



Fan Coil Units: Horizontal In-Room

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[HTTP://WWW.TECHNICALAIR.COM/NAILOR](http://www.technicalair.com/nailor)

Overview/Recap- In Room Horizontal FCU

Refresh by reading the [5 Variables to Consider when Choosing a Horizontal Fan Coil Unit](#)

- Highest volume unit in the industry
- Ideal for hotel rooms, condominiums, and small offices
- Typically installed above ceiling and supplies directly to the room they serve
 - Air returns through a grille in the ceiling, either directly into the unit or through the plenum
- **Topics covered:**
 - **Performance based on 5 Design Variables**
 - **Available Configurations**
 - **Unit Design**
 - **Controls**
 - **The Nailor Advantage**



Performance based on 5 Design Variables

From Article: [5 Variables to Consider when Choosing a Horizontal Fan Coil Unit](#)



- **Capacity Requirements**

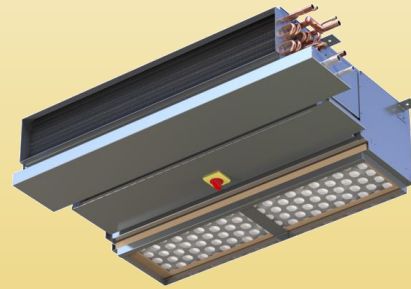
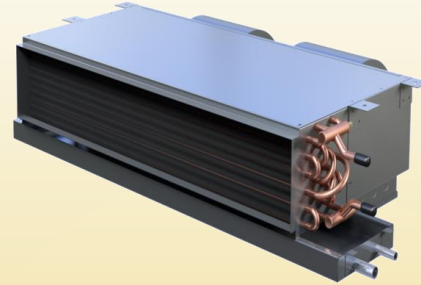
- 300-1,500 CFM
- 2/3-3.5 Tons Cooling
- 9-73 MBH Hot Water Heating
- 1-10 KW Electric Heating

- **External Static Pressure**

- Low, up to 0.5" w.g.
 - Motors are pressure dependent

- **Available Ceiling Space**

- Concealed Units, 10"
- Exposed Units, 12"



- **Sound Sensitivity**

- Medium
 - Most are unducted, causing them to be slightly louder than other options

- **Outside Air Capabilities**

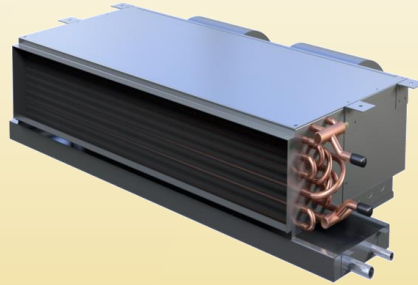
- Low
 - Limited to 4 rows of cooling coil, limits the fan coils ability to handle the latent loads associated with outside air

Available Configurations



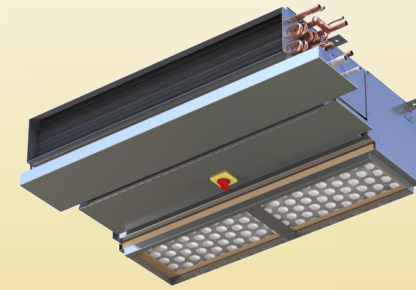
• Free Return

- Lowest cost assembly
- Fan's blower and motor mounted to the side of the cabinet
 - Remain open to the return air source



• Plenum

- Extends the cabinet around the fan blower and motors
- Can be open on the bottom or back of the unit
- Adding plenum makes the unit easier to duct the return
- reduces the radiated sound from the unit by providing a layer of sheet metal and insulation around the fan(s)



• Telescoping

- Installed directly above an access panel with a filter grille
- provides a telescoping extension that connects the unit with the filter grille below
- Extension enables a direct path to the unit for the return air

• Exposed

- Enclosure surrounds the entire unit
- allows the unit to be exposed in the room



Unit Design



- **Cabinet**

- Provides framework for mounting/operability of components
- Includes
 - Chamber for coil
 - Electrical Box
 - Insulated condensate drain pan
- Aids serviceability by having the electrical box is on the bottom of the unit

- **Coils**

- Chilled water
 - Up to 4 rows of cooling
- Hot water
 - Usually located in the reheat position in front of the cooling coil
 - Up to 2 rows (for a total of 6 rows)
- Electric heating
 - Coil is in front of the fans inside the cabinet.

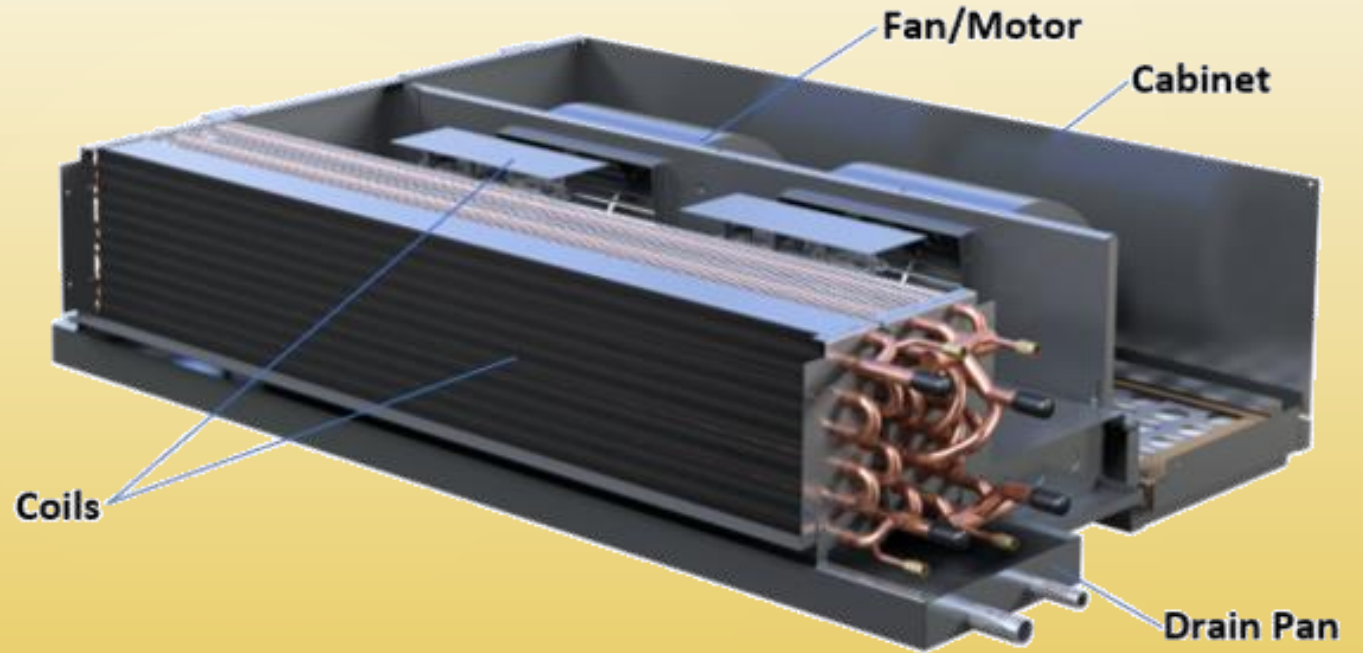
- **Fan/Blower**

- Blow-through in design
- Fan is mounted on the back of the unit and directs the airflow through the coils
- The fan and blower wheel combination optimized for energy efficiency
- Motor types available:
 - 3-Speed PSC
 - 3-Speed ECM
 - Modulating ECM
 - Each has trade-off between cost and energy efficiency
 - PSC- lower cost/efficiency
 - ECM -higher cost/efficiency
- With the small size of the fans and motors, each is pressure dependent
- Pressure-independent motors are not available in this size of fan

Unit Design: Accessories



- Valve Packages
 - Control Valve
 - Auto Flow Control
 - Shut-off valves
 - Flexible Hoses
 - Accessories
 - Y
 - Unions
 - PT Ports
- Thermostats
- Factory Mounted Controls
- Condensate Pumps
- Outside Air Inlets
 - For pretreated air



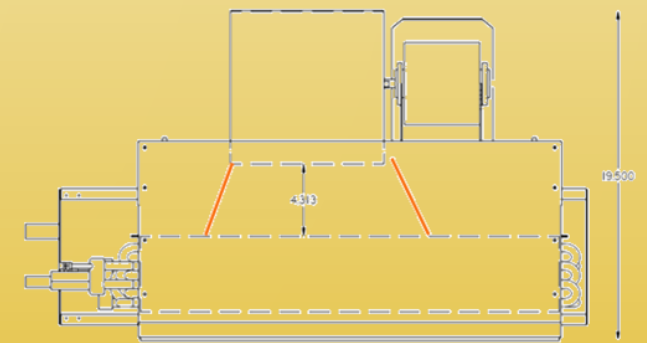
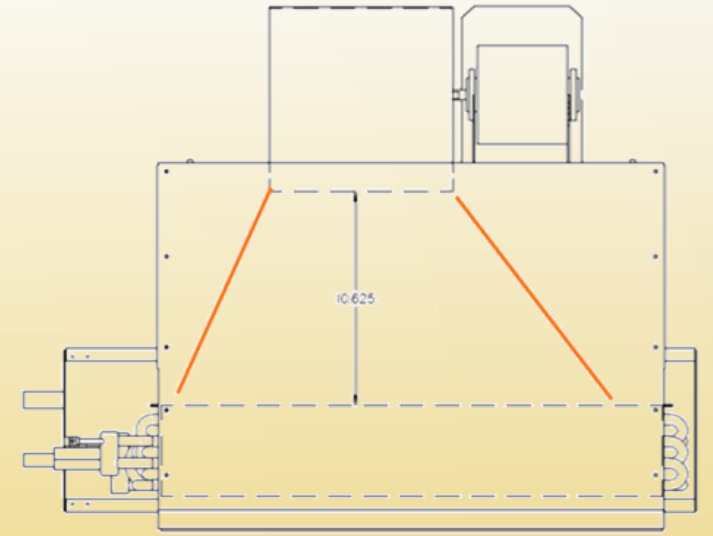
Controls



- Traditional method of controls is similar to an in home DX Split system
 - Unit will cycle on or off depending on the thermostat setting
- Hydronic fan coil system requires control valve to open and fan to operate
 - More advanced systems utilize modulating fan and valves
- Thermostat controls fan speed to regulate comfort in the space
- Modulating control valve ensures constant leaving air temperature from the coil

The Nailor Advantage

- Competitive products position the fan directly against the coil
 - The result is a blast area at the coil
 - In some cases the air velocity through the coil can exceed 500 ft/min
 - At this velocity, condensate on the coil can be blown into the room
- **Nailor has lengthened the cabinet to improve distribution across the entire face of the coil**
 - **Reduces the chance of blowing condensate**
 - **Increases the heat transfer to the air in the space**
 - Results in a more efficient unit
 - **Lowers velocities through the coil**
 - Results in quieter operation



Contact the Local Experts



- Learn more about Nailor Industries, Inc. entire air handling/ air distribution line by going to <http://www.technicalair.com/nailor>
- Contact the Technical Air Systems' Sales Engineering Team at **973-285-0333** or by email at solutions@technicalair.com
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