According to the U.S. Department of Energy (USDOE), motor-driven equipment consumes 64% of the total electricity used in the U.S. industrial sector. But these systems have the potential to use 11 to 18% less energy by implementation of cost-effective measures with existing technology and practices. Where do you begin?

Step 1: Make sure you're working with the right motor. Is it the right size and efficiency? It's not unusual for motors to be oversized (hp). Oversized units can use more energy than smaller ones that more closely match an application's needs. In addition to the appropriate size, it's important to select a high-efficiency model. Electricity costs to operate a motor over its lifetime are much higher than initial purchase price. In fact, lifetime operating costs represent approximately 95% of a motor's cost. To estimate potential savings with more efficient motors, visit www.motorsmatter.org/tools and download the MDM Simple Savings Chart. By entering your annual operating hours and electricity cost, you can estimate annual operating costs and savings for three different efficiency levels across 1-500 hp.

Step 2: Consider your system's opportunity to use VFDs. Assess whether your applications are candidates for variable frequency drives (VFDs). Also known as a variable speed drive (VSD) or adjustable speed drive (ASD), a VFD controls motor speed by controlling voltage and frequency. By reducing the motor speed to match the needs of the application, VFDs have the potential to significantly save energy and reduce operating costs for a variety of applications. Motor systems that are likely candidates for energy savings through the use of VFDs include:

- Variable load motor systems where output is throttled or damped below full rated speed
- Centrifugal fan, pump, or blower systems
- Systems that meet the criteria above that operate frequently (e.g. > 2000 hrs/yr).

To learn more about VFDs and access calculators to estimate potential savings, visit the MDM

VFD Resources page.

Step 3: Develop a motor management plan.Record the results of Steps 1 and 2 to create a motor management plan. In addition to improving energy efficiency, documenting these important steps and making the plan centrally available to your team can help you improve productivity and increase reliability. A well-documented plan that outlines the steps to manage your motors identifies how to respond when failure occurs, so that you can act quickly to get your system back up and running, and do so more efficiently. For more information about creating a motor management plan, visit the MDM Website at www.motorsmatter.com/tools/mpk.html to download the Motor Planning Kit, which provides an overview of several important motor management basics.
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US DOE, 2011, http://www1.eere.energy.gov/industry/bestpractices/motors.html

US DOE, 2002, http://www1.eere.energy.gov/industry/bestpractices/pdfs/mtrmkt.pdf

IEA, 2011, http://www.iea.org/papers/2011/Walking_the_Torque.pdf

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