Like the shoes we wear, motors are not a "one size fits all" proposition. In other words, it pays to make sure every electric motor in your facility is properly matched to its system, especially with regard to factors like motor type, efficiency and size, among others. Don't overlook these things when you prepare to replace motors.

Type (Design A, B, C, D)…

There are four NEMA three-phase motor designs, each with different overall motor system efficiency implications due to variations in speed, slip, starting torque and starting current. Design A and B motors are the most common. Both are considered general-purpose motors and often are used in similar applications, including pump and fan systems. Design A motors, however, have slightly greater breakdown torque and higher starting current.

Design C motors are intended for applications that require high starting torque, normal starting current and low slip; they typically are used where breakaway loads are high at starting. Design D motors have very high starting torque, high slip, low starting current and low full speed, which enables them to handle shock loads.

Efficiency…

With today's high energy prices, many facility managers are discovering benefits to their bottom

line through the use of NEMA Premium efficiency motors. While NEMA Premium motors often are more expensive, the incremental cost is typically overcome in as little as 18-24 months through reduced electricity consumption. These savings really add up over the motor's expected 15- to 20-year life.

Size, Speed and Load…

Achieving energy savings requires that the motor is the right size (horsepower) and speed, and that it is properly loaded. A study conducted by Advanced Energy , in which efficiency and load data from 100 motors was measured, found that nearly 30% of them were operating below 50% load. (Motors achieve peak efficiency when they operate at 75 to 100% full load.) The research also found that many motors had been dramatically oversized. Remember: a motor that is larger than the application calls for will waste significant energy.

Drive System…

Adjustable speed drives help match a motor's speed to the load requirements at any particular time. For centrifugal loads, the resulting reductions in flow can yield impressive energy savings. For details, see the National Electrical Manufacturers Association's Application Guide for AC Adjustable Speed Drive Systems
.

Several organizations can help you navigate issues related to selecting the right drive for an application, including your local electric utility, motor distributor, motor service center and government agencies. These organizations sponsor the Motor Decisions Matter (MDM) campaign to raise awareness about motor management, promote repair-replace decisions based on life-cycle costing and provide a central resource to assist with motor decisions. Visit MDM's Website
for help in developing a motor management plan based on your company's needs and decision-making criteria.

The U.S. Department of Energy also addresses these issues in Improving Motor and Drive System Performance: A Sourcebook for Industry
.

MT

The Motor Decisions Matter campaign is managed by the Consortium for Energy Efficiency, a North American nonprofit organization that promotes energy-saving products, equipment and technologies. For further information about MDM, contact Kellem Emanuele at kemanuele@cee1.org or (617) 589-3949, x225.

For more info, enter 1 at www.MT-freeinfo.com