

Description:

The purpose of the section is to highlight the current applicable UMD Design Standards for current HVAC Energy Efficient Design at the UMD campus.

The University encourages the HVAC consultant to employ energy-efficient design, consistent with goals of LEED and the project budget. The University desires to maximize all opportunities to participate in funding assistance from utilities, including rebates, and other incentives to stimulate energy-efficient design.

Related Sections:

- HVAC Systems
- HVAC Equipment
- Piping / Valves
- Automatic Temperature Control
- HVAC Submittal Schedule
- Mechanical Design Standards
- SCUB Concept
- Boiler Inspection
- Plumbing

Effective Date:

January 1, 2020

Applicable Standards:

- TBD

General Requirements:

All evaporator designs systems shall be water designs.

- Chiller plant designs shall be variable primary/variable secondary or primary variable with minimum flow bypass. Minimum flow bypass 2 way control for primary variable flow chiller plant designs shall be installed at remote locations not directly across chiller plant.
- Primary/secondary plant design shall incorporate VFD control for both primary and secondary CHW pumping to minimize flow balance through decoupler.
State regulations may require life cycle analysis of several alternatives for HVAC systems. When such comparative analysis is required, the concepts, systems, and components described herein by those favored by the University must be among the alternatives analyzed.

Products:**Electric motors:**

- Premium efficiency motors are the university standard for motors 1 horsepower and greater.
- Power factor correction capacitors are required.

Variable speed drives:

- Basis of Design for Drives Shall be ABB Series ACH-580. Acceptable Drives shall be by ABB (series ACH-580), York (Series AYK) or Danfoss (Series HVAC). Where specific Model number are required information shall be as directed by the university. All interior drives shall be NEMA 12 rated, exterior installed VFD's shall be rated for application. Drives shall not be installed within Air streams.
- Variable speed drives are preferred on motors 3 horsepower and greater. Use of electric initiated integrated manufacturer option Bypasses are to be used only for specific purpose as agreed to by owner. Bypass integration when used shall be integrated into UMD CCMS.
- Motors used in conjunction with variable speed drives shall be the inverter duty type with a shaft grounding ring at the Drive end and ceramic bearing installed on the Motor end where motor HP is at or above 40 HP.

Shaft grounding rings alone shall be used where less than 40 HP for all three Phase motors using VFD applications.

- Drives shall be furnished by the mechanical contractor and installed by the electrical contractor.

General Design Standards

- Being committed to the SCUB (Satellite Central Utility Building) concept, the University's preference is for chilled water based systems. Water-cooled shall be the basis of design unless the case can be made that the application mandates air-cooled condensing equipment. All evaporator designs systems shall be water designs.
 - Chiller plant designs shall be variable primary/variable secondary or primary variable with minimum flow bypass. Minimum flow bypass 2 way control for primary variable flow chiller plant designs shall be installed at remote locations not directly across chiller plant.
 - Primary/secondary plant design shall incorporate VFD control for both primary and secondary CHW pumping to minimize flow balance through decoupler.
- Hot water is the preferred space heating medium. Electric resistance heat will be evaluated on a case by case basis in the schematic design phase.
- Decouple the outside ventilation air system (provide a dedicated outside air handling unit) from the cooling and heating air systems, where practical.
- All Testing and Balancing instruments shall have documentation that the testing equipment has been certified within the past 12 months.