



# 2010

EASTERN GAS  
COMPRESSION  
ROUNDTABLE

May 11-13, 2010  
Robert Morris College  
Moon Township, PA

[www.EGCR.org](http://www.EGCR.org)

## **Class Descriptions**

## EGCR Basic Track

**Classroom: Pennsylvania Ste, Sewell Center, 3rd Flr**

**\$500 PER STUDENT INCLUDES EGCR REGISTRATION FEE, MEALS AND EXHIBITS (12 HOURS)**

This training provides an introduction to the 3 types of compressor stations used in the transportation of natural gas and focuses on the design, function and operational differences.

The program targets new employees, those new to the gas industry or those newly exposed to natural gas compressor stations and auxiliary equipment. It is building-block based, with review and practice session built in to reinforce each objective. Each module has a review session and test. CEU's are issued for the successful completion of the course and final test.

- Compressor Stations and their functions
- Compressor Station equipment and yard piping
- Auxiliary systems and equipment
- Operating characteristics of reciprocating and centrifugal compressors
- Design characteristics of prime movers
- Factors basic to reciprocating compression operation
- Characteristics of the primary equipment in a compressor station
- Reciprocating compressor components and cylinder operation
- Systems basic to operating reciprocating compressor units

*Richard Lynch, Dominion Transmission*

*Terry Godfrey, EQT Corp*

## Technical & Engineering

**Classroom: Hale 301**

**TUESDAY**

**SESSION 1** **1:00 - 2:30**  
**FOUNDATION REPAIR VS REPLACEMENT**

This session will cover at what time repairs should be made vs. when to replace an entire engine foundation.

*Jay Greer – D.R. - Arrow Services*

**SESSION 2** **2:40 - 4:10**  
**ELECTRICAL HAZARDOUS AREA CLASSIFICATION**

Overview of hazardous area classification for gas compressor stations and electrical equipment and installation techniques required

*Joe Haught, EQT Corporation*

**WEDNESDAY**

**SESSION 3** **8:00 - 9:30**  
**GAS CONDITIONING AND GLYCOL DEHYDRATION**

Operation of glycol dehydration systems with an emphasis on system components and operating parameters.

*Greg Knight, Nisource GT&S*

**SESSION 4** **9:40 - 11:00**  
**COMPRESSOR STATION DESIGN PROCESS**

We will walk through a compressor station design from concept to the beginning of construction and explore the role of the engineer and the development of the engineering drawing package. We will:

- Discuss basic station systems such as Main Gas, Fuel Gas, Lube Oil, Cooling Water, Waste Fluids, etc.
- Identify and discuss the major pieces of equipment that make up each system and how they function.
- Discuss the design information that is required by the design engineer in order for him to properly size the equipment in these systems.
- Discuss the design drawings - how they are developed, taking a closer look at the information needed to develop the design drawings.
- Discuss the different types of drawings and how they're used to provide information in the design drawing package.

The students will see examples of the original design drawings from an operating compressor station and have an opportunity to discuss station design concepts.

*G. Mitchell Mazaher, P.E., Basic Systems, Inc.*

**SESSION 5** **1:00 - 2:30**  
**GAS TURBINE MAINTENANCE**

Although turbo-machinery overhaul is the greatest single maintenance expense in equipment life-cycle cost analysis, unscheduled or unexpected gas turbine outages could be the costliest of all events. This presentation will focus on maintenance procedures and operating practices that could increase the time between inspections and overhauls, with the goal of reducing the risks of more costly unscheduled equipment downtime. Several primary areas will be reviewed where poor maintenance practices typically result in premature gas turbine overhauls and failures. These areas include inlet air, water, fuel, lube oil and vibration.

*Cindy Liu, Solar Turbines Inc. Charles Lozinger, Solar Turbines Inc.*

**SESSION 6** **2:40 - 4:10**  
**MARCELLUS SHALE PLAY**

*Exterran*

**THURSDAY****SESSION 7 8:00 - 9:30**  
**EMISSION REDUCTION SOLUTIONS FOR THE NEW CLEAN AIR REGULATIONS**

In August 2010, EPA will be publishing new clean air and emissions requirements for all reciprocating engines (as low as 25 HP). This session will present the expected new regulations and compliance requirements. And, it will also discuss the different types of emission reduction technologies that will be necessary to comply with these new regulations.

*Charles Ely, Dresser-Rand, Engineuity*

**SESSION 8 9:40 - 11:10**  
**HIGH BTU FUEL GAS AND HOW IT AFFECTS OUR ENGINES**

This discussion will be about the Marcellus Gas and how the high BTU gas affects peak firing pressures and emission level permits.

*Keith Schafer, Nisource GT&S*

**Team Leader and Management Training**

**Classroom: Hale 303**

**JIM KING, THE COMMUNITY AND TECHNICAL COLLEGE AT WEST VIRGINIA UNIVERSITY INSTITUTE OF TECHNOLOGY**

**TUESDAY****SESSION 1 1:00 - 2:30**  
**LEADERSHIP AND MOTIVATION**

This session will focus on the most difficult part of a manager's responsibilities: how to keep employees motivated. Topics covered will include the supervisor's role regarding leadership and motivation, employee performance, workplace attitudes, and training

**SESSION 2 2:40 - 4:10**  
**PLANNING AND SCHEDULING**

"Plan the work and work the plan" is the mantra we've all heard at one time or another during our careers, but just what does it mean and how is it applied? This session will look at plan preparation, communication, various tracking methods, use of electronic scheduling and planning and scheduling applications throughout the company

**WEDNESDAY****SESSION 3 8:00 - 9:30**  
**COMMUNICATIONS FOR SUPERVISORS**

While communications may be viewed as a basic function of our everyday work environment, there are many pitfalls that can impact a manager. Session 3 will address what is effective

communication, learning to listen, conversations, persuasion, negotiation, and confrontation, how/what to communicate with your crew, basic writing skills, meetings and electronic communication

**SESSION 4 9:40 - 11:10**  
**PROJECT MANAGEMENT**

Session 4 is a more in depth look at Planning and Scheduling, Session 2. While it is not required that one attends Session 2, it is strongly suggested. Topics covered include: Understanding project delivery systems, ways to manage information, risk management, methods and materials, finances, project "champions," the human factor, and corporate policies and procedures.

**SESSION 5 1:00 - 2:30**  
**SUSTAINABILITY AWARENESS**

This Session will start with a basic overview of Sustainability, define the "green movement" and explore the effects on the Oil and Gas Industry. It is highly recommended that participants attend both Sessions 5 and 6. The operation of a business involves many facets of management, from human resources to materials. This session will describe the history of business since the industrial revolution and the tremendous amount of waste produced, the current state of industry in the United States and how to implement sustainable practices that affect the triple bottom line (people, profits and the planet), or social responsibility, economic success and environmental stewardship

**SESSION 6 2:40 PM - 4:10 PM**  
**SUSTAINABILITY AWARENESS II**

As a continuation of the previous Sustainability Awareness I, Session 6 participants will learn how to balance the issues associated with the use of "green" technologies. Focused on the technology associated with "green jobs", the session examines the balancing act of doing the right thing with the issues created by changing an existing process (i.e., cost changes, legal ramifications, altering work procedures, etc)

**THURSDAY****SESSION 7 8:00 - 9:30**  
**BASIC ESTIMATING**

An overview of the application of procedures and theory in formulating project estimates. Focus on job parameters, estimating production, compilation of costs, final preparation of bids, and ethics in estimating. Specialized construction estimating software popular in industry will be introduced as well as Means Construction Cost Data books to explain both manual and computer based the estimating processes.

**SESSION 8** **9:40 – 11:10**  
**PRODUCTIVITY IMPROVEMENT**

Productivity is the mainstay of business. This session will address benchmarking site productivity, how to improve productivity through pre-planning, personnel management, equipment/tools and the effect on productivity, managing subcontractors, tacking lost labor, and basic recordkeeping. Many of the topics covered in the previous sessions will be referenced.

## EGCR Intermediate Gas Engine Maintenance

**Classroom: Hale 310**

### TUESDAY

**SESSION 1** **1:00 - 2:00**  
**CAM TIMING AND GAS VALVES**

Discussion of Cam Timing, Gas Valves, and their implications on engine performance  
*Mitch Newton, Cameron*

**SESSION 2** **2:00 - 3:00**  
**TURBO, BLOWERS, SAVAGING**

The Theory of Aspiration and the components that make air.  
*Nick, Cameron*

**SESSION 3** **3:00 - 4:00**  
**EMISSIONS TECHNOLOGY**

Discussion about current and upcoming emission equipment that will affect the natural gas compression market  
*Mitch Newton, Cameron | David O'Kelly, EMS*

### WEDNESDAY

**SESSION 4** **8:00 - 9:30**

**SESSION 5** **9:40 - 11:10**

**MAJOR COMPONENT EVALUATIONS, MAINTENANCE, REPAIR AND RECONDITIONING**

Topics Covers will include: Power Cylinders, Power Pistons and Rings, Crankshafts, Connecting rods, Frames, Bearings, Governors

*Jim Logue, Peaker Services | Mitch Newton, Cameron*

*Randy Ridgeway, Engine Room International*

**SESSION 6** **1:00 - 3:00**  
**ENGINE BALANCING**

An in-depth discussion of the effects of engine balancing on engine performance  
*Charles Ely, Dresser-Rand*

**SESSION 7** **3:00 - 4:00**  
**FOUNDATIONS / GROUT**

The Pros and Cons of today's practices and grouting methods  
*Scott Vercoe, Energy Tech Systems*

### THURSDAY

**SESSION 8** **8:00 - 9:00**  
**PREVENTATIVE/PREDICTIVE MAINTENANCE**

An Overview of Maintenance Philosophies  
*David O'Kelly, EMS*

**SESSION 9** **9:00 - 10:00**  
**LUBRICATION SYSTEMS**

Theory, Maintenance and Troubleshooting  
*Walter Sloan, Sloan Brothers*

**SESSION 10** **10:00 - 11:00**  
**FILTRATION / OIL ANALYSIS**

The Importance of Filtering and Monitoring Lube Oil  
*Don Banister, Citgo*

**SESSION 11** **11:00 - 12:00**  
**IGNITION SYSTEMS**

The Operation and Troubleshooting of Ignition Systems Used on Gas Engines  
*Tom Smith, Altronic*

## Pipeline Valve & Actuation Operations and Maintenance

**Classroom: Hale 203**

### TUESDAY

**SESSION 1** **1:00 - 2:00**  
**PLUG VALVE BASICS**

Identifying the types of plugs valves commonly used in the industry. Understanding how they work, implementation, and proper terminology. Open discussion regarding common Q&A and then identifying as a group what challenges we face concerning the plug valve in the field.

*Lee Graham, Val -Tex*

**SESSION 2** **2:40 - 4:10**  
**MAINTAINING AND TROUBLESHOOTING THE PLUG VALVE**

Following the discussion of the challenges we are facing in the field, we will attempt to dissect the best methods by which to overcome them. We will talk about preventative maintenance and troubleshooting sticking, frozen and inoperative plug valves. Class participation is highly encouraged in this class.

*Lee Graham, Val -Tex*

**WEDNESDAY****SESSION 3** **8:00 - 9:30**  
**BALL VALVE BASICS**

Discuss the similarities and differences between the most commonly used trunnion mounted ball valves used today. Understanding how they work, implementation, and proper terminology. Open discussion regarding common Q&A and then identifying as a group what challenges we face concerning the plug valve in the field.

*Lee Graham, Val -Tex*

**SESSION 4** **9:40 - 11:10**  
**MAINTAINING AND TROUBLE SHOOTING THE BALL VALVE**

Following the discussion of the challenges we are facing in the field, we will attempt to dissect the best methods by which to overcome them. Following the discussion of the challenges we are facing in the field, we will attempt to dissect the best methods by which to overcome them. A portion of this class will discuss procedures and best practices of valve prep for hydrostatic testing and start-up of new construction. Class participation is highly encouraged in this class.

*Lee Graham, Val -Tex*

**SESSION 5** **1:00 - 2:30**  
**RELIEF VALVES: BASICS AND HANDS ON**

Identifying the types of relief valves commonly used in the industry. Understanding how they work, implementation, and proper terminology. Open discussion regarding common Q&A and then identifying as a group what challenges we face concerning the relief valve in the field.

*Perry Blythe, Blythe Company*

**SESSION 6** **2:40 - 4:10**  
**ROTARY VANE ACTUATION BASICS TROUBLESHOOTING AND MAINTENANCE**

- Basic operations of the Shafer Rotary Vane type valve actuators
- Yearly recommended maintenance for Actuator, Gas Hydraulic Tanks, Poppet Block Control & Hand Pump
- Rebuild and repair as required from yearly check

*Dale Opperman, Emerson/Shafer*

**THURSDAY****SESSION 7** **8:00 - 9:30**  
**SCOTCH YOKE ACTUATION BASICS, TROUBLESHOOTING AND MAINTENANCE**

How a scotch-yoke actuator works. Identify common packages seen in the field, commonalities and differences amongst the different manufacturers of the scotch-yoke, and how to maintain these actuators. Q&A encouraged in this class.

*Russ Robertson, Ledeen*

**SESSION 8** **9:40 - 11:10**  
**WORM GEARS AND ELECTRIC ACTUATORS TROUBLESHOOTING AND MAINTENANCE**

While the most basic of actuators, the worm gear receives constant neglect of maintenance. We will discuss the parts of a common worm gear, preventative maintenance, troubleshooting and setting the stops. This class is a must for pipeline O&M technicians who perform annual valve maintenance.

*Lee Graham, Val -Tex*

**EGCR Intermediate Reciprocating Compressor Maintenance**

**Classroom: Hale 204**

**TRACK COORDINATOR: BRUCE WALKER, COOK COMPRESSION (13 HOURS)**

**TUESDAY****SESSION 1** **1:00-2:30**  
**COMPRESSOR THEORY**

In this class, the instructor will give the students a basic understanding Pressure Volume Curve and how they can be used.

*Ben Boutin, Hoerbiger*

**SESSION 2** **2:40-4:10**  
**FRAMES & COMPONENTS INTEGRAL/SEPARABLE CROSSHEADS, CONNECTING RODS, CRANKSHAFTS, BEARINGS**

This Class will cover Compressor Frames & Components Integral/Separable, Crossheads, Connecting Rods, Crankshafts, Bearings

*Matthew Johnson, EQT*

**WEDNESDAY****SESSION 3** **8:00-9:30**  
**LUBRICATION**

This class will cover the how's and why's of compressor lubrication

*Bill Pullin, T.F. Hudgins*

**SESSION 4** **9:40-11:00**  
**COMPRESSOR VALVES**

This class will cover the topic of compressor valves. In the class, we will discuss different types of valve and where they are used. The Types covered are: Poppets, Plates, Channels, Spring tension, Lift or travel, Field Inspection & Repairs

*Steve Chaykosky, Dresser-Rand*

**SESSION 5A** 1:00–2:30  
**SESSION 5B** 2:40–4:10

### MAJOR COMPRESSOR CYLINDER COMPONENTS

This class will cover Major Compressor Cylinder Components including; Packing, Piston Rings & Riderbands, Pistons and Rods, Cylinders and Cylinder Liners

*George McKinney, EMS*

#### THURSDAY

**SESSION 6** 8:00–9:30  
**ROD REVERSAL/FUGITIVE EMISSIONS**

This class will cover Measuring Rod Packing Leak Rates and Fugitive Methane Emissions at Compressor Stations

*Warren Laible, Windrock | Milton Heath, Heath Consultants*

**SESSION 7** 9:40–10:50  
**CHECKING COMPRESSOR CRITICAL CLEARANCES**

*Greg Knight, Columbia Gas Transmission*

**SESSION 9** 11:00–12:00  
**FILTRATION**

This class will cover the different uses of filtration devices to protect compressor Equipment from liquid and solids in the gas stream.

*Kevin Christian, Peco*

## EGCR Auxiliary Equipment Maintenance Topic

**Classroom: Hale 207**

#### TUESDAY

**SESSION 1** 1:00–2:30  
**FIRE SYSTEMS AND GAS DETECTION EQUIPMENT**

Discussion on The types of Fire and Gas Detection systems that are on the market, how the work, and how they are calibrated.

*Ken Salmen, Salmen-Tech*

**SESSION 2** 2:40–4:10  
**ROTARY AND ULTRASONIC METER MAINTENANCE**

*Pat Ryan, Venture Tech*

#### WEDNESDAY

**SESSION 3** 8:00–9:30  
**SCRUBBER/FILTRATION MAINTENANCE**

*Sam Singleton, PECo*

**SESSION 4** 9:40–11:00  
**EIM VALVE OPERATOR MAINTENANCE**

*Mike Rooney, EIM*

**SESSION 4** 1:00–2:30  
**AUTO DUMP VALVES & REGULATORS**

*Gary Beckett, NIABCO Automation*

#### THURSDAY

**SESSION 6** 8:00–9:30  
**SCRUBBER/FILTRATION MAINTENANCE**

*Sam Singleton, PECo*

**SESSION 7** 9:40–10:50  
**ROTARY AND ULTRASONIC METER MAINTENANCE**

*Pat Ryan, Venture Tech*

## Special Topics

**Classroom: Hale 209**

#### TUESDAY

**SESSION 1** 1:00–2:30  
**REPAIR OF 2 CYCLE AND 4 CYCLE POWER CYLINDER BY THERMAL SPRAY**

Repair of 2 cycle and 4 cycle power cylinders by Exline, Inc's ThermAlloy spray method presented by Power Point Presentation and related discussion period. Topic to include review and discussion of power cylinder repair options with evaluation of choices available, the importance of inspecting the entire cylinder, and in depth information on ThermAlloy spray of power cylinders and the integrity of related components.

*Ken Robison, Exline, Inc.*

**SESSION 2** 2:40–4:10  
**EPA SUB PART W, MANDATORY REPORTING RULE FOR FUGITIVE METHANE EMISSIONS**

How will you comply? What it is, what type of facilities does it affects, What to Screen, What to Measure, How to measure, What and how to report

*Milton W. Heath III, Heath Consultants Incorporated*

#### WEDNESDAY

**SESSION 3** 9:40–11:00  
**CREATE YOUR OWN LOW EMISSION, RELIABLE ELECTRICAL AND THERMAL ENERGY ON SITE WITH CAPSTONE TURBINES**

Come learn how Dominion Transmission has been using Capstone technology to deliver clean, reliable and cost effective gas transportation at ultra-low emission rates for more than a decade. Dominion Transmission boasts a fleet of more than 45 turbines at 10 different compression and storage stations throughout Virginia, West Virginia, New York State and

Pennsylvania. This Technical Presentation will demonstrate the functionality and scalability of Capstone units that require minimal maintenance at extended run hours.

*Jeff Beiter – E-Finity*

## **Original Equipment Manufacturers (OEM) Caterpillar**

**Classroom: Dining Room A&B, Sewell Center, 3rd Flr**

### **CATERPILLAR – INTRODUCTORY COURSE**

**\$500 PER STUDENT INCLUDES EGCR REGISTRATION FEE, MEALS AND EXHIBITS (14 HOURS)**

\$500 – Cost includes full EGCR registration fee, vendor hall admission, meals and the Caterpillar Introductory session. (14 hours). Introductory course with presentations will discuss the many facets of how the systems work, discussion of operation and adjustments, how to properly set the engines up for correct performance and emissions.

- Introduction to Caterpillar Gas Engines
- Basic operational characteristics of natural gas engines
- Rich burn (Stoichiometric) vs. Lean burn
- Methane Number and Cat Methane Number Program
- Carburetor operation and adjustment, emissions adjustment
- Sensors
- Wastegate, boost control, aftercooler
- Gas regulators and balance line
- Ignition Systems

**Classroom: Dining Room C, Sewell Center, 3rd Flr**

### **CATERPILLAR – ADVANCED COURSE**

**\$500 PER STUDENT INCLUDES EGCR REGISTRATION FEE, MEALS AND EXHIBITS (14 HOURS)**

\$500 – Cost includes full EGCR registration fee, vendor hall admission, meals and the Caterpillar Introductory session. (14 hours). Introductory course with presentations will discuss the many facets of how the systems work, discussion of operation and adjustments, how to properly set the engines up for correct performance and emissions.

- G3500 Cat Gas Engine
- G3600 Cat Gas Engine
- Optional; subject to class request