

MOTORS AND MOTOR SYSTEMS



Overview: CEE has two initiatives that address energy savings related to electric motors: the Premium Efficiency Motors Initiative and the Motor Systems Initiative. Together, these initiatives are designed to improve performance and reduce energy consumption of industrial motors and motor systems by:

- defining and promoting a premium efficiency motor specification
- identifying credible tools and resources that support motor systems optimization
- promoting proactive motor management through the *Motor Decisions MatterSM* campaign

Premium Efficiency Motors Initiative

In 1996, CEE launched its Premium Efficiency Motors Initiative in anticipation of new minimum-efficiency standards going into effect under the Energy Policy Act of 1992. The initiative provides a common definition of “premium efficiency,” including a set of specifications that are 1-4 percent higher than federal requirements. In June 2001, CEE and the National Electrical Manufacturers Association agreed to promote a common specification for premium efficiency motors – NEMA PremiumTM – based on CEE’s original premium efficiency specification.

Because many motors operate 40-80 hours per week (or more), even small increases in efficiency can yield huge energy savings. When running continuously at or near full load, the annual energy cost for running a motor can be 10-25 times its purchase price.

This initiative supports the ongoing promotion of premium-efficiency motors in the marketplace while working with members to advance program design. Initiative participants also work with other industry stakeholders to educate consumers about the energy and non-energy benefits of premium-efficiency motors.

Motor Systems Initiative

Even the most efficient motors may not save a significant amount of electricity if the motor system is not running in optimum fashion. Viewing the motor as a component of a larger motor system, and optimizing the whole system, provides the greatest opportunity for savings.

In 1999, CEE launched its Motor Systems Initiative to help C&I programs address these opportunities. The initiative supports the following activities:

Adjustable Speed Drives – CEE provides a forum for members to consider the current state of drive technology and the drive market, assess how different programs approach drive-related projects, and to explore common program strategies and resources.

Sector-Specific Strategies – The initiative focuses interest on motor-related systems and processes within an individual target market sector offer of common interest to the members that offer significant opportunities for energy savings. For example, in 2004 motor system efficiency opportunities related to pumping and aeration (blowers) led CEE to launch a separate Water and Wastewater Facilities Initiative. Additional information about this initiative is available at <http://www.cee1.org/ind/mot-sys/ww/ww.php3>.

FACT SHEET

Motor System Tools and Resources – The initiative provides a forum for review and, where appropriate, distribution of credible tools and resources designed to improve the energy performance of pumps, fans and other motor-driven systems.

Motor Decisions Matter Campaign

The *Motor Decisions Matter* campaign, launched in 2001, promotes greater awareness of the benefits of motor systems efficiency. It is a supplemental project funded jointly by motor manufacturers, motor service providers, trade associations and CEE members who serve as a separate advisory panel for the campaign. The campaign's strategy is to develop a "business" message that translates the benefits of motor management and best-practice repairs into terms that senior plant and corporate management will understand and find compelling. MDM sponsors work individually and cooperatively to help customers implement appropriate motor management strategies.

Visit the campaign's Web site, www.motorsmatter.org, or contact DOE-OIT Best Practices Clearinghouse (1-877-337-3463) or for additional information.

About This Market: Industrial electric motor-driven systems consume approximately 679 billion kWh annually – 23 percent of all electricity in the United States – representing the largest single category of electricity use in the country. Motor systems operate everything from paint sprayers to ventilation and water pumping systems. Improvements in industrial productivity and other non-energy benefits can be of even greater value. The food processing, forest products and water/wastewater industries have been targeted as energy intensive industries that could benefit most from motor system optimization.

Energy Savings Opportunity: Introducing more energy-efficient motor systems can reduce industrial motor system demand by 11-18 percent (62-104 billion kWh per year). Valued at \$3-5 billion per year, these savings are obtainable through cost-effective measures using mature efficiency technologies and practices. The resulting energy savings could reduce carbon emissions by 15-26 million metric tons per year. In addition, industrial customers would benefit from improved control of production processes, reduction in waste materials and improved environmental compliance.

Market Barriers: Knowledge and adoption of motor system efficiency measures is very low for a variety of reasons:

- Low priority of energy efficiency among capital investment and operating objectives.
- General lack of awareness among facilities managers, equipment distributors, engineers and manufacturers' representatives about NEMA Premium motors or about strategies to improve motor system efficiency.
- Low level of staffing for facilities maintenance.
- Conflicting incentives for equipment and service providers to promote efficient equipment.
- Lack of awareness of non-energy benefits, such as increased reliability and reduced downtime.

A cumulative result of these barriers is that the motor system market is largely first-cost driven. Consequently, the connection is not made between efficient motor systems and manufacturing performance.

Contact: Additional information about CEE's Motors/Motor Systems Initiative is available at <http://www.cee1.org/ind/mot-sys/mtr-ms-main.php3> or by contacting:

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