

Management

By Lynn Marcinkowski Woolf

Give farm an energy audit

**Target energy waste
to save money and
improve management**

■ Nancy Kavazanjian had six energy experts at her kitchen table in 2007. What started as a volunteer effort to share energy data for a new state program led to a new grain drying system, an on-farm wind turbine and a bolstered commitment to energy conservation.

"My husband and I are always interested in conservation and doing the right thing. We're always experimenting," says Kavazanjian. She and husband Charlie Hammer farm 2,000 acres of corn, soybeans and wheat near Beaver Dam, Wis.

On-farm energy conservation goes much further than turning off shop lights. Reducing costs on major energy expendi-



Nancy Kavazanjian and husband Charlie Hammer, Beaver Dam, Wis., installed a new grain dryer based on energy audit recommendations.

tures gives short- and long-term benefits.

"Every dollar you save on energy costs goes directly back to your bottom line," says Dana Petersen, program coordinator for the Farm Energy Initiative at Iowa State University Extension.

Tracking energy

The first step in evaluating energy use is committing to a plan. Can you tackle an energy audit for your entire farm? If not, start with an enterprise audit or an audit of a particular crop. A lot may depend on whether you work with a professional or tackle the evaluation yourself.

A professional energy audit may cost \$1,000 to \$2,000 or more, says Scott Sanford, outreach specialist with the University of Wisconsin's Rural Energy Program. It may be worth it, though. "The cost for tracking data is time, and farmers don't have much of that," he says. "If nothing else, a professional audit gives you the information to make educated choices."

Kavazanjian's audit through her state's Focus on Energy program examined the whole farm, but the auditors did hone in on major energy users, such as the grain drying system, and fuel use.

Regardless of the size or scope of your audit, data is key to its success. "You can't manage what you don't measure," says Petersen.

Kavazanjian provided her historical data to auditors. She pulled data from her QuickBooks accounting system, including electricity and fuel expenses, and gathered receipts for unit cost information. She also provided records for grain moisture levels and talked through management and operation processes.

Kavazanjian's audit report provided her with a situation summary; energy-saving recommendations, such as no-till and an upgraded dryer system; and their farm's environmental footprint.

The couple had previously looked at no-till practices, but decided strip tillage

was better-suited for their soils and management style. However, the grain drying recommendations were a revelation.

"We were really surprised," she says. "We thought our grain drying system was efficient." The existing system, a two-module stacked continuous flow dryer with optional heat recovery, was purchased in 2003, but turned out to be undersized for their operation.

Implementation is the final step in any energy audit. Sometimes, simple management and operation changes can help reduce energy use. For example, air and fuel filter replacements can save 3% to 4% on fuel costs, according to ISU Extension. Painting aboveground fuel tanks with white or aluminum-colored paint can reduce fuel evaporation. Check tractor tires for low air pressure, which increases fuel use.

Other times, equipment upgrades are the best choice. Kavazanjian followed through with the auditor's suggestion and in 2010 installed a continuous-flow grain dryer with vacuum heat recovery. The annual energy savings from the new unit with the added heat recovery technology is expected to be more than \$12,000, with an 11-year payback.

Kavazanjian and Hammer took another giant step by adding an on-farm wind turbine in 2008. She had to get approvals and cooperation from the local utility to integrate the system into its grid. She also had to get township approval.

A state grant, a federal Rural Energy for America Program grant and federal tax credits helped cut the total cost of \$85,000 in half.

The wind turbine is now generating income. They chose a 20-kilowatt system, a size that qualifies them to receive retail rates for the energy produced.

"These are the kinds of things that are going to be here for my children when I'm gone," she says. 

Woolf writes from Milton, Kan.