Proctor Sales invites you to join Taco for an 8 hour Hydronic Essentials Class on Tuesday August 30th. This will provide 8 hours of Oregon CEU credits. Please RSVP to gchambers@gopsi.com by Monday August 8th. There will be a charge of $150.00 per person and seats are limited. After completion of the course, each participant will receive a 0015e3 pump.
Location: 27180 SW 95th Ave. Suite 3370 Wilsonville, OR 97070

'Hydronic Essentials' Course Outline

8- Hours class time: 8:00 AM to 5:30 PM, (30 min Lunch & 6- 10-minute breaks)

Introduction- 5: Minutes

- Distinguish the difference between professionals and amateurs
- Overview of what goes into a complete hydronic design

Load Calculation review- 60: Minutes

- Manual step by step sample room calculations
- Terminologies and formulas for proper heat-loss
- Infiltration and conduction losses
- Zoning considerations

Heat Emitter Sizing & Selection- 45: Minutes

- Standard and low-temp applications with baseboard fin tube
- Standard and low-temp applications with Panel radiators
- Low-temp hydronic radiant floor applications

Boiler Sizing and Selection Details- 35: Minutes

- Review of AGA input, DOE capacity and Net IBR output
- Selection of the correct boiler size
- Traditional or Mod/Con styles available and how they impact the system

Review of typical Hydronic calculations- 35: Minutes

- Break-down and analysis of the traditional GPM formula:
  GPM= Load/(ΔT x K)
- Density/Specific weight, Specific Heat & glycol de-rates
- Initial pump sizing exercise

Near Boiler / Supply and Return Pipe Sizing- 45: Minutes

- Minimum and Maximum flow rates for each line size
- Associated pressure drop and velocity issues
- Pressure drop calculation example
- Cv clarification

Near Boiler Piping Details- 30: Minutes

- "Power Purge" detail and review
- Review the typical and appropriate piping of the condensing boilers
- Primary/Secondary piping configuration rules
- Air Elimination

Circulator Facts and Curves - 45: Minutes

- Anatomy of a centrifugal circulator
- System Fluid Hydraulics
- Understanding mechanical energy added
- Point of no pressure change
- Efficiency and the "sweet-spot"
- Circulator Curves vs System Curves vs Control Curves (operational range)
- Solving for the "system curve"
- Reading the system's flow
- Solving for the missing; Cv, Head or GPM

How the Primary Circ effects the overall efficiency of the Mod/Con - 15: Minutes

- Not oversizing the Primary circ
- Deduct for altitude and efficiency
- Calculation example

Expansion Tank considerations - 10: Minutes

- Understanding what you are sizing for!
- Software makes it easy
- Information required to size correctly

Circulator Selection - 15: Minutes

- Using the class example to select a circ
- Understanding how the operating point moves w/ valves closing
- Finalizing the selection based on over-all efficiency

ECM Circulator Realities - 80: Minutes

- Dispelling the myth of a 'magic button' for all pump applications
- Understanding which mode to use for what piping scheme/application
- Can a delta T ECM be used as a boiler primary circ?

Where is ECM technology going in the next 5 years…- 60: Minutes

- From 3 to 300 GPM in ECM
- How will we communicate with these circs
- What keeps pumps from locking up?
- Can we effectively "see" inside the piping system?

Review, Questions and Clarifications...