Gas Machinery Research Council

Year End Report to Members - December 2014

Your <u>Gas Machinery Research Council</u> enjoyed a successful year in 2014. This report provides a summary of 2014 and a look ahead to 2015.

HIGHLIGHTS - 2014

- Focus
 - Purpose: Provide solutions to industry problems
 - Vision: An industry advanced through collaborative research, training and technology
 - Mission: Identify industry problems and provide solutions that improve reliability, efficiency and cost effectiveness
- Research Projects
 - Predicting Power Cost of Reciprocating Compressor Manifolds
 - Evaluate Dampening Products & Support Designs
 - Pipe Support Stiffness
 - o Effect of Inlet Pulsation & Acoustic Impedance on Surge
 - o PAN Full Scale Implementation
 - o Total budget: \$1.18 MM
- Training
 - o 9 workshops
 - Gas Machinery Conference (Nashville; 1,319 attendees)
 - Total of 1,614 field technicians and engineers attended GMRC training events in 2014

• Gas Machinery Conference

- The GMC continues to be the premier machinery conference in North America. This conference includes three days of technical training, and presentations, by industry's leading subject matter experts. The program offers short courses, technical papers and new technology updates. The conference includes a vendor exhibit with over 126 companies showcasing the latest equipment, technology and services.
- Excellent attendance (1,319) to the GMC in Nashville, TN
- GMC 2014 Chairman: Keith Schafer, Columbia Pipeline Group (2014 Committee roster)
- Membership
 - New Operating Company Members
 - Anadarko Petroleum Corporation
 - DCP Midstream
 - New Engineering & Fabrication Member
 - Dow Oil & Gas
 - New Associate Members
 - Access Compression
 - Black & Veatch
 - Chart Cooler Service Company

- Filmax, Inc.
- **Red Cedar Gathering Company**
- **Sertco Industries**
- Shandong Kerui Petroleum Equipment Co., Ltd.
- SKF USA, Inc.
- **Sloan Lubrication Systems**
- **Zahroof Valves**

Financials (summary)

o Income

•	Membership dues, research co-funding	728,000 (year-end estimate)
•	Training (Net)	613,000 (year-end estimate)

2,974,967

Expense

• Total 1,582,073 (year-end estimate) Excess of Income to Expenses (241,073) (year-end estimate) Research Expenditures 2014 1,156,100

HIGHLIGHTS - 2015

Research Projects

- Completion of Torsional Guidelines
- o Motor Magnetic Center Torsional Influence
- o Power Loss in Reciprocating Manifolds Calculation
- o Reciprocating Compressor LO Theoretical Basis
- Wet Gas Compression
- Equations of State

o Research Reserve

Dry Gas Seal

Training

- Approximately 10 workshops
- o Gas Machinery Conference (October 4-7, 2015; Austin TX)

Financials (Budget Summary)

o Income

•	Membership dues, research co-funding	302,000		
•	Training (Net)	520,000		

Expense

	 Total 	821,500
0	Excess of Income to Expenses	500
0	Research Expenditures	300,000
0	Ending Reserve Balance	2,995,467

LEADERSHIP

- **Board of Directors**
 - o Craig Linn, Williams Chairman of the Board
 - o Michael Smith, Compressor-Systems, Inc. Vice Chairman of the Board
 - Doug Bird, Dresser-Rand Treasurer

- Quince Och, Spectra Energy Secretary
- o Angus Sites, ExxonMobil
- o Kary Saleeby, ExxonMobil Production
- o Martin Habel, Solar Turbines Incorporated
- o Kriss McDonald, Ariel Corporation
- Don York, HOERBIGER Services
- Bharat Trivedi, Atmos Energy
- Marc Rossiter, Enerflex Energy Systems
- o Orin Flanigan, Adobe Enterprises
- Mike Grubb, Southern Gas Association/Gas Machinery Research Council
- Project Supervisory Committee
 - Kary Saleeby, ExxonMobil Chairman
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 - Josh Shaver, Atmos Secretary
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 - Martin Hinchliff, Dresser-Rand
 - Everette Johnson, Cameron
 - David Krenek, CAT
 - Rainer Kurz, Solar
 - Clint Lingel, Ariel
 - Steve O'Toole, Chevron
 - o Christine Scrivner, Kinder Morgan
 - Gary Bourn, Anadarko
- Staff
 - o Pat Downey, Senior Vice President
 - Jane Butler, Vice President

DISTINGUISHED SERVICE AWARD

<u>Congratulations to Bill Couch</u>, Global Filtration & Separation Training Manager, PECOFacet, who received the Distinguished Service (Edward N. Henderson) Award, at the Gas Machinery Conference in October. This award is presented for outstanding service not only to GMRC but to the industry.

COMMENTS FROM OUR CHAIRMAN – CRAIG LINN

Gas Machinery Research Council was founded in 1952 to provide its member companies and industry with the benefits of an applied research and technology program directed toward improving reliability and cost effectiveness of the design, construction, and operation of mechanical and fluid systems. The Project Supervisory Committee, under the leadership of Kary Saleeby, ExxonMobil, has a number of research projects on-going and results of some of those projects were shared in sessions at GMC:

- Performance Augmentation Networks (PAN)
- Predicting the Power Cost of Reciprocating Compressor Manifolds
- Evaluation of Dampening Products and Support Designs
- Effect of Inlet Pulsation and Piping Acoustic Impedance on Centrifugal Compressor Performance
- Piping Support Stiffness

• GMRC Design Guideline for High-Speed Reciprocating Compressor Packages for Natural Gas Transmission & Storage Applications

GMRC also conducted training throughout the year with 9 workshops in 2014. Over 1,600 technicians and engineers have attended a GMRC event this year.

I sincerely appreciate the hard work of our Board, staff and team of volunteers who executed our plan for the year. I hope you were able to attend the Gas Machinery Conference and I encourage you to seek opportunities to get involved within your organization, the Gas Machinery Research Council.

Craig Linn
Director – Engineering, Williams
GMRC Chairman of the Board

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