DESIGN GUIDELINE 220513
MOTORS

Scope

This sections covers requirements for most motors 200 HP and less. This section does not apply to fire pumps, elevators and sealed refrigeration motors, nor does it apply to small motors with stepped down voltage below 115V.

Related Sections

U-M Master Specification Sections:
220513 - Motors

General

U-M Master Specification Section 220513 Motors shall be used as the basis for the motor specification on all projects. The A/E shall edit (append) the U-M motor specification to make it project specific; however do not generally modify the fundamental motor attributes described in the specification. Turn on hidden text and read all spec. editor's notes when editing the specification.

Phase and Voltage

Motors 1/2 HP and larger should be three phase.

Single phase motors may be rated for 115V, 200V, depending on the application, and building power.

Three phase motors should be rated for 460V wherever possible. Where building power does not include 480V distribution, review options with Project Coordinator and consider adding a step-up transformer, and using 460V motors. The long term objective in most buildings is to have three phase distribution at 480V.

Power distribution system serving large motors (100HP and larger) should be examined to ensure across the line motor starting will not adversely impact the system. Consult Project Coordinator and other appropriate University personnel in these applications.

Three Phase Motor General Requirements

For most applications, including air handlers, motor enclosures for fans and pumps should be Open Drip Proof (ODP) type. For cooling towers and other harsh environments, use Totally Enclosed Fan Cooled (TEFC) motors.

Multiple Speed Motors

With the increased viability of variable speed drives, applications for multiple speed motors are few and far between. Where three phase motors require multiple speeds, there shall be a separate winding for each speed. Coordinate electrical requirements carefully with electrical designer.

Motors for Variable Frequency Drives

Review and verify with both the drive and motor manufactueres the maximum cable length for each drive. Also consider other reuirements such as RFI that may affect the cable length.

Consult manufacture guidelines and provide proper grounding.

For all hospital funded projects, provide AEGIS SGR (Shaft Grounding Ring) for all VFD motors. In addition for motors 100 HP or above, also prove an insulted ceramic bearing assembly on the non-drive end of the motor.