

HVAC Systems Operational Summary Sheet

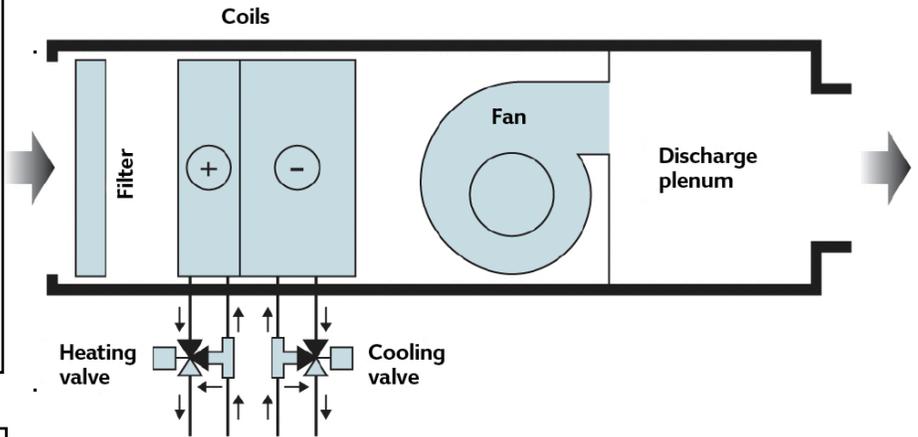
Buildings with De-centralized Systems

SYSTEM DEFINITION

The term *De-centralized Systems* describe those systems that are smaller, local systems. This description includes 4-pipe fan coils, small direct expansion (DX) units, water source heat pumps, and passive heating and cooling systems. *De-centralized Systems* make up the type of HVAC systems in about 20% of USC buildings.

FILTRATION

The term MERV stands for the Minimum Efficiency Reporting Value and is used to measure air filter efficiency. Higher MERV ratings translates to a filter that is more efficient in capturing particles in the air. Filter ratings range from MERV-1 to MERV-16. The filters in USC buildings with *De-centralized Systems* range from MERV-8 to MERV-16. *De-centralized Systems* have physical limitations which determine the level of filtration possible. Currently, there is no verified case of transmission of the COVID-19 virus by means of droplets travelling over large distances, such as through air conditioning ductwork systems.



SYSTEM OPERATION & OCCUPANCY

The term Outdoor Air (or Ventilation Air) describes the minimum amount of fresh outdoor air required for the purpose of controlling contaminant levels in buildings. USC's *De-centralized Systems* are designed to meet the fresh Outdoor Air supply rates required by the ASHRAE Ventilation Standards and the California Mechanical Building Code at the time they are designed. Outdoor air flow rates are established by utilizing the maximum anticipated occupant count for the building. Many of the buildings at USC do not experience the maximum occupant counts for which they were designed. With the current social distancing measures, the occupancy counts will be further reduced, resulting in higher per person outdoor air supply rates.

De-centralized Systems typically have individual controls which enable the occupants to control whether the units are energized and de-energized. Some systems are programed on a regular schedule while others are locally controlled. Typically, *De-centralized Systems* have constant outside air provided while the units are energized. With locally controlled units, occupants should verify the units are energized while the space is occupied to ensure constant outside air is being provided to the space.

AIR CHANGE RATE (ACH)

Air Change Rate describes the measure of the air volume added to, or removed from, a space divided by the volume of the space. Air Changes per Hour (ACH) is a measure of how many times the air within a defined space is replaced.

The Air Change Rates in buildings with *De-centralized Systems* are determined when the system is first designed. They are primarily based on providing the maximum supply airflow needed to meet the individual space cooling needs or to compensate for laboratory equipment exhaust requirements, whichever is greater. The resultant Air Change Rates may vary among individual spaces within the same building. Associated equipment capacity is set during system design by these calculated cooling loads.

