

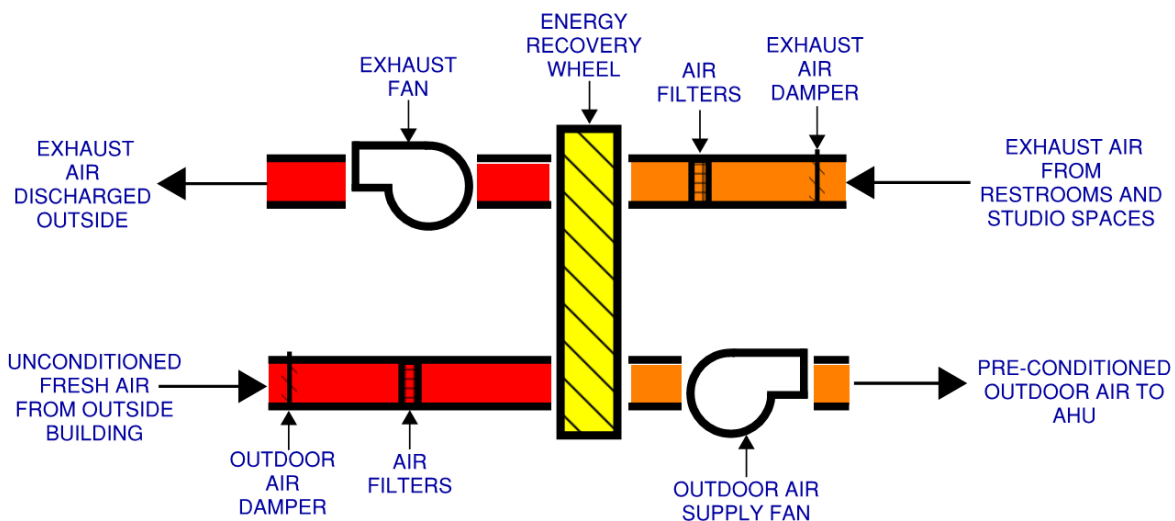
MAIN ART BUILDING (1694)

The Lamar Dodd School of Art building was completed in 2011 as a sustainably designed building housing studios, lecture halls, galleries, and a visual resource center. The Main Art Building includes 3 floors and a mechanical penthouse comprising 216,577 square feet of floor area. The building is predominantly served by eight variable volume Air Handling Units (AHUs) serving duct mounted variable air volume terminal units with hot water reheat coils. Due to the significant number of slot hoods, snorkels and fume hoods located in the various studio spaces within the building, each of the building's Air Handling Units is paired with dedicated Energy Recovery Units (ERUs) to reclaim heat and cooling energy from the exhaust air to pre-condition the incoming outdoor ventilation air. The building air from studio spaces is exhausted, while the room air in offices and classroom spaces is recirculated back to the central AHUs via exposed return air ductwork in corridors.

The central HVAC systems are supplemented with ductless heat pumps to maintain appropriate temperatures for communications equipment in data rooms within the building along with a number of individual hot water unit heaters and electric baseboard heaters to provide heating along the building perimeter, points of entry and in stairwells and equipment rooms with transient occupancy. The mechanical penthouse is heated and cooled using Fan Coil Units which recirculate the air within the space.

ENERGY RECOVERY UNITS

Ventilation and building exhaust is provided by nine Energy Recovery Units located in the penthouse of the building. The energy recovery units precondition the incoming outdoor ventilation air using a total energy recovery wheel that is exposed to the outdoor airstream flowing into the building and the exhaust airstream leaving the building. Exhaust air is drawn through the building via ductwork by exhaust fans in the ERUs where it passes through a filter bank and then through a turning wheel that transfers both sensible and latent heat to/from the exhaust air stream. The outdoor ventilation air is drawn through the ERU via separate outdoor air supply fans within the unit where it passes through a filter bank and the turning total energy recovery wheel where it is pre-conditioned with energy transferred from the exhaust air stream.



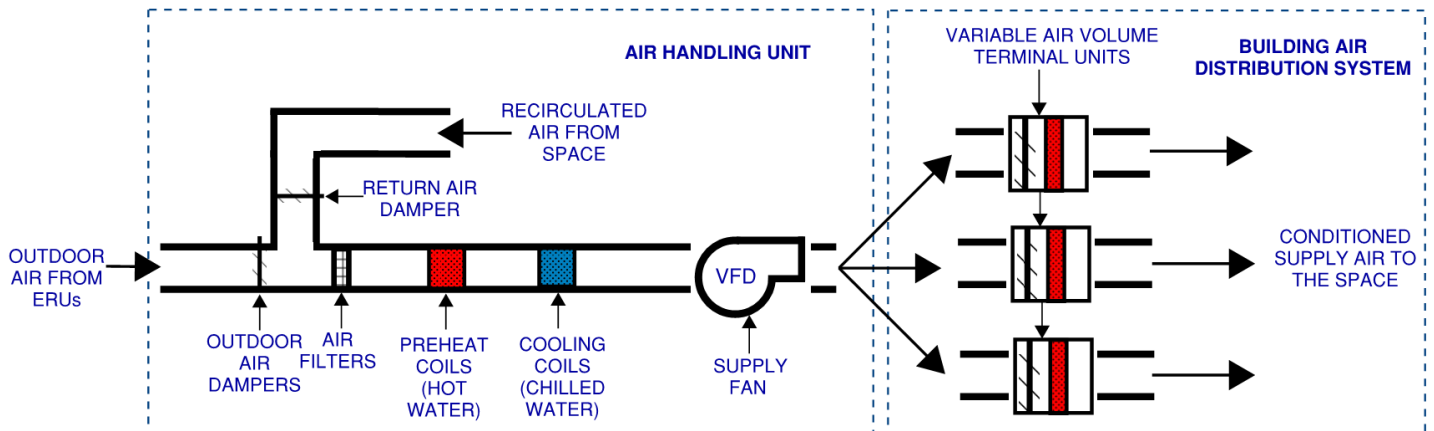
ENERGY RECOVERY UNIT SCHEMATIC

VARIABLE VOLUME AIR HANDLING UNITS

The Air Handling Units deliver a variable volume of conditioned air consisting of a mixture of recirculated building air and fresh air from outside of the building. The building return air is mixed with outdoor air, passed through a bank of filters and cooled with chilled water coils in the building's air handling unit before being supplied to rooms throughout the building through above ceiling ductwork. The Variable Air Volume terminal units (VAVs) are equipped with an air damper to regulate the volume of air delivered from the central AHU to the space based on the current space temperatures. Most of the VAVs also include a fan, a hot water coil and a filter combination that will mix in air from the above ceiling plenum with the conditioned air from the central AHU when the space requires heating.

Air is recirculated from the spaces back to the air handling unit through ceiling mounted air return registers located in each space. Room air is returned to the central AHUs via exposed ductwork in corridors. Exhaust is provided in restrooms on each floor to remove odors and in studio spaces via general exhaust, snorkel exhaust and hood exhaust to remove process fumes and to maintain building pressurization.

Chilled water is supplied throughout the building from a chiller plant located in the School of Music Building or from the campus chilled water system. Heating hot water, distributed throughout the building for heating, is provided by a steam to water heat exchanger located in the School of Music building using steam from the central campus steam system.

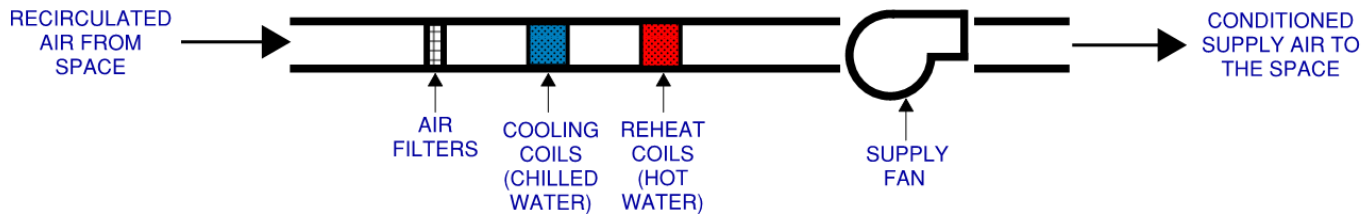


VARIABLE VOLUME AIR HANDLING UNIT SCHEMATIC

FAN COIL UNITS

A fan coil unit is fairly simple: it's a fan with a coil or coils (like a car radiator) that can add heating and cooling to the air stream flowing through it. The FCUs have air filters to remove particulate matter from the air, a hot water coil and chilled water coil for heating and cooling the air, and a supply fan for forced air circulation through the unit and into the space. There is no ventilation air provided for these FCUs because they are located in spaces with transient occupancy.

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4-PIPE FAN COIL UNIT SCHEMATIC