

CONVECTION HEATING AND COOLING UNITS

GENERAL INFORMATION

- 1.1 This section applies to fan coil units, finned tube radiator, convectors and unit heaters.
- 1.2 Any desired deviation from 1) this requirement, or 2) approved manufacturers may be requested in writing and submitted prior to the design review meeting with the Project Manager and CU Operations.

DESIGN REQUIREMENTS

- 2.1 Approved manufacturers
 - a. Fan coil units
 1. Custom Air
 2. York
 3. International Environmental (preferred)
 - b. High rise style fan coil units
 1. Williams
 2. Airtherm Manufacturing Co.
 - c. Fin tube radiation
 1. Dunham-Bush, Inc.
 2. Sterling Radiator, Div. of Reed National Corp.
 3. Vulcan Radiator
 - d. Convectors
 1. Airtherm Manufacturing Co.
 2. Dunham-Bush, Inc.
 3. Sterling Radiator, Div. of Reed National Corp.
 - e. Unit Heaters
 1. Airtherm Manufacturing Co.
 2. Dunham-Bush, Inc.
 3. Sterling Radiator, Div. of Reed National Corp.
 4. Modine Manufacturing Co.
 - f. Cabinet Heaters
 1. Airtherm Manufacturing Co.
 2. Dunham-Bush, Inc.
 3. Sterling Radiator, Div. of Reed National Corp.
 4. McQuay Inc. Cabinet Heaters

DESIGN REQUIREMENTS

- g. Induction Units
 - 1. Carrier Corp
 - h. Unit Ventilators
 - 1. McQuay Inc.
 - 2. AAF – Herman Nelson
 - 3. Johnson Controls, Inc.
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- 2.2 Four pipe fan coil systems are standard for new building construction and renovations.
 - 2.3 All fan coil units shall have DDC controls and be connected to the Building Automation System.
 - 2.4 All fan coil units shall be sized to meet design load while operating at medium speed. In noise sensitive areas, low speed will be the design speed.
 - 2.5 All fan coil units that are to be connected to the central campus chilled water system shall be selected for a water temperature rise of 16°F, and shall be a minimum of 3 rows.
 - 2.6 Fan coil unit temperature control shall be accomplished through a pressure independent modulating control valve at constant fan speed.
 - 2.7 Minimum pipe size to an individual fan coil unit shall be ¾" including for condensate drainage.
 - 2.8 Finished backs shall be provided where unit backs are visible from within the building or from the exterior of the building.
 - 2.9 Custom enclosures shall be designed and fabricated to facilitate quick filter replacement and simple enclosure disassembly procedure without the need for tools, and to offer sufficient space to service and/or replace all unit components. Design for access of unit mounted controls and provide with discharge collars connected to enclosure discharge air device. Fan coil capacity reduction caused by additional fan static pressure shall be accounted for in design.
 - 2.10 Where space permits, extra wide piping pockets shall be provided.
 - 2.11 Where horizontal piping distribution system is utilized, consider additional height kick space to facilitate pitch of condensate drainage.
 - 2.12 The use of ceiling mounted fan coil units is not permitted.
 - 2.13 Where an exception is granted for a ceiling mounted installation, the Designer shall clearly specify on the construction documents that the units must be installed to allow free maintenance of all serviceable components within the unit through the designated

DESIGN REQUIREMENTS

service panels without the need to remove or relocate ducts, piping or other adjacent systems such as light fixtures.

- 2.14 Allow for adequate access to all valves within convector enclosures.

CONSTRUCTION REQUIREMENTS

- 3.1 Provide a mock-up of each typical fan coil unit installation, provide all piping, controls, air outlets, fan switch, etc. with each typical fan coil unit installed as directed by the Owner for coordination with other trades and for examination prior to proceeding with each basic unit installation.
- 3.2 Provide mock-up for a typical finned-tube radiation run including all piping, valves, accessories and supports.
- 3.3 Protect coils to prevent damage to fins and flanges. Comb out bent fins.
- 3.4 Make connections to coils with unions.

REFERENCE

1. The applicable CSI Specification Section is 23 82 00. Product Requirements

a. Fan Coil Units

1. Unit coil shall be constructed of 5/8 inch O.D. seamless copper tubes mechanically bonded to configured plate type aluminum fins.
2. Fan coil units shall be furnished with a pressure independent modulating control valve for each coil (normally closed valve for chilled water, normally open valve for hot water).
3. The fan coil unit shall include a factory-provided piping package for the coil consisting of a pressure independent modulating control valve with readout ports (for handheld flow indication device), globe stop valves on supply and return unions (between stop valves and coil), and all interconnecting piping. The entire coil and piping package shall be factory tested and rated for 300 psig design working pressure and have factory installed manual air vents.

b. Finned Tube Radiation

1. Commercial radiation shall be a minimum 18 gauge cold-rolled steel full backplate, minimum 16 gauge front. Brace and reinforce front minimum of 4'-0" o. c. without visible fasteners. Elements shall be copper tube and aluminum fins, with tube mechanically expanded into fin. Exposed parts shall be factory

finished baked enamel, color to be selected from manufacturer's offering of standard colors. Include all accessories as required to install a complete system including end caps, access panels, inside corners, outside corners, etc.

2. Install end caps where units butt against walls. Install access panels centered in front of each shutoff valve, steam trap and temperature control valve.

c. Convectors

1. Minimum 16 gauge painted steel front and top panels, minimum 18 gauge painted side panels, and 20 gauge galvanized back panels. Secure fronts in place with quick opening slide bolts or camlock fasteners. Elements shall consist of aluminum fins on copper tubes, and cast iron headers suitable for use in steam or hot water systems. Convectors shall be pre-finished, color to be selected from manufacturer's offering of standard colors.

d. Unit Heaters

1. Horizontal unit heaters shall be constructed of steel, phosphatized inside and out, and finished with baked enamel. Provide motor-mounted panel, minimum of 18 gauge steel. Fabricate casing to enclose coil, louvers, and fan blades. Fans shall be constructed of aluminum, and factory balanced. Motor and fan assembly is removable through fan outlet panel.

DESIGN REQUIREMENTS

Provide totally enclosed motors with built-in overload protection.

2. Hang units from building substrate, not from piping. Mount as high as possible to maintain greatest headroom possible.

e. Cabinet Heaters

1. Minimum 16 gauge painted steel front and top panels, minimum 18 gauge painted side panels, and 20 gauge galvanized back panels. Secure fronts in place with quick opening slide bolts or camlock fasteners.

Elements shall consist of aluminum fins on copper tubes, and cast iron headers suitable for use in steam or hot water systems, provide filters. Cabinet heaters shall be pre-finished, color to be selected from manufacturer's offering of standard colors.

2. Provide centrifugal, forward curved double width fans. Construct fan scrolls of galvanized steel. Motors shall be shaded pole motors with integral thermal overload protection.

END OF SECTION

Revision Approval:

Revision #: 1

Joe Mannino

Date

1.13.14

Frank Martino

Date

1/29/14

AP OK
1/28/14