Heating System Fundamentals

Course Information

Developers: HVAC State Curriculum Committee

Chris Sterrett, FSCC; Jackie Long, Hutchinson CC; Glenn Smith, JCCC; Howard Hendren, JCCC; Jim Bennett, JCCC; Richard Fort, JCCC; David Yantz, KCKCC; Cliff Smith, KCKCC; Frank Avila, MATC; Ron Bell, MATC; Brian Badger, NCKTC; Corey Isbell, NCKTC; Linc Ostmeyer, NWKTC; Chad Townley, SATC; Judy Crymble, SATC; Joshua Thompson, Washburn Tech; Terry Smith, WATC; Fran Tedman, WATC; Mike Edwards, WATC; Chris Hickman, SCCC; Bud Smithson, SCCC; Kevin Brungardt, SCCC.

Development Date: 11/18/2010 & 11/16/2012

KBOR Facilitators: Dr. Dennis Rittle / Don H. Richards
Shirley Antes/ Rita Johnson/Zoe Thompson

Business & Industry Liaison: Ray Frederick

Credit Hours: 3

Course Competencies:

Students will be able to:

1. Recognize the different fuel types used in various furnaces.
2. Indentify different efficiency of furnaces.
3. Identify carbon monoxide safety violations.
4. Check gas pressures.
5. Inspect and perform standard seasonal maintenance and tune-up.
6. List sequence of operation.
7. Assess air flow/water flow.
8. Measure temperature split.
9. Check and adjust thermostat heat anticipators.
10. Perform start up procedures.
11. Apply trade math to daily applications.
12. Interpret mechanical drawings, symbols, and their applications.
13. Design and install venting for fossil fuel appliances.
14. Explain heating system design and functions.
15. Introduce airside and hydronic systems including various types of boilers, piping, chilled-water systems and their components.
16. Measurement and control of air temperature, humidity, pressure, and velocity.
17. Maintenance and repairs of various HVAC systems.

18. Introduce troubleshooting of heating, cooling, and heat pump systems.
19. Introduce troubleshooting of control circuits, electronic controls, and accessories.
20. Introduce troubleshooting of air quality and energy conservation equipment.
21. Identify the types of ferrous metal pipes.
22. Measure the sizes of ferrous metal pipes.
23. Identify the common malleable iron fittings.
24. Cut, ream, and thread ferrous metal pipe.
25. Join lengths of threaded pipe together and install fittings.
26. Describe the main points to consider when installing pipe runs.
27. Describe the methods used to join piping.