

# BMPs FOR ENERGY EFFICIENCY

## AROUND THE HOME

Energy audits are a great way to start. There are always improvements – no matter how small – that can reduce your energy bills. Basic BMPs for energy conservation for the home are highlighted below.

Energy controls can be used for heating, lighting and appliances. Energy controls will help to use energy more efficiently and reduce energy needs.



Energy-efficient appliances like this water heater pay for themselves in energy savings.



Energy-efficient lighting such as light-emitting diode (LED) lights is a simple way to start saving energy around the home.

## AROUND THE BARN

The best way to start is by comparing your energy use with similar operations – a process referred to as *benchmarking* (see Step 4, pg. 4). It will help pinpoint areas of your operation where you can make improvements in energy efficiency and conservation.

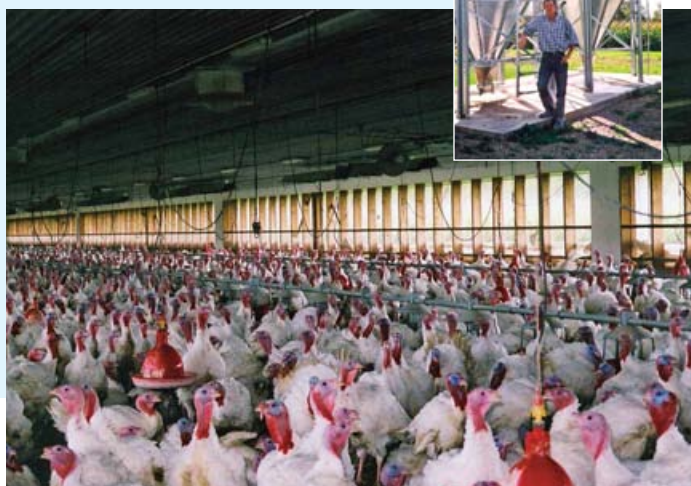
The biggest users of electrical energy in livestock operations are heat, lights and motors. Consider the technologies illustrated below when making improvements.

## POULTRY

When Bill Revington and his company built two new barns in 2004, they decided to use two-stage infrared tube heaters and dimmable T-8 fluorescent tube lights. They also tried out curtain-sided dual ventilation, which uses both natural and mechanical ventilation. So far they have been impressed. They know that the savings are there and that the air quality in these new barns is significantly improved.

“We focused directly on the primary uses of energy in our operation – ventilation, lighting and heating – to decrease our energy cost,” Bill says.

“We used to see significant condemnations due to airsacculitis, since birds are very susceptible to getting dust lodged in their lungs, which in turn causes infection. The respiratory system of a bird is not well-served by its immune system. This situation is greatly improved in the new barns with dual ventilation and improved air quality.”



## SWINE



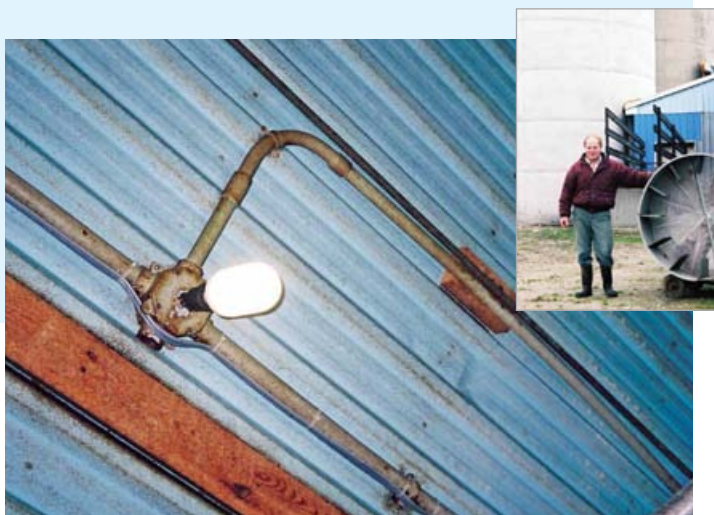
Climate is critical for farrowing operations: piglets require a nursery temperature of 36 °C (96.8 °F) and sows will be most comfortable and maximize their milk production at about 18 °C (64.4 °F).

“We are in the business of nurturing and producing animals,” comments Gerald Jantzi, “so we want to keep them as comfortable as possible in a clean creep environment.”

The Jantzis changed to electric creep heat mats and now use roughly half as much energy. Their energy bills are somewhere around \$4,000 per month, and they have been able to take 10% off those costs – saving approximately \$5,000 per year on their farm.

## DAIRY

Steve Veldman is no stranger to saving energy, reducing costs and improving efficiency. Steve embraces the culture of energy conservation, and he is constantly changing the way he runs his 75-cow tie-stall dairy farm to gain benefits. One simple area of improvement was the conversion from fluorescent to compact fluorescent lighting. It provides superior lighting and an electric cost savings of roughly \$1,500 per year.



There are many opportunities to improve energy efficiency in milking centres, such as variable-speed drive equipment, milking pre-coolers, heat reclaimers, and scroll compressors.

Henk and Ary Grootendorst have built an impressive dairy operation by paying careful attention to the barn environment for their cows and by purchasing energy-efficient equipment.

“We installed our variable-frequency drive vacuum pump 10 years ago when we built our first barn. Since we have to run it at only 30% of its full capacity, there are definite energy savings with the additional benefit of a longer operational life for the pump,” comments Henk.

“The best part of all is that we have not had to fix the pump over the 10 years.”

For their water system, they have installed a high-efficiency water heater. Warm water from the milk pre-cooler and milk heat reclaimer is stored in several water storage tanks, which feed preheated water to the water heater. The warm water also goes to the cattle for drinking water, preheats the milk parlour floor, and is used in the warm-water sanitation cycles and other cleaning activities.





## IN THE GREENHOUSE

Research indicates that 80% of the energy to heat a single-glazed greenhouse is required at night, so reducing heat loss at night can pay dividends.

A movable insulated curtain can reduce the heat loss by up to 70% when the curtain is closed. There are several types of blanket materials, each with their own advantages and disadvantages. Non-porous aluminized materials provide the most savings – up to 70% when closed. Porous blankets save about 20% when closed, but can be used for shading in the summer and allow water to drain through them.



A double polyethylene-covered greenhouse reduces air infiltration losses. But unless it has an infrared-treated film, infrared radiation can be transmitted out of the greenhouse.

The infrared/anti-condensation-treated films are expensive but reduce energy use by up to 20%. The payback on the incremental cost of purchasing these treated films is often less than one heating season.



## IN THE FIELD

Save energy during field operations by following the owner's manuals and keeping equipment properly maintained.

Reduce fossil fuel consumption with the following BMPs:

- ✓ assess fuel efficiency performance
- ✓ match tractor capacity to task at hand
- ✓ follow recommendations for ballast distribution
- ✓ use timers for block heaters.



Mulch tillage and no-till cropping systems reduce the number of passes in the field, which reduces fuel consumption by up to 70% when compared with conventional systems.

