Gulf South Rotating Machinery Symposium

Conference Program

April 28 – 30, 2014
Crowne Plaza Executive Center
Baton Rouge, Louisiana

www.gsrms.org
gsrms@outreach.lsu.edu

Mission of GSRMS

To lead the compression and rotating machinery industry to excellence by providing a high quality forum for technology and information sharing and experience exchanges.
2014 SPONSORS

WE WOULD LIKE TO THANK THE FOLLOWING SPONSORS FOR THEIR CONTINUED COMMITMENT IN SUPPORT OF GSRMS

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Welcome to the 2014 Gulf South Rotating Machinery Symposium.

The GSRMS Committee has endeavored to bring you the very best in technical training to improve your knowledge and skills, the rest is up to you. Learn everything you can from these industry experts to make yourself better at what you do. If you are an "end user", let this information and training make you smarter at operating, maintaining and repairing your machinery. Find the companies that can provide you with the services and products you need to do your job. If you are a supplier, learn from your customers what they need from you to be a better supplier to them.

Our industry is experiencing a great loss of highly experienced people to retirement. It is important to as quickly as possible pass along their knowledge to the next generation so they might avoid some of the things learned "the hard way". This symposium is a gathering place of much of that knowledge and experience so take advantage of the chance to improve your skills.

Network with your colleagues at this symposium and everywhere you can. If you have the experience... share it and be a mentor. If you are new to the industry or even well seasoned.... listen and remember, something you learn this week may be invaluable in the future. Most of all enjoy the opportunity to be in fellowship with those who do what we do.

Thank you for attending the Gulf South Rotating Machinery Symposium.

Dennis Schaibly
2014 GSRMS President
2014 GSRMS Executive Committee

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1st Vice President  Lou Boothe, AXIP
2nd Vice President  Chris Alley, Exterran
Past President  Alan Autin -Chevron

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Eloi Plaisance, Exterran
Andrew Sonnier, M & J Valve
Terry Tumminello, Cameron Compression Systems

Social Committee
Chair Rodney Orgeron, Ruhrpumpen
Vice Chair Dennis Schaibly, Kaydon Ring and Seal

Golf Tournament
Marty Flach, ACI Services, Inc.

LSU Continuing Education
Lisa Graves - Program Manager
LSU CE Executive Director - Douglas Weimer
2014 Schedule at a glance

Monday, April 28, 2014
7 a.m. – 5 p.m. - Registration Opens
8 a.m. - til - Golf Tournament - The Island Country Club and Golf Course
8 a.m. – 5 p.m. - Technical Courses
1-6 p.m. - Exhibit Set-Up

Tuesday, April 29, 2014
7 a.m. – 5 p.m. – Registration
7 – 9 a.m. - Exhibits & Breakfast
8 a.m. – 5 p.m. - Technical Courses
9 – 11 am. - Tutorials
11 a.m. – 2 pm. - Exhibits Open
Noon – 1 p.m. – Lunch – Cypress I & II -
W. Norm Shade, Sr. Consultant and President-Emeritus of ACI Services Inc,
2 – 4 p.m. – Tutorials
4 – 6 p.m. - Exhibits Open
5 – 6 p.m. – Resume/Interview Skills Presentation in Exhibit Hall
6 – 8 p.m. - Crawfish Social Poolside

Wednesday, April 30, 2014
7 a.m. – 2 p.m. – Registration
7 – 9 a.m. - Exhibits & Breakfast
8 a.m. – 5 p.m. - Technical Courses
9 – 11 am. - Tutorials
11 a.m. – 2 pm. - Exhibits Open
Noon – 1 p.m. – Lunch – Cypress I & II –
Charlotte Batson, Co-Founder and CEO, Tuscaloosa Energy Services, LLC
2 – 4 p.m. – Tutorials
3 – 6 p.m. - Exhibit Teardown
4 – 5 p.m. - Executive Committee Meeting

Lunch Speaker – Tuesday, April 29
W. Norm Shade is Sr. Consultant and President-Emeritus of ACI Services Inc, headquartered in Cambridge, OH. He received BME and MSME degrees from The Ohio State University, graduating Summa Cum Laude in 1970, and he is a registered professional engineer in the States of Ohio, Oklahoma and Texas.

Lunch Speaker – Wednesday, April 30
Charlotte Batson is an internationally-recognized expert on shale oil and gas from work as a petroleum engineer in oil and gas exploration and development with Tenneco Oil Company, as well as presentations, publications, and projects. Ms. Batson is CEO of Tuscaloosa Energy Services
Technical Course 1 (TC1) - CANCELED – April 28 & 29 - Monday and Tuesday

Technical Course 2 (TC2) - April 28 & 29 - Monday - Tuesday (16 hrs) - 8 am – 5 pm
Location: Natchez-Samuel Clemens Room
Course: Integral Compressors – CES Cooper Bessemer Integral Gas Engine-Compressor
Instructor: John Haney, Technical Training Supervisor – CAMERON (Compressor Systems)
A two day course to gain knowledge & comprehension of day to day operations and maintenance
Course Content:
Engine details to include:
• Frame & crosshead guide
• Crankshaft & flywheel
• Connecting rods & crossheads
• Control box & lay shaft
• Lubrication requirements to include:
  • Cold start procedures
  • Pre-lube systems – manual, pneumatic or electric, pre-lube pumps
  • Gas injection system to include:
  • Low emission systems
Compressor details to include:
• Cylinder & components – valves & unloaders, pressure packing, rings & rider bands
Ignition systems - Support systems to include:
• Coolers, water pumps, relief valves
Description of installation & commissioning to include:
• Inspection & setup procedures
Description of operation & maintenance to include:
• Startup procedures, normal & emergency shutdown procedures, regular servicing
• Performing prescribed maintenance tasks & handling critical repairs
• Condition monitoring & troubleshooting
Compressor performance control
Product Development

Technical Course 3 (TC3) - April 28 & 29- Monday and Tuesday (16 hrs) - 8 am – 5 pm
Location: Levee Room -
Course: Centrifugal Compressor - Instructor: Gerry Butler, Senior Field Service Representative – Solar Turbines
A two day course on the basic operation and maintenance of Gas Turbines and Centrifugal Compressors.

Technical Course 4 (TC4) - April 28 - Monday (8 hrs) - 8 am – 5 pm
Location: Bayou Room
This Technical Course will cover the basic principles and techniques involved in equipment alignment. Although the course will cover the basics (which are needed in all applications), the course will include the exclusive use of Laser Alignment tools during the “Hands-On” portion of the training.
Technical Course 5 (TC5)- CANCELED - April 28 - Monday

Technical Course 6(TC6)- April 29 - Tuesday (8 hrs) - 8 am – 5 pm
Location: Bayou Room
Course: Pump Fundamentals - Instructor – Lloyd Golobay Project Engineer, Ruhrpumpen North American Service Centers
This 1 day course will cover basic pump training, intermediate pump training and advanced pump training
Basic Pump Training
• Pump Overview
• How a pump works
• Parts & Function
• RP Pump Types
• Pump Metallurgy
• Critical Fits
• Nss explanation
• NPSH explained
• Effect of Viscosity
• Pumps in parallel
• Affinity Law
Intermediate Pump Training
• Cause of Efficiency losses
• Cavitation – Advanced
• More Pumps in Parray
• More Pumps in Series
• Pump Instability – When & Why
• Pump Orifice Plates
• Ruhrpumpen Designs
• Ns Explained
• Pump Power formula
• Torque-v-Speed & Inertia
• Mechanical Seals – Functions
Advanced Pump Training
• Mechanical Seals – Advanced
• Casing Design – Fit & Function
• Dynamics of Pump Design – Part 1
• Dynamics of Pump Design – Part 2
• General Fault Finding Guide
• When Cavitation is not the Cause
• Causes & Cures of General Problems
• Pump Noise Correction factors
• General Causes & Cures of Vibration
• Pump Pre-Swirl – Is it really Unstable
• Illustrated Guide to Problems
• Reducing run costs & improving system

Technical Course 7(TC7)- CANCELED – April 30 – May 1- Wednesday and Thursday

Technical Course 8 (TC8) CANCELED- April 30 – May 1 – Wednesday and Thursday
Technical Course 9 (TC9)- April 30 - Wednesday (8 hrs) - 8 am – 5 pm  
Location: Levee Room  
Course: Basic Diesel Engine Operation, Maintenance and Troubleshooting  
Instructor – Ryan Dunbar, Valerus Compression  
A one day “Hands-On” course that covers the basic operation, maintenance and troubleshooting of Diesel Engines  
**Basic 2 cycle and 4 cycle Diesel Operation**  
- Tune up  
- Fuel System Basics  
- Injector Pump Timing  
- Cooling System Basics  
- Lubrication Basics  
- Basic Troubleshooting (Fuel, Color of Smoke and Possible Causes)

Technical Course 10 (TC10)- April 30 - Wednesday (4 hrs) - 8 am – 12 pm  
Location: Bayou Room  
Course: Basic Thermodynamics of Reciprocating Compression  
Instructor – Greg Phillippi, Director Process Compressor Marketing & Sales, Ariel Corporation  
This 1/2 day course will cover –  
- Pressure – time diagram animation  
- Pressure – volume diagram  
- Capacity - Fixed Clearance, Volumetric efficiency, ACFM, ACF, SCF, MMSCFD  
- Ideal and real gas laws  
- Horsepower - Adiabatic, Valve loss, Resistance factor, Valve equivalent area, Deactivated end, IHP, BHP, friction, Compression efficiency  
- Varying conditions - Pressure, Speed  
- Gas analysis effects - Adiabatic exponent (k-value), Compressibility factor (Z)  
- Temperature - Adiabatic discharge temperature, Actual discharge temperature, Suction temperature preheat  
- Multi-stage compression - What, Why, How, Capacity balance  
- Rod load - Tension, Compression, Gas + inertia, Non-reversing  
- Pulsation

Technical Course 11 (TC11)- April 30 - Wednesday (4 hrs) - 1 - 5 pm  
Location: Bayou Room  
Course: Basic to Advanced Reciprocating Compressor Optimization  
Instructor – Randy Bissey, Regional Manager, Ariel Corporation  
This ½ day course will cover the Ariel Performance Program’s basic to advanced features, how to make a preliminary selection, and how to model existing Ariel compressors. The presentation will cover single stage and multi-stage applications, loading to flow & horsepower, and demonstrate the ability to create performance curves. We will also discuss how the performance program output can be used as a tool for evaluating the overall health of the equipment.
Tuesday, April 29

9 am - 11 am

T1 – Emission Rules/Regulations Presenter – Erin Badough, PE, Environmental Manager, Air Quality Programs, Exterran
Location: Delta Queen
This tutorial will cover past and present Emission Rules/Regulations. There will be a focus on current regulations such as NESHAP ZZZZ.

T2 – New Hydraulic Nut for Compressor Crosshead Presenter – Michael Chustz, Hytorc
Location: Riverboat Room
This tutorial will cover the fastest and most accurate method of securing compressor rods to crossheads by replacing the existing “Jam Nut” with a “Hydraulic Collar Nut”, you can speed up installation time by up to 10X compared to other methods and thereby offer considerable savings on assembly and costly downtime. Hydraulic nuts can be designed and manufactured to suit your individual requirements. Course will cover design, engineering, application, installation and benefits of the hydraulic nut.

T3 – Rotating Equipment Failure Analysis Presenter – Ronald LeTard, Staff Engineer, ConocoPhillips
Location: Mississippi Queen
This Tutorial will cover case history of failures caused by improper installation of Rotating Equipment

Location: Creole Queen
This tutorial will cover general discussion of control valve and flow measurement applications associated with gas compression and oil & gas production. We will address gas and liquid measurement. The focus will be on best practices, common application issues, proper maintenance practices and how new technology is helping address old problems

2 pm - 4 pm

T5 – Production Equipment Operations Presenter – Dean Maltsberger, Valerus Compression
Location: Delta Queen
This tutorial will cover the typical Production Equipment associated with Rotating Equipment and a brief description of each process component

T6 – Case Study: Community Noise Annoyance Mitigation with Intake/Exhaust Silencer Design Presenter – Eugene “Buddy” L. Broerman, Senior Research Engineer, Southwest Research Institute
Location: Riverboat Room
An evaluation of community noise/vibration annoyance was commissioned to identify the causes of complaints from residents living near a compressor station and to develop potential modifications for mitigation. Elevated pulsation levels were identified at frequencies below the range of human hearing, but were determined to be the most likely cause of rattling window panes, doors,
cabinets, etc. The sources of the pulsations were traced to pressure pulsations inside both the inlet and exhaust manifolds of one particular type of engine at the nearby compressor station. Field measurements identified the pulsation characteristics at the residences, identified the pulsation characteristics within the engine manifolds, and provided data for correlation with an acoustic model. The model predicted that the existing silencers allowed unfiltered low frequency pulsation (pressure fluctuations) to pass into the atmosphere at the same frequencies as the elevated sound pulsation frequencies measured at the residences. New silencers were designed that reduced the coupling of the engine manifold pulsations to the atmosphere at both the intake and exhaust. This tutorial will describe the field measurements used to diagnose the problem and identify the source; a pulsation analysis and silencer redesign; and follow up field measurements to assess the quality of the redesign.

**T7 – Bearings Presenter – Dr. Michael Khonsari, LSU**
**Location: Mississippi Queen**
This tutorial will cover bearing failure modes and applications

**T8 – Fundamentals of Torque Presenter – Michael Chustz, Hytorc**
**Location: Creole Queen**
This tutorial will cover fundamentals of torque as it applies to rotating equipment. Pneumatic and hydraulic tools used for the install of fasteners on all types of rotating equipment.

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**Wednesday, April 30**

**9 am - 11 am**

**T9 – Compressor Valves Presenter – James Gray, Engineer, M&J Valve**
**Location: Delta Queen Room**
This tutorial will cover Compressor valve parts and terminology, Different valve types and options, Lift and springs, Hands on valve measuring and identification, Understanding how compressor operation affects valve performance

**T10 – Coating Applications Presenter - David Cato, Simmons Plating & Grinding**
**Location: Riverboat Room**
This tutorial will cover coating types and applications used throughout industry

**T11 – Compressor Piston Rings, Rider Bands and Rod Packing Presenter – David Schroeder, CPI Senior Engineer, CPI**
**Location: Mississippi Queen Room**
This tutorial will cover the fundamentals of reciprocating compressor piston, rider ring fundamentals and reciprocating compressor rod packing. The performance of the piston and rider rings and rod packing is important due to the effect on capacity and the overall run life and increased environmental emissions regulations. The discussion will focus not only on the rings and packing rings but also on the other components that affect the performance including the piston and cylinder bore packing case, rod and cylinder. The topics will include basic product function, terminology, design features, materials, installation and reconditioning. Also included will be a review of typical failure modes, basic troubleshooting and design upgrades

**T12 – Optimized Robust Compressor Station Design Methodology Presenter – Ben White, Senior Research Engineer, Southwest Research Institute**
**Location: Creole Queen Room**
In the process of designing gas compression equipment, it is important to ensure the mechanical
reliability of the system through proper analysis of the fluid and structural systems. Pulsation models of the reciprocating compressor systems are developed to study the dynamic pressure and flow characteristics for the planned operating conditions. Similarly, mechanical models are developed for the study of the structural dynamic characteristics. Predicted pulsations and loading from the reciprocating compressor components are added to the simulation to predict the forced response of the mechanical system. These predictions are then used to identify potential problems and design modifications are studied to eliminate the problems. However, design iterations can be time consuming, so system optimization is often limited to a small number of variables.

2 pm - 4 pm

T13 – Force Feed Lubrication Presenter – Jeff Guillory, CPI Lubrication Training Instructor, CPI
Location: Delta Queen Room
This tutorial will cover the basics of force feed divider block compressor cylinder & packing lubrication systems – operation, preventative maintenance & control monitoring

T14 – Principles of Compressor Packing Presenter – Bill Brown, CPI Products Engineer, CPI
Location: Riverboat Room
This tutorial will cover the fundamentals of reciprocating compressor rod packing. The performance of rod packing is becoming more and more important due to increased environmental emissions regulations. This discussion will focus not only on the packing rings but also on the other components that make up the rod packing system including the case, rod and cylinder. The topics will include basic product function, terminology, design features, materials, installation and reconditioning. Also included will be a review of some typical failure modes, basic troubleshooting and design upgrades

T15 – Containment Control, Storage and Handling Presenter – Doug Sackett, District Manager, Total Specialties USA, Inc.
Location: Mississippi Room
This tutorial will cover Raising your Lubrication Program to the Next Level

Understanding how to insure proper quality and integrity of lubricants to reduce the risk of premature damage to equipment is one of the most important procedures that your operation can invest in and garner the greatest return on investment. In this presentation your will grow to understand and learn how to build processes and procedures to insure that your lubricants perform to the level that is expected and how to train your staff to store , handle and dispense the product in the correct manner.

Knowing how to review your lubrication procedures from the inspection of your supplier and how they handle and receive the products before they are delivered to you is the first step in the process, then reviewing you’re in house lubrication program from storage to dispensing and delivery to the final asset will extend the components life and increase your reliability and thus reducing downtime.

Major points that you will learn from this presentation;

Contamination- How we can minimize impact and develop processes to remove it
• Understand the damage and set up a program to address it
• Use appropriate storage & handling of lubricants and greases
• Use effective filtration and breathers to control ingress
• Maintain equipment with view to reducing contamination
• Contamination control and how to measure it
• Setting contamination limits
• Train operators to understand the importance of product cleanliness

If you are a new or seasoned Reliability Engineer you will be able to walk away with a fresh view of your lubrication process and how to work with your partners in supplying you these products to raise your program to the next level.

Location: Creole Queen Room
This tutorial will cover the problems seen in the industry, as well as a history of the technologies that have been used in the past. We will cover how these technologies have changed and evolved over the years into what we have available to us today, keeping in mind the tightening of emissions regulations and how this has driven the evolution of control strategy.

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2014 Exhibitor Map

GSRMS Save The Date!
April 27 – 30, 2015