

## Wednesday, January 17th

- 8:00            **Welcome and Introductions**
- 8:30            **Fundamentals of Self-Operated Regulators**  
*Self-operated regulator principles are discussed including droop, critical flow, spring, diaphragm & inlet sensitivity.*
- 9:30            **HSR Take Apart & Design Technology**  
*Students will assemble a self-operated regulator and discuss the industry standards which guide regulator design.*
- 10:00           **Break**
- 10:15           **Sizing & Selection Self-Operated Regulators**  
*Students will discuss and demonstrate basics of selection and sizing of regulators.*
- 11:15           **Odorizer – Dosaodor**
- 12:00           **Lunch with Emerson staff**
- 1:00            **Pressure-Loaded & Pilot Operated Regulators**  
*A discussion of how pressure loading improves regulator performance illustrated with a look at the CP regulator designs. Comparison to CS400 performance. As well as discussion of how pilot loading, pilot unloading, and two-path control improve regulator performance illustrated with several pilot-operated regulator designs.*
- 2:15            **Sizing & Selection Pilot-Operated Regulators**  
*Students will discuss and demonstrate basics of selection and sizing of regulators.*
- 3:15            **Break**
- 3:30            **OPP**  
*A discussion of the basic methods of overpressure protection for natural gas applications, including relief valve installation philosophies and considerations for selecting monitors.*
- 4:30            **Quiz**
- 5:00            **Adjourn**

## **Thursday, January 18th**

- 8:00            **Second Levels of Over Pressure Protection**  
*A discussion of the 2020 Pipes Act and the basic methods of overpressure protection for natural gas applications, including relief valve installation philosophies and considerations for selecting monitors.*
- 8:30            **Over Pressure Protection Sizing & Selection**  
*Students will discuss and demonstrate basics of selection and sizing.*
- 9:30            **Break**
- 9:45            **Regulator Stability & Failure Analysis / Installation Practices & Troubleshooting**  
*A discussion of stability problems, regulator failure open or closed, proper installation practices, and effective troubleshooting.*
- 10:45          **Regulator Toolkit & Lab Tour**  
*35 minutes each with 5-minute break in between.*
- Group 1      Flow Lab Tour**
- Station 2      Regulator Toolkit**  
*Review of useful tool to help expedite the sizing and selection process.*
- 11:45          **Lunch with Emerson staff**
- 12:45          **PRV Codes, Standards, and Regulations**  
*Will review ASME, API, NBBI and DOT 192 for PRVs.*
- 1:05            **Principles of Design and Operation for PRVs**  
*This discussion will specifically cover Direct Spring and Pilot Op Design.*
- 1:45            **Installation and Options for PRVs**
- 2:00            **API Storage Tank Standards and Recommended Practices**  
*A discussion of the different types of storage tanks and applicable standards.*
- 2:15            **Layers of Tank Protection**
- 2:30            **Types of Tank Pressure Control Vents**
- 3:00            **Flame Protection and Arrestors**
- 3:30            **Quiz**
- 4:00            **Adjourn**