LP Management Services, Inc.
Specializing in Safety, Health and Risk Management Consultation

Modern Hydronics: Advanced Seminar

Course Duration: 8 hours

DEFINITIONS, TERMS, PRINCIPLES, BASIC COMPONENTS USED IN DESIGNING HYDRONIC SYSTEMS

CENTRIFUGAL PUMPS USED IN MID-SIZED HYDRONIC SYSTEMS
Centrifugal pump operation
Mechanical seals
Bearings, lubrication
Larger centrifugal pump accessories

CENTRIFUGAL PUMP CURVES
Head-capacity curves, impeller diameter
Pump efficiency, selecting pump motors
NPSH, avoiding pump cavitation
Closed and open systems
Basics of pump selection

THE BELL & GOSSETT SYSTEM SYZER
Fundamental calculations
Using the System Syzer to aid in pump selection
Introduction to ESP Plus

COMPOUND PUMP SYSTEMS
Pumps in parallel using manual methods and using ESP Plus
Some limitations and cautions
Pumps in series

ZONING IN HYDRONIC SYSTEMS
Additional components required, some more limitations, problems
Primary-secondary pumping as a better solution to zoning problems

INTRODUCTION TO CHILLED WATER SYSTEMS
The vapor compression cycle, chillers, cooling towers, fan coil units
Example problem: Dual temperature, primary-secondary system
- Introduction to system balance
- Limitations and cautions
- Open systems

BALANCING HYDRONIC SYSTEMS
Why balance?
The effect of design decisions on system balance
Introduction to hydronic control valves
Achieving balance in constant speed pumping systems

INTRODUCTION TO VARIABLE SPEED PUMPING
Why variable speed?
Automatic control
What's next?