



Factors in Compressor Station Design

March 6 - 8, 2012

Houston, TX

PRELIMINARY AGENDA

DAY 1

- 8:00-8:30 **Continental Breakfast**
Welcome and Introductions – Patrick Downey, GMRC
- 8:30-9:30 **Evaluation of Drivers**
- 9:30-9:45 Break
- 9:45-12:00 **Workshop Overview**
Chuck Law, Alliance Engineering
- Workshop Goals
 - Business Cycle
 - Rules of Thumb for Costs of Compressor
 - Station & Pipeline Facilities
 - Compressor Station Specifics
 - Contents of 1 Cubic Foot of Natural Gas
 - Gas Terminology, Definitions, Conversions and TOPO
- Compressor Station Layout
- Factors to Consider
 - Storm Water Considerations
- 12:00-1:00 Lunch
- 1:00-2:30 **Compressor Horsepower Calculation**
- Compressor Horsepower Estimate Graphic
 - Compressor Horsepower Estimate Worksheet
- 2:30-2:45 Break
- 2:45-5:00 **Valves and Yard Piping**
- Valves Diagram
 - Calculate Gas Velocity I Pipe Worksheet
 - Piping Analysis, Acoustical-Mechanical-Thermal Acoustic Filter Diagram
- Fuel Gas Systems**
- Fuel Gas Piping Diagram
 - Water Vapor Content Graph
 - Fuel Gas System Worksheet
 - Considerations for Fuel Gas System

Day 2

- 8:00-8:30 **Conference Breakfast**
- 8:30-10:00 **Gas Cleaning** - Tony Walton, Peerless
- 10:00-10:15 Break
- 10:15-12:00 **Electrical Systems** - Graeme McNeil, Alliance Engineering
- Electrical Classification & Ventilation
- Division and Classification
 - Typical Compressor Building Classification Diagram
 - Non-Acceptable Building Ventilation
 - Acceptable Application for building Ventilation
 - Adequate Ventilation – Critical Flow Rate Calculations
- Considerations for Gas & Fire Detection Systems
- Considerations for Emergency Action
- Emergency Action Examples
- 12:00-1:00 **Lunch**
- 1:00-3:00 **Compressor Station Air Systems** - Graeme McNeil/Chuck Law
- Electrical Schematic for Large Motor Station
- Electrical Schematic for Recip or Turbine Station
- Station Electrical Loads
 - Convert Horsepower to KV A Diagram
 - Electrical Load Calculations Worksheet
- Sizing Generators and Transformers
- Generator and Transformer Sizing Worksheet

Day 3

- 8:00-8:30 **Conference Breakfast**
- 8:30 **Sizing Wire and Conduit** - Graeme McNeil, Alliance
- Parameters for Sizing Wire and Conduit
- NEC Table 310.16
 - NEC Table 310.77
 - NEC Chapter 9, Table 5
 - NEC Chapter 9, Table 4
 - Answer Sheet – Size Wire and Conduit
- 9:30-9:45 **Break**
- Lighting Systems** - Graeme McNeil
- Types of Lighting
- Tank age, Power and Power Gas Systems** - Chuck Law
- Cooling** - Chuck Law

Sizing an Air Cooled Exchange for the Discharge Gas
Major Equipment

11:00

Lunch

Automation - Graeme McNeil

Typical Distributed Control System for an Automated
Compressor Station Diagram

Automation Overview

- Typical Turbine Station – I/O Listing
- Typical Recip Station – I/O Listing
- Sample Station PLC Functions

Exhaust System Design - Chuck Law

Exhaust Design Worksheet

Exhaust Design Concerns/Considerations

Exhaust Definitions

Turbine Exhaust Silencer and Exhaust Stack Diagram

Air Intake System Design - Chuck Law

Air Intake Design Worksheet

Air Intake Definitions

Inertial Self-Cleaning Barrier Air Filter System – HV

Gas Turbine Inlet Air Filter Diagram

Air Intake Design Concerns/Considerations

Inlet Air Filter System Selection Chart

Building Heating

Building Heating Worksheet

Commonly Used Types of Building Heating

Cathodic Protection

Closing Remarks

Adjourn