

# Gas Machinery Research Council

## Year End Report to Members - December 2015

Your [Gas Machinery Research Council](#) enjoyed a successful year in 2015. This report provides a summary of 2015 and a look ahead to 2016.

### Over-View

- Annual operating budget of \$2 million
- Healthy reserve balance of \$3 million
- Invested \$2.5 million in research projects over the past six years

### Research Projects – 2015

- Guidelines / Recommended Practice for Torsional Vibrations
- Current Understanding of Wet Gas Effects on Gas Machinery
- Improvements to Dry Gas Seal System Reliability
- Equation of State Comparisons for Pipeline Compression Apps
- Predicting Power Loss of Reciprocating Compressor Manifolds
- Recommended Approach for Calculation Power Los Comp Manifolds
- Development of Theoretical Basis for Oil Consumption for Reciprocating Compressor Cylinders
- Methodology Including Stiffness and Dampening Motor Magnetic Field in the Torsional Analysis

2015 spend = \$386,000

### Research Projects – 2016

- Centrifugal Compressor Surge Forces: Measurement and Predictions
- Green House Gas: Impact of Driver Choices
- Revisions to High Speed Package Guidelines
- Gas Flow Characterization of Liquid Flow Regime and the Impact on Gas Compression Equipment
- PRCI Program – Effect of Variability in Fuel on Operation and Reliability of Gas Turbines
- Oil Dilution Project
- Placeholder for Cylinder Oil Lubrication Fundamentals
- PRCI Program - GHG Database to Support Emissions Factor Improvement – Methane Data and “Super Emitters”
- PRCI Program – Control of Fugitive Methane Emissions from Compressor Stations Thorough Combustion of Compressor and Engine Crankcase Emissions
- PRCI Program – Methane Reduction Data Analysis for 2-Stroke Lean Burn Natural Gas Engines
- Wet Gas Compressor Performance Measurements and Correlation
- PRCI Project – Portable Analyzer Lab Tests to Support Simplified Test Method

2016 spend = \$428,000

## Training – 2015

- Applied Principles of Engines & Compressors
- Intro to Gas Turbines and Centrifugal Compressors
- Compressor Station Vibration and the Impact on Performance, Cost & Reliability
- Factors in Compressor Station Design
- Combustion Characteristics
- High Speed Package Design
- Engine Analyzer & Reliability
- Foundation Design & Repair
- Engine Emissions Stack Testing & Analyzer
- [Gas Machinery Conference](#)
  - [Highlight Video](#)
  - Chairman: David Atwood, Siemens

Total Attendance: 1,352

## Membership

- New Operating Company Member
  - SourceGas
- New Associate Members
  - Bi-Con Engineering
  - Custom Compression Systems
  - EGC Critical Components
  - Mueller Environmental Designs, Inc.

## Financials (summary)

- Income
  - Membership dues, research co-funding 419,000
  - Training (Net) 615,000
  - Other 41,000
  - Total 1,075,000
- Expense
  - Total 834,900
- Excess of Income to Expenses 240,100
- Research Expenditures 386,000
- Research Reserve 3,470,000

## LEADERSHIP

- Board of Directors – 2016
  - Michael Smith, CSI Compressco LP –Chairman of the Board
  - Kary Saleeby, ExxonMobil Production – Vice Chairman of the Board
  - Doug Bird, Dresser-Rand – Treasurer
  - Quince Och, Spectra Energy – Secretary

- Craig Linn, Williams – Past Chairman of the Board
- Martin Habel, Solar Turbines Incorporated
- Kriss McDonald, Ariel Corporation
- Don York, HOERBIGER Services
- Marlan Jarzombek, Atmos Energy
- Frank Antoine, Enable Midstream
- Scott Schubring, Williams – Project Supervisory Committee Chairman
- Orin Flanigan, Adobe Enterprises
- Mike Grubb, President & CEO
- Jane Butler, GMRC Staff Executive

Thank you to Marc Rossiter, Enerflex Energy Systems, and Bharat Trivedi, Atmos Energy, for serving on the 2015 Board of Directors.

- Project Supervisory Committee
  - Scott Schubring, Williams – Chair
  - Kary Saleeby, ExxonMobil – Past Chair
  - Josh Shaver, Atmos – Secretary
  - Richard Fink, Spectra
  - Everette Johnson, GE Oil & Gas
  - David Krenek, CAT
  - Rainer Kurz, Solar
  - Clint Lingel, Ariel
  - Steve O'Toole, Chevron
  - Christine Scrivner, Kinder Morgan
  - Gary Bourn, Anadarko
  - Jane Butler, GMRC Staff Executive

### **DISTINGUISHED SERVICE AWARD**

Congratulations to Martin Hinchliff 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. [Read more.](#)

### **COMMENT FROM OUR CHAIRMAN – CRAIG LINN**

All metrics point to 2015 being another successful year for GMRC. Knowledge gained from the projects identified by the Project Supervisory Committee was effectively delivered to industry primarily at our Gas Machinery Conference. We increased membership, attracted 1,352 industry professionals to our training and education programs, and met our financial goals.

It has been my pleasure serving as your Chairman for the past four years. I feel the organization is in great shape with a strong and committed Board, and an equally strong and committed Project Supervisory Committee Chaired by outgoing Chairman Kary Saleeby and incoming Chairman Scott Schubring, and Gas Machinery Conference Planning Committee Chaired by outgoing Chairman David Atwood and incoming Chairman Hans Mathews.

I sincerely appreciate your support for our 63 year old organization and encourage you to seek opportunities to get involved.

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

#### **COMMENT FROM OUR INCOMING CHAIRMAN – MICHAEL SMITH**

GMRC enters 2016 with a strong financial foundation and a suite of research and Industry supporting projects focused toward improving the reliability and cost effectiveness of the design, construction, and operation of mechanical and fluid systems; essentially the mission of GMRC. This came about in a robust energy industry due to the effort and dedication of the many volunteers that have a passion for our industry and make up the Project Supervisory Committee, the GMC Planning Committee and the GMRC Board of Directors along with the support and guidance of the GMRC/SGA staff.

While the recent downturn in the oil & gas industry is of concern to us all, we are all likewise aware these cycles happen periodically in our industry. Currently, GMRC is in a good position to “weather this storm” but we must continue a full court press to keep people and companies involved in GMRC research, training and, of course, the Gas Machinery Conference.

I am honored to take the reins of this world class organization, and I do so with the full knowledge that I am but a very small part of this organization. I look forward to, and greatly appreciate your support, guidance and encouragement.

*Michael A. Smith, P.E.  
VP, Engineering, CSI Compressco*

#### **PHOTO GALLERY**

<https://gmrc.smugmug.com/>

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