What Does EISA Mean for your Facility?

The following industry experts share their perspectives on issues critical to the overall food industry marketplace. *Chem.Info*'s sister property, *Food Manufacturing* asked:

The Energy Independence and Security Act (EISA) will go into effect on December 19, 2010, and all motors built after that date will have to comply with new energy efficiency rules. How will this affect food manufacturers?

Chris H. Medinger, Stock Products Manager, LEESON Electric

"Food manufacturers will not be forced to change out their existing motors, but if their existing motor fails and the motor is covered under the EISA legislation rules, their replacement motor will need to be of a higher efficiency. For the most part, these manufacturers use general purpose or washdown duty, 140 frame and larger three-phase motors. These motors will have to be replaced by a premium-efficiency motor. Single-phase motors and three-phase motors smaller than 140 frame are not affected by the upcoming legislation.

"In the long run, food manufacturers will benefit by using more efficient motors that are mandated by the upcoming EISA legislation. They will not only help manufacturers minimize energy consumption, but the motors should also last longer, as they are designed with a premium-grade insulation system. Premium-efficiency motors typically have a longer warranty period — 3 years — and are also designed to be inverter rated, so a food manufacturer will see additional energy savings if they run these motors with an AC control.

"The negative side of this legislation is that a premium-efficiency motor costs about 15 percent more than an EPAct-rated efficient motor. However, there are many local utility companies offering rebates that will help pay for the cost difference between the current motor and the premium-efficiency motor. There are also many motor distributors that will help these manufacturers by coming to their facilities,

doing an audit on the current motors they are using today and listing the new premium-efficiency motor if the need should arise.

“Also worthy of consideration are high-efficiency gear reducers. Though not affected by the EISA legislation, such units can certainly reduce energy consumption. In many cases, food manufacturers can use a smaller HP motor in the same application, which will also reduce operating costs.”

For more information, please visit www.leeson.com *[1].*

John Malinowski, Senior Product Manager, Baldor Electric Co.

“The food industry will see this law raise the efficiency on three-phase AC electric motors with NEMA frames 140T and larger, where most 1- to 200-HP motors will become NEMA Premium® efficiency. Smaller motors in 56 frames are exempt from EISA rules.

“1- to 200-HP, 230 or 460 volt, 60 Hz, NEMA Design B or IEC Design N, general-purpose motors that were previously effected by the Energy Policy Act of 1992 (EPAct) will have their efficiency raised to NEMA Premium® levels as defined by NEMA MG 1, Table 12-12. Motors built before December 19, 2010 can be sold or used, but new motors manufactured after that date need to comply with EISA. This law also affects IEC frame motors in these power ratings with IEC frames 90 and larger (excluding 100 frame).

“Some 1- to 200-HP motors that were previously not covered by EPAct are now mandated to the energy-efficiency level defined in NEMA MG 1, Table 12-11. These include NEMA frames 140T and larger with footless frames (F-face and D-flange), close-coupled pump motors, Design C, U frames and several other variations. Also larger general-purpose motors 201- to 500-HP, NEMA Design A or B, and IEC Design N will need to comply with table 12-11.

“In Canada, the Natural Resources Canada (NRCan) regulations are proposed to take effect on January 1, 2011, and are the same as in the U.S. except that on 1- to 200-HP motors, all voltages less than 600 V are included to comply with NEMA Premium® as are footless motors.

“These new EISA rules will allow food processors to save on their energy costs because two-thirds of their electricity costs go towards motor-driven systems. Motors with higher efficiencies will have a higher initial cost because they use motor copper and aluminum, and higher grade electrical steel.

“Food processors should contact their electric utility to see if they have any rebates for upgrading to NEMA Premium® efficient electric motors, adding adjustable-speed drives or other technologies that reduce electricity usage. During these upgrades, motor enclosures should be reviewed to provide additional service.”

For more information, please visit www.reliance.com *[2].*

Chris Wood, Food Industry Account Manager, SEW-Eurodrive Inc.

“The portion of EISA 2007 that affects industrial motors is important to food manufacturers because it mandates efficiency levels for most three-phase AC motors from 1 to 200 HP. But because the law is intended to regulate the most commonly used motor types, it has some exemptions.

“Many motor types — like TENV, submersible, intermittent duty, single phase and servo — are exempt, as are motors that are integrally mounted with gear units or motor brakes in such a way that the motor cannot be used separately. Some inverter-duty motors are exempt as well. You’ll have to do some research to see which motors may not be affected.

“If you do replace a pre-EISA motor with a new model, be sure to look at all the application parameters. A lot of times you’ll find that more than just the efficiency has changed. Sometimes the new motor may be physically larger. It may not be able to handle as many starts per hour as the old one.

“Since the main goal of replacing an old motor with a new one is to lower the current draw, be sure to look at your overload protection. It may be necessary to change fuses, heaters or relays or adjust maximum current parameter values in your variable-frequency drives to match the reduced current of your new motors.

“Remember that nothing’s free. All of this new technology that saves energy will cost a little more up front. So take a look at your motor replacement budget and adjust your purchases accordingly. But remember, the initial cost of the motor is just the tip of the iceberg when it comes to the long-term use costs. Energy accounts for over 90 percent of the total lifecycle cost of an industrial motor. Many manufacturers offer a return on investment calculator that will show you how long it will take to recoup your investment.

“Some think that replacing old motors with more efficient models will yield the biggest bang for the energy-savings buck. The truth is, premium-efficiency motors are only one part of the drivetrain. And while you can certainly save energy by replacing a motor, you can save even more by looking at your entire drivetrain. “Consider your gear reducer. Are you going to spend all of that money on a new motor that’s 5 percent more efficient than the old one, and use it to drive a worm gear reducer with an efficiency of 70 percent? And what about belts? Every belt in the drivetrain reduces its efficiency by about 10 percent.

“If you’re considering a motor replacement plan, take the opportunity to examine the efficiency of the entire powertrain. Eliminating belts, and replacing separately mounted motors and gear reducers with shaft-mount gearmotors — especially non-worm units — yields much greater savings than just replacing the motor.

“Some people will begrudgingly buy new motors because they have to. Others will take this opportunity to really save money on utility bills. This new law gives a bit of a push to get you moving in the right direction, but it’s up to the individual to make the most of it.”

For more information, please visit www.seweurodrive.com *[3].*

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