

# Reducing energy on dairy farms

**G**ROWING up on an Iowa dairy farm, I learned at a young age that decisions regarding dairy expansion and long-term business planning are not made lightly. This includes weighing the risks and rewards of investing in new equipment, expanding or upgrading facilities, or increasing the size of the herd.

As milk prices fluctuate, calculating long-term risks and rewards with confidence is increasingly tricky. For many, long-range decisions regarding succession for the next generation may loom larger and larger. If those issues seem overwhelming, take heart that addressing dairy energy efficiency can provide tangible benefits both now and into the future.

Before critical parts of the milking system reach the end of their useful life, take the time to review energy-efficient replacements. Consider new technologies that not only meet the needs of the dairy enterprise but also improve its energy efficiency. Talk to your dairy equipment suppliers and local utility service providers to evaluate your specific needs. Set aside time for a site assessment or an energy audit when possible. Also, determine if you are eligible for any energy efficiency rebates or incentive programs through your local utility or agencies like the Natural Resources Conservation Service.

In contrast to the seasonal needs of most crop enterprises, dairy farms typically require more electricity for daily operations, primarily for milking the herd and cooling and storing the milk. Key areas to improve energy efficiency during milking are milk cooling, water heating and vacuum pumps. When combined, these three factors account for about half of the energy used on Midwest dairy farms.

## Choose equipment carefully

Buying and installing equipment such as a scroll compressor, milk pre-cooler or variable frequency drive can significantly reduce energy consumption. In particular, milk refrigeration requires a lot of energy. Milk pre-cooling and refrigeration heat recovery have been gaining popularity among dairy producers for decades. The equipment is common at many dairies and is proven to reduce energy use.

A refrigeration heat recovery unit, or RHR, can recover 20% to 60% of the energy that is removed from the milk as heat during the cooling process. But RHR units and milk pre-coolers may interact and compete with one another, so an energy assessment should be done to determine if one or both units would be optimal for your dairy facilities.

Plate heat exchangers, which contain a series of side-by-side ribbed plates, also improve energy efficiency. Two separate circuits are created between the plates using rubber gaskets. Milk flows along its designated circuit in direct contact with every other plate. At the same time, cold well water absorbs heat from the milk as it flows through the other circuit on the opposite side of the plate. Warm water from the heat exchanger can be used for washing or to supply drinking water for the herd.

Scroll compressors can also provide energy savings for dairies of all sizes. A scroll compressor typically uses 15% to 20% less energy than a conventional re-



## Farm Energy

By DANA PETERSEN

consider installing a scroll compressor. In general, dairy farm energy assessments show that operations with larger herds have greater energy needs, thus greater energy-saving potential. However, nobody knows your operation better than you, so consider which improvements are best suited to your farm and herd. The specific configuration of your milking, cooling

and vacuum systems directly impact your farm's energy consumption.

More information about dairy energy efficiency, including variable frequency drives, is coming from ISU Farm Energy. For updates, follow @ISU\_Farm\_Energy on Twitter or visit [farmenergy.exnet.iastate.edu](http://farmenergy.exnet.iastate.edu) for additional resources.

Petersen is with ISU Farm Energy.

## QUALITY IS CLOSER THAN EVER

When you need replacement tires, you can't afford a long wait. Mitas produces high-quality radial tires for a wide variety of agriculture equipment. And starting in the spring of 2012, we'll make our tires in the heart of American farm country: Charles City, Iowa. We think you'll like having that kind of quality that close to home.

For more information about Mitas tires or locating a distributor, email [info@mitas-tires.com](mailto:info@mitas-tires.com) or visit [www.mitas-tires.com](http://www.mitas-tires.com).

Mitas Tires North America, Inc., 7400 Carmel Executive Park, Suite 100, NC 28226 Charlotte, U.S.A.  
 Phone: 704-542-3422, E-mail: [info@mitas-tires.com](mailto:info@mitas-tires.com) 12-17154