



Select each topic to preview or review,
then select “complete module”.

**Heating and
Cooling**

**Air Handling
Unit Layout**

**Types of Air
Handling Units**

**Dampers and
Diffusers**

**VAV vs. CAV
Systems**





Heating and Cooling

Explore how boilers and chillers work alongside air handling units.

Air Handling Unit Layout

Discover three elements on a typical air-handling unit.

Types of Air Handling Units

Compare the functions and features of two different air-handling units.

Dampers and Diffusers

Examine the roles of dampers and diffusers in the HVAC system.

VAV vs. CAV Systems

Contrast two different approaches to managing airflow in HVAC systems.

Select each topic, then select “complete module”.

Complete Module



Central Cooling and Heating

Select the arrows to explore boiler images.

Boilers

Boilers supply **heating water** to air handling units and other equipment for space **heating**.



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Central Cooling and Heating

Select the arrows to explore chiller images.

Chillers

Chillers supply **chilled water** to air handling units and other equipment for space **cooling**.



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Central Cooling and Heating

Drag and drop each choice correctly, then select “submit”.

Chillers supply drag choice here to air handling units and other equipment for **space cooling**.

Boilers supply drag choice here to air handling units and other equipment for space **heating**.

heating water

heating air

chilled water

chilled air

Submit

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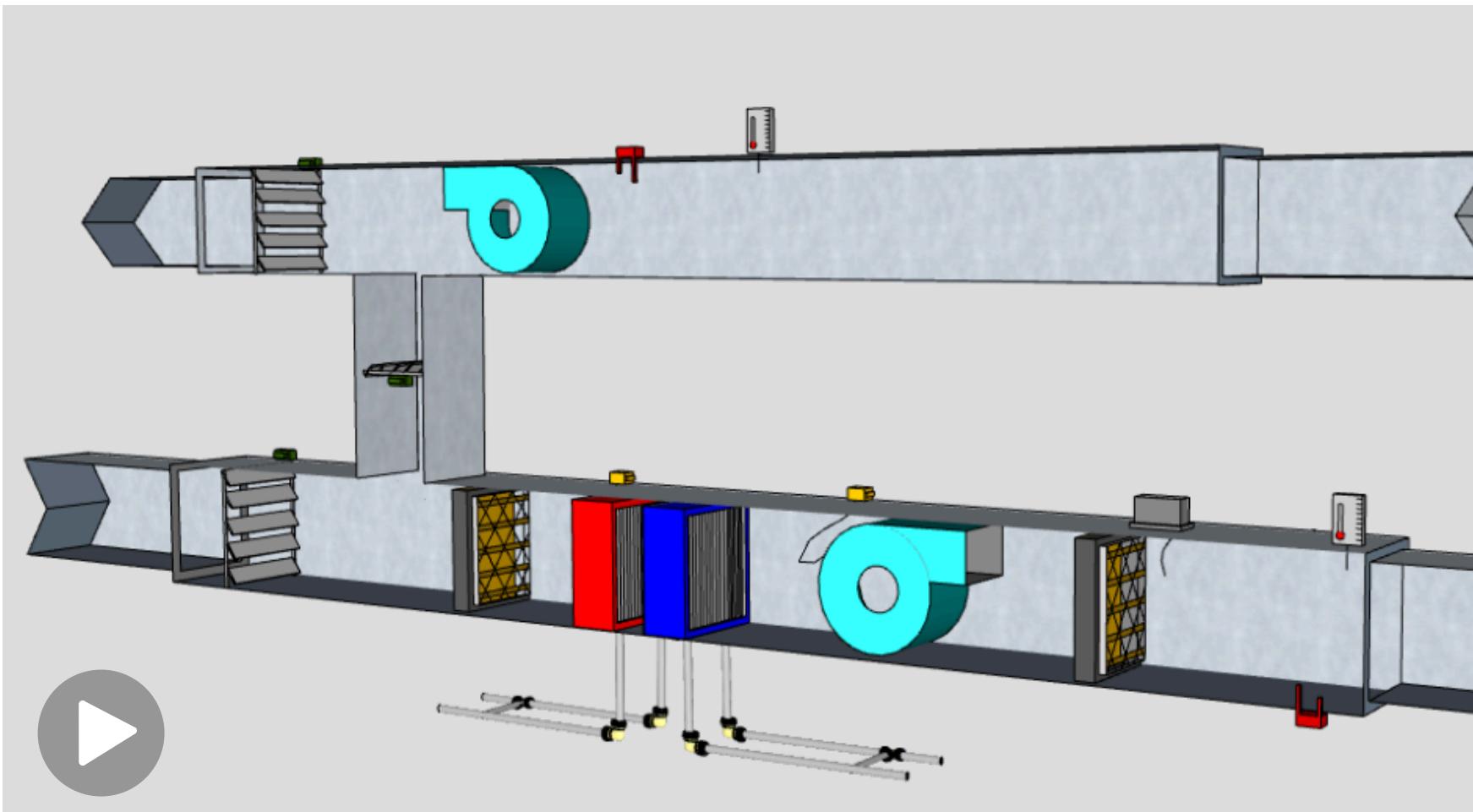
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Air-Handling Unit (AHU) Layout

Select each component label to learn more, or select the play button to hear about all the components at once.



Heating Coils

Cooling Coils

Supply Fan

Boilers and chillers condition the air, and the air-handling unit (AHU) distributes that air through the system.

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Types of AHU's

Centralized Versus Decentralized

Air handling unit (AHU) types and setups vary because buildings have different heating, cooling, and ventilation needs.

Some systems use a **centralized** AHU to serve the entire building from one location, while others rely on **decentralized** units placed closer to individual zones.

Rabbit Hole: Dive deeper into centralized and decentralized systems by selecting this icon.



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Types of AHU's



Dedicated Outdoor Air Systems



Makeup Air Unit

Makeup Air Units (MAUs) and Dedicated Outdoor Air Systems (DOAS) are designed to manage outdoor air ventilation in different ways.

Select each *image* to learn more about each type of AHU.

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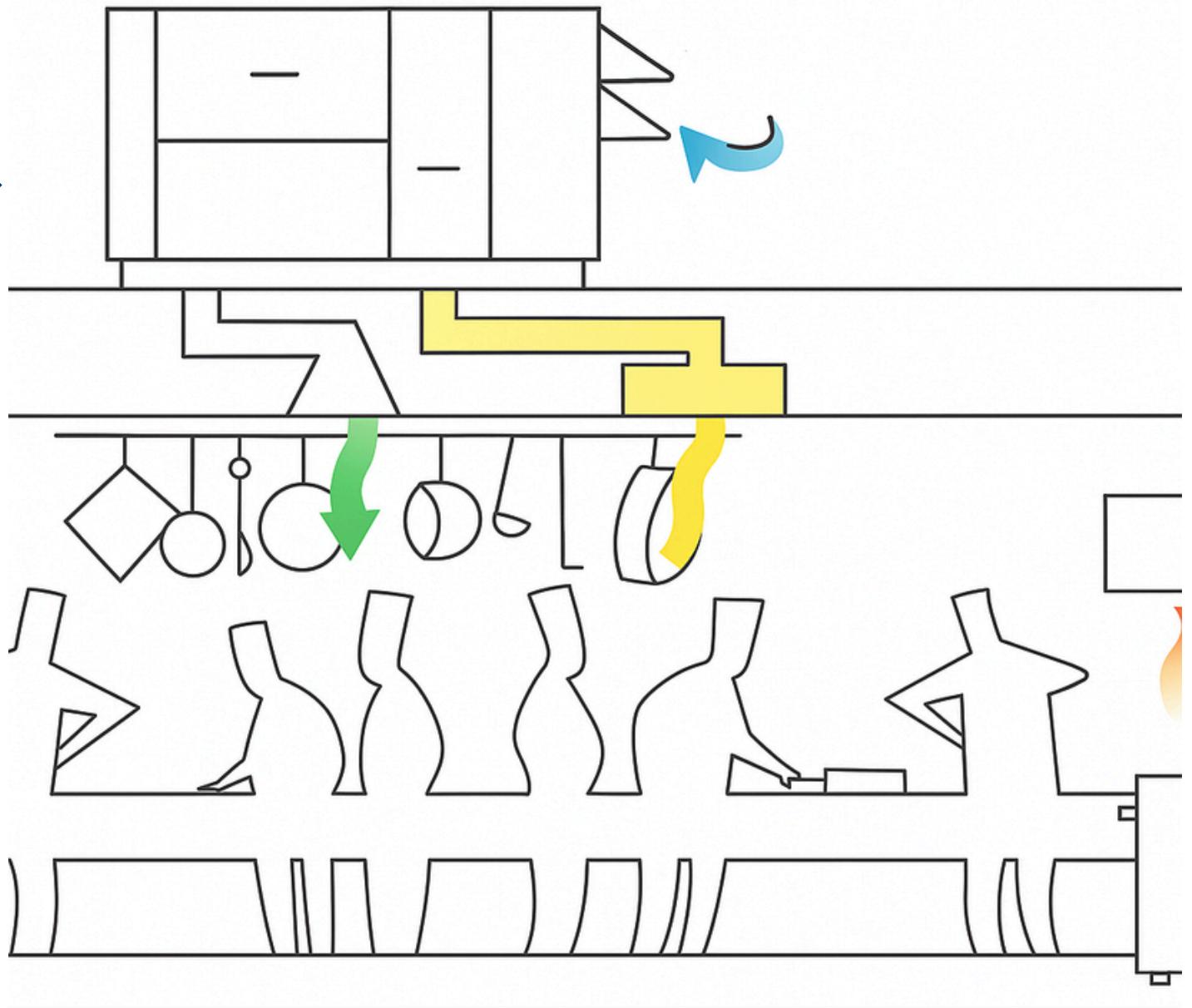
Types of AHU's



Dedicated Outdoor Air Systems (DOAs)



Makeup Air Unit



This text box will display a short description of the animations above.



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Types of AHU's



- neither **centralized nor decentralized**, focused solely on ventilation

- provide fresh, conditioned outdoor air **independently from the space conditioning**

Dedicated Outdoor Air Systems



- **decentralized** HVAC systems that provide outside air

- heated through **direct-fired gas burners** or with **heat exchangers**

Makeup Air Unit

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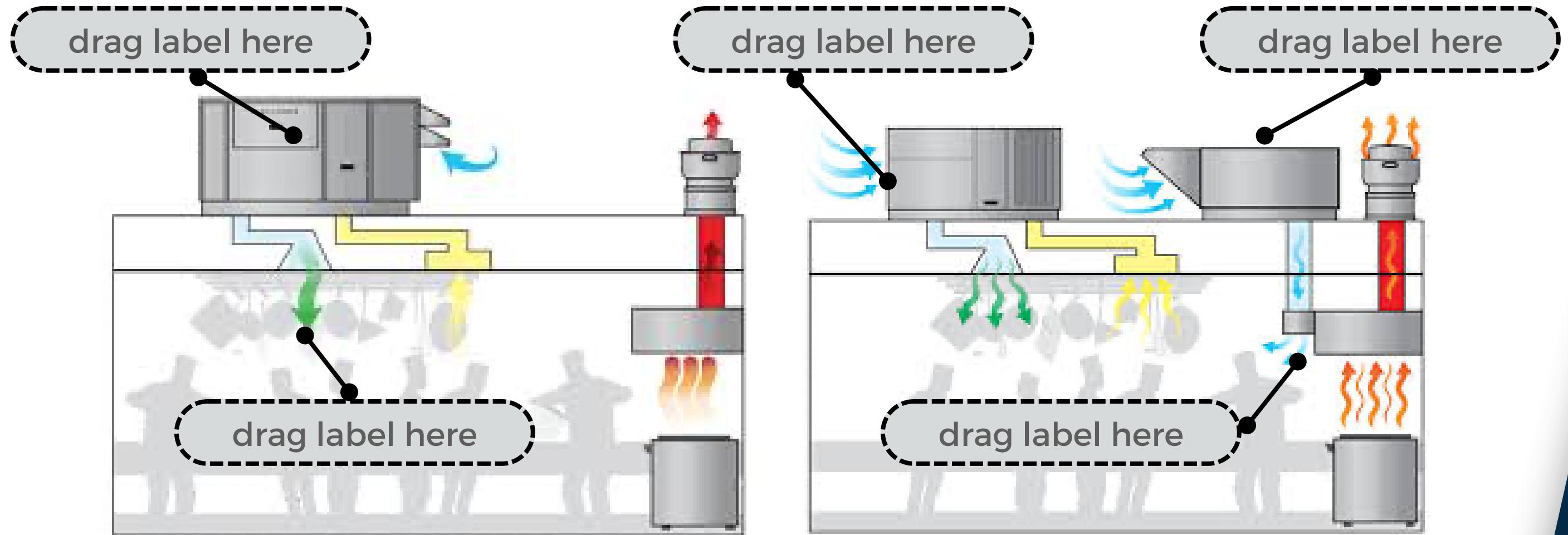
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Types of AHU's

Drag the correct labels to each image, then select “submit”.



DOAS

Make-Up Air Unit

HVAC Unit

Outside Air

Submit

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CAV vs. VAV

Approaches for Managing Air Flow

CAV (constant air volume) and VAV (variable air volume) are different systems for managing air flow in HVAC systems.



Make a prediction. What is the main difference between CAV and VAV based on the full name of each system?

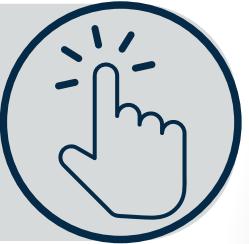
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CAV vs. VAV

Select this icon for a visual breakdown of each system from MEP Academy on YouTube.



Constant Air Volume

CAV systems deliver conditioned air at a constant temperature and airflow to all zones.

Variable Air Volume

VAV systems take the same conditioned air and adjust the amount delivered to each zone based on individual temperature needs.

Variable air volume systems are more energy- efficient than constant air volume systems.



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CAV vs. VAV

Variable Frequency Drives (VFD's)

In a VAV system, VAV boxes control the amount of air delivered to individual zones with dampers inside the box.

A variable frequency drive (VFD) on the supply fan responds to changes in duct pressure caused by VAV box adjustments and speeds up or slows down the fan.



Variable Frequency Drive

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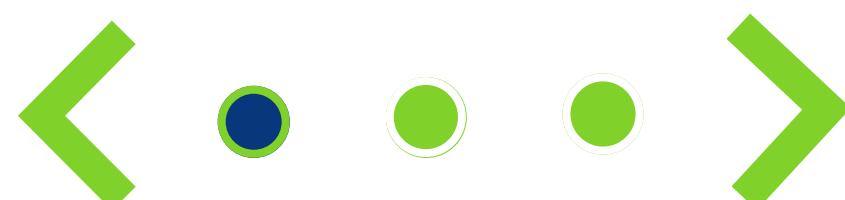


Dampers and Diffusers

Dampers

Conditioned air is eventually exhausted, and that's where backdraft dampers come in.

Backdraft dampers let air flow out, but stop it from flowing back in.



Continue to learn more
about dampers (1 of 3).



Backdraft Damper (One-way airflow control)

Compare a damper to the little flap outside a house where the bathroom fan or dryer vents. The flap opens when air blows out, but closes automatically when air stops so nothing comes back in.



This is the end of the module preview.

Slides similar to those shown previously would continue to cover dampers as well as diffusers.