Heating System Fundamentals

Updated November 2022

Developers: Heather Pollet (Coffeyville CC), Clayton Tatro (Dodge City CC), Chris Sterrett (Fort Scott CC), Amy Dulac (Highland CC), Dan Sowers (Highland CC), Mike Steinmetz (Johnson County CC), Jason Lamping (Johnson County CC), Johnathan Vallejo (Johnson County CC), Richard Fort (Johnson County CC), Michael Florence (Kansas City KS CC), Allen Sangwin (Manhattan Area TC), Chad Townley (Salina Area TC), Many Jimenez (Seward County CC), Hector Norez (Seward County CC), Cody Beauclair (Washburn Tech), Joe Erwin (Washburn Tech), Dennis Simmon (WSU Tech)

Business & Industry Liaisons: Brandon Roach (DMC Service, Inc), Keven Ward (Trane), Bob Merritt (BCS), Zack Grossenburg (Mr. Breeze Heating and Cooling), Roger Whitmore (Western Supply Company)

KBOR Facilitators: April Henry, Lisa Beck, Tobias Wood, Charmine Chambers, Vera Brown, Laura Leite

Course Information

Credit Hours: 3

Course Competencies

1. Recognize the different fuel types used in various furnaces.
2. Identify 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, and their components.
16. Measurement and control of air temperature, humidity, pressure, and velocity.
17. Maintenance and repairs of various heating systems
18. Introduce troubleshooting of heating 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.