gas Separation Applications</b> .....                               | 746 |
| <i>D. Parro, C. Chartier, G. Blizzard</i>  |     |
| <b>Integration of Membranes Into Natural Gas Process Schemes</b> .....   | 761 |
| <i>W.I. Echt, M. Singh</i>   |     |

## **TECHNOLOGY TO IMPROVE OPERATIONS FORUM**

|   |     |
|---|-----|
| <b>ALPIS®: an Airborne Laser Technology for Gas Pipeline Leak Detection</b> .....                                 | 776 |
| <i>R.R. Jennett, W. Johnson, E. Degtiarev</i>   |     |
| <b>Evaluation of VOC Emission Controls for Oil and Gas Production Storage Tanks</b> .....                         | 804 |
| <i>R. McKaskle, K. Fisher, K. Searcy, C. Rueter</i>   |     |
| <b>Catalytic Oxygen Removal for the Aberdeen Project (CMM) in Carbon County, Utah</b> .....                       | 821 |
| <i>G.L. Trotter, Q.Z. Rhodes II</i>   |     |
| <b>CLAUS Tail Gas Cleanup Can Now Be Better, Easier, and Less Expensive to Meet Federal EPA Regulations</b> ..... | 830 |
| <i>B.G. Goar, S.F. Meyer</i>  |     |

## **GPA, GPSA ORGANIZATION**

|  |     |
|--|-----|
| <b>GPA Resolution</b> .....                                | 837 |
| <b>GPSA Resolution</b> .....                               | 838 |
| <b>Election of GPA Officers and Directors</b> .....        | 839 |
| <b>Election of GPSA Officers and Directors</b> .....       | 841 |
| <b>Members, Gas Processors Suppliers Association</b> ..... | 843 |

**Author Index**