



Motors and Variable-Speed Drives



**Muscatine
Power and Water**



Sound motor management practices can help you by clarifying the true operating costs and the benefits of planning ahead. It is important to develop a motor management plan that meets your company's needs.

Considering that a commercial building or manufacturing plant may have tens, hundreds, or even thousands of motors operating within the facility, managing motor energy costs is good business.

Motor-driven equipment accounts for 64 percent of the electricity consumed in the United States' industrial sector. Improvements to motor systems could yield dramatic energy and cost savings. The key to these savings is to utilize energy efficiency equipment or to implement sound energy management practices.

Generally NEMA Premium® -efficient motors are 2-8 percent more efficient than standard motors. If a variable-speed drive is added in an appropriate application, you can save even more because the motor then consumes less energy when load requirements are less than full speed.

When is it appropriate to install a variable-speed drive?

Commercial and industrial electric customers may want to consider installing variable-speed equipment if they use motors for increased operating hours and have a higher variability of loads on the system (centrifugal pumps and fans) or if the equipment use includes mechanical throttling (valves and dampers). Equipment with low variability of loads are not good candidates for variable-speed drives. Variable-speed drives are eligible for an incentive of \$15/HP.



When should you replace your motor?

Having a motor plan in place before motor failure ensures that your decisions will be the most timely and cost effective. A motor management plan can also reduce your energy costs for years to come.

Because electricity accounts for 97 percent of a motor's lifetime costs, choosing a NEMA Premium® -efficient motor is appropriate before a motor fails and for new installations. Other reasons for considering replacing motors are loading factors and age. Premium motors are generally most efficient at a loading factor of 75 percent. Motors operating above or below this loading factor may be candidates for resizing. Older units having high operating hours or that have been rewound also may be considered for replacement.

Visit these sites for more information



Energy Efficiency Economics

Pumping system improvement information can be found at www.pumpsystemsmatter.org.



Program managed by the Commission for Energy Efficiency

For more information on developing a motor management program, life-cycling costs, and return on investments, visit www.motorsmatter.org.



Motor efficiency details can be found by visiting www.nema.org/gov/energy/efficiency/premium.



To learn how to improve pumping system performance, visit www.mpw.org/pdf/Improvingmotorperformance.pdf.

*NEMA Premium
TEFC Motors*

| HORSE POWER | SPEED in RPM | NOMINAL EFFICIENCY |
|-------------|--------------|--------------------|
| 1 | 3600 | 77.0% |
| | 1800 | 85.5% |
| | 1200 | 82.5% |
| 1.5 | 3600 | 84.0% |
| | 1800 | 86.5% |
| | 1200 | 87.5% |
| 2 | 3600 | 85.5% |
| | 1800 | 86.5% |
| | 1200 | 88.5% |
| 3 | 3600 | 86.5% |
| | 1800 | 89.5% |
| | 1200 | 89.5% |
| 5 | 3600 | 88.5% |
| | 1800 | 89.5% |
| | 1200 | 89.5% |
| 7.5 | 3600 | 89.5% |
| | 1800 | 91.7% |
| | 1200 | 91.0% |
| 10 | 3600 | 90.2% |
| | 1800 | 91.7% |
| | 1200 | 91.0% |
| 15 | 3600 | 91.0% |
| | 1800 | 92.4% |
| | 1200 | 91.7% |
| 20 | 3600 | 91.0% |
| | 1800 | 93.0% |
| | 1200 | 91.7% |
| 25 | 3600 | 91.7% |
| | 1800 | 93.6% |
| | 1200 | 93.0% |
| 30 | 3600 | 91.7% |
| | 1800 | 93.6% |
| | 1200 | 93.0% |
| 40 | 3600 | 92.4% |
| | 1800 | 94.1% |
| | 1200 | 94.1% |
| 50 | 3600 | 93.0% |
| | 1800 | 94.5% |
| | 1200 | 94.1% |
| 60 | 3600 | 93.6% |
| | 1800 | 95.0% |
| | 1200 | 94.5% |
| 75 | 3600 | 93.6% |
| | 1800 | 95.4% |
| | 1200 | 94.5% |
| 100 | 3600 | 94.1% |
| | 1800 | 95.4% |
| | 1200 | 95.0% |
| 125 | 3600 | 95.0% |
| | 1800 | 95.4% |
| | 1200 | 95.0% |
| 150 | 3600 | 95.0% |
| | 1800 | 95.8% |
| | 1200 | 95.8% |
| 200 | 3600 | 95.4% |
| | 1800 | 96.2% |
| | 1200 | 95.8% |

*NEMA Premium
Open Drip Proof (ODP)*

| HORSE POWER | SPEED in RPM | NOMINAL EFFICIENCY |
|-------------|--------------|--------------------|
| 1 | 3600 | 77.0% |
| | 1800 | 85.5% |
| | 1200 | 82.5% |
| 1.5 | 3600 | 84.0% |
| | 1800 | 86.5% |
| | 1200 | 86.5% |
| 2 | 3600 | 85.5% |
| | 1800 | 86.5% |
| | 1200 | 87.5% |
| 3 | 3600 | 85.5% |
| | 1800 | 89.5% |
| | 1200 | 88.5% |
| 5 | 3600 | 86.5% |
| | 1800 | 89.5% |
| | 1200 | 89.5% |
| 7.5 | 3600 | 88.5% |
| | 1800 | 91.0% |
| | 1200 | 90.2% |
| 10 | 3600 | 89.5% |
| | 1800 | 91.7% |
| | 1200 | 91.7% |
| 15 | 3600 | 90.2% |
| | 1800 | 93.0% |
| | 1200 | 91.7% |
| 20 | 3600 | 91.0% |
| | 1800 | 93.0% |
| | 1200 | 92.4% |
| 25 | 3600 | 91.7% |
| | 1800 | 93.6% |
| | 1200 | 93.0% |
| 30 | 3600 | 91.7% |
| | 1800 | 94.1% |
| | 1200 | 93.6% |
| 40 | 3600 | 92.4% |
| | 1800 | 91.1% |
| | 1200 | 94.1% |
| 50 | 3600 | 93.0% |
| | 1800 | 94.5% |
| | 1200 | 94.1% |
| 60 | 3600 | 93.6% |
| | 1800 | 95.0% |
| | 1200 | 94.5% |
| 75 | 3600 | 93.6% |
| | 1800 | 95.0% |
| | 1200 | 94.5% |
| 100 | 3600 | 93.6% |
| | 1800 | 95.4% |
| | 1200 | 95.0% |
| 125 | 3600 | 94.1% |
| | 1800 | 95.4% |
| | 1200 | 95.0% |
| 150 | 3600 | 94.1% |
| | 1800 | 95.8% |
| | 1200 | 95.4% |
| 200 | 3600 | 95.0% |
| | 1800 | 95.8% |
| | 1200 | 95.4% |

Terms and Conditions

- Pre-approval required before implementation of projects with potential rebates over \$2,000.
- Minimum of 3,000 annual operating hours required.
- All projects subject to pre/post verification and metering by MP&W.
- MP&W reserves the right to limit or cancel program at any time.
- Rebates will be issued 4-6 weeks after completion of project.
- Rebate will not exceed 50 percent of cost of proposed motor/drive.
- Applicant must be an existing MP&W customer and MP&W must supply the primary source of energy for the proposed equipment.
- In no event shall MP&W be liable for any incidental or consequential damages. Customer is responsible for the installation and operation of equipment/system.
- Projects must comply with all local, state, and federal codes, standards, or regulatory requirements.
- All proposed equipment must be new. Used or reconditioned equipment is not eligible.
- MP&W does not guarantee energy or cost savings will result from the implementation of energy-efficient equipment covered by this program.
- MP&W makes no warranties, express or implied, with respect to equipment operations, material, or workmanship. All warranties are between the customer, product manufacturer, and installing contractor.

To Participate

Complete information on rebate form, including customer information; a copy of dated invoice, including manufacturer's name, model, and serial number; installation date; and quantity of equipment purchased and installed to:

Muscatine Power and Water
Attention: Eric Biederman
Energy Services Advisor
3205 Cedar Street
Muscatine, IA 52761
Phone: 563-262-3354
Fax: 563-262-3315

Your incentive check will be issued following equipment installation and application reviewal period. Please allow four to six weeks for processing.



For more information, call 563-262-3354 today!