Tips to Reduce Energy Costs and Usage around the Farm
Scott Sanford
Sr. Outreach Specialist – Rural Energy Program
UW-Madison

The summer heat will be here before we know it, stressing cows and refrigeration systems. Here are a few things that can be done before the heat to keep you and your cows cool.

**Ventilation - What types of maintenance items can improve fan efficiency?**

Belts – loose, slipping belts can reduce air flow by up to 30%. This results in not getting your moneys worth for the energy used. Belts that are too tight will wear out bearings prematurely. Pulleys that are misaligned will cause excessive side wear on belts. Self tightening devices can be added to existing fans to keep the belts the proper tightness.

Louvers – Louvers that don’t open freely can reduce air flow by an average of 40%. Louvers need to be cleaned monthly and lubricated with a dry lubricant such as graphite to prevent the attraction of dust and dirt. Check that shutters are not bent or warped and seal properly annually.

Dirt – Dirt on blades and guards will increase drag and reduce air flow. Dust accumulation on motors will cause the motor to run hot, reducing its efficiency and can cause shortened service life. Dirt on thermostats will insulate the sensor and result in inaccurate readings.

Obstructions – Trees, bushes, weeds that obstruct the fan outlet will create a drag and affect air flow. Keep an area of at least 10 feet from the fan discharge clear.

**Refrigeration - A half an hour investment can reduce milk cooling costs 4% this summer.**

That’s how long it typically takes to clean dirty refrigeration condensing units that can rob your systems ability to expel heat. A study at the University of Wisconsin found a 3 to 5% reduction in energy usage after simply cleaning dirty condensing coils.

What is required for cleaning? You’ll need a few hand tools, a garden hose and water supply, condenser / evaporator cleaner and sometime some plastic sheeting or a plastic garbage bag.

Step 1: **Disconnect the electricity to the compressors** and protect any open motors or electrical boxes with plastic from water spray before starting to clean. Removal of the condenser fans to gain access to the back of the condenser can help facilitate cleaning. Using the garden hose, spray the condenser fins to flush out dust and dirt. Power sprayers are not recommended because they can bend fins and force dirt between the copper coil and fins, reducing heat transfer. It is sometimes necessary to drill a drain hole or loosen the frame around the condenser to get the water to drain. Next, mix the condenser degreaser with water per the directions and spray it onto the fins from both sides; allow it to soak for 5 to 10 minutes and then rinsed off. Repeat the process for very dirty units. Condenser units have press fit heat transfer surfaces between the copper refrigerant tubing and the aluminum fins. If they corrode, it will reduce the heat the condenser can dissipate; therefore it is important to use a degreaser/detergent that won’t corrode the bonds. Condenser degreaser/detergent is recommended and can be purchased (< $20/gallon) from refrigeration equipment suppliers. A gallon will last many years. Bent fins should also be straightened with a fin comb (also available at a refrigeration distributor) to allow free flow of air. It is highly recommended that your refrigeration service provider check the refrigerant level and pressures annually to detect any leaks or other problems. Open winter covers so condenser has unrestricted access to outside air or the milkhouse should be ventilated with an exhaust fan to remove excess heat. Condenser units in an unventilated milkhouse will use more energy to cool milk.

This article was funded in part by the Wisconsin FOCUS ON ENERGY program.