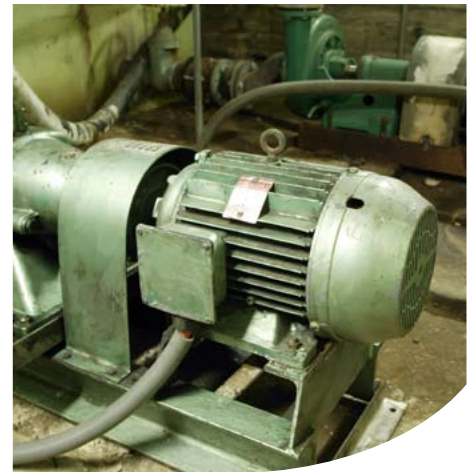


Electric motors



Half of the world's electrical energy goes toward powering electric motors.

To improve energy-efficiency in your workplace, ensure electric motors are suitable for the tasks they perform. The best way to identify potential energy savings is to work backwards from the task the motor performs to its power input.

A smaller motor may provide sufficient power for a specific task and cost less to run. If feasible, install a time switch to control the length of time the motor operates. Alternatively, install a calendar time switch to prevent motors running on days when not in use, such as when your workplace is closed.

Does your motor match your needs?

Consider three basic factors when assessing motor suitability:

1. Consider total life costs when buying an electric motor, including purchase price, installation and operating costs. If you invest in an energy-efficient motor your business will save more over time.
2. High Efficiency Motors (HEM) are about two to four percent more efficient than standard electric motors, and offer lower operating costs and reduced energy consumption.

The initial investment will be greater, but it only takes about two years to recoup the additional costs in energy savings.

HEMs produce less heat, reducing air-conditioning costs and providing a cooler work place. They maintain high efficiency over a wider range of loads and have a greater thermal tolerance.

It is important to match the HEM to its application as these motors operate at a slightly higher full-load speed than standard motors. This means that centrifugal loads, including pumps, fans, and compressors, can be affected by

higher speeds and negate energy savings. This may involve replacing an existing motor with a smaller one, trimming impellers on pumps or changing gear or pulley ratios.

3. Consider the size of the motor. Companies often buy an oversized motor to cope with unexpected peak loads or to allow for process expansion in the future. As a result, hundreds of motors used in industrial applications are grossly oversized. Motors are most efficient when operating at full load, and installing a smaller motor, which operates at full load, will greatly improve the operating efficiency.

Improve performance with a VSD

A Variable Speed Drive (VSD) is an electrical device that controls power to the motor, and is suitable for inconsistent loads. Rather than continuously running at full speed, the VSD varies the motor speed to meet the energy needs of the load. While a VSD can cost more than the motor, it can achieve energy savings of up to 50 percent a year. VSDs provide best energy savings when applied to a motor-driven centrifugal pump.

There are cheaper alternatives to VSDs. Multi-speed motors can be used with two or more pumps running parallel systems. One motor is used for the base load, and the second is used only during peak load times, offering improved reliability and providing a back-up if one motor or component fails.

Maintaining your motors

- Check that drive belts, chains and couplings are in good condition and are adjusted in accordance with the supplier's recommendations.
- Check for motors that are running hot, as this is a sign of energy loss. Use an infrared non-contact thermometer to measure the temperature of the motor casing (investigate if it is 60 degrees or higher).
- Check alignment, as parts in a misaligned motor will be susceptible to wear more quickly, reducing both the motor's service life and efficiency.
- Record data for each motor to assess if it is running unnecessarily. Record the motor's application, the nominal power (in kW) from the motor identification plate and how the motor is controlled.
- Replace a motor rather than rewinding it. Although rewinding is popular, efficiency is reduced by up to three percent each time a motor is rewound, leading to lower operating efficiency than the nameplate efficiency. If a motor burns out, the best solution is to review your load needs and purchase a high-efficiency motor to match that load.

For more information

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