

# Beauty View Dairy Manages Hot Water Use and Improves Productivity

PARTNER NEWS UPDATE

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L ohren Behnke recently made a decision that put him in hot water—lots of it. He replaced the old electric water heater on his Clintonville-area dairy farm with a new, energy efficient, propane-powered unit. Why make this switch? Because a propane unit heats water faster and cheaper than an electric unit. He now has all the hot water he needs, when he needs it. In addition, his operation's productivity improved and his annual energy costs have dropped.

The old electric-powered water heater was creating real problems for Mr. Behnke. Replacing it helped his operation in two ways. It couldn't produce enough hot water to clean his milking equipment. "I was running out of hot water at the end of the wash cycle. This caused a plate count of 12 to 14," he said. "But since the new propane water heater was installed, I have not been above two." This reduction occurred because a propane unit typically heats water four times faster than an electric unit.

The switch also reduced his utility bills. "I evaluated my electric bill and have seen a drop of \$400 per month. I do spend about \$100 per month for propane, so I have a savings of about \$300 per month," he said. This cost reduction is possible because a propane unit typically heats water less expensively—generally two to



The new water heater installed at the Behnke's farm has reduced utility costs and improved productivity.

three times cheaper—than an electric unit, even with the current rise in propane prices.

When it was time to replace his water heater, Mr. Behnke turned to people he trusted: Lon Allen of Kruegers Bou-matic and Focus on Energy's Fred Daniels. They had worked together on other energy efficiency projects at Mr. Behnke's farm. "It's very easy to work with the Focus program and Kruegers," Mr. Behnke said. "They made quality recommendations that helped my operation."

**TABLE 1. EXAMPLES OF SAVINGS FROM FOCUS ON ENERGY WATER HEATER REPLACEMENT PROJECTS**

RECOMMENDATION	HERD SIZE	\$ COST AVG.	\$ SAVINGS AVG.*	SIMPLE PAYBACK (YEARS)* *
Water Heater Replacement	<100	\$ 2,600	\$ 1,250	2.1
Water Heater Replacement	100 – 199	\$ 3,000	\$ 1,600	1.9
Water Heater Replacement	200 – 499	\$ 3,000	\$ 1,600	1.8
Water Heater Replacement	>500	\$ 4,500	\$ 2,600	1.8

\* Installation costs and corresponding savings will vary depending on the site conditions and use. Our energy advisors can help determine savings estimates for your situation.

\* \* Before any incentive.

Krueger's Bou-matic, of Clintonville, has been Mr. Behnke's long-time local dairy supplier and electrical contractor. Krueger's Bou-matic is a Focus on Energy Preferred Program Ally—the first agricultural trade ally to reach this level.

The new energy efficient water heater cost Lohren Behnke \$3,500 to install in late 2003. "Milk prices were still low and money was tight," noted Mr. Behnke. "But this project made good sense, and they offered me a grant to offset the cost." Table 1 provides examples of the costs, energy savings, and payback periods for different herd sizes.

"I can't tell you how happy we are with both Focus on Energy and Krueger's Bou-matic," said Mr. Behnke.

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## CHECKLIST OF ENERGY-SAVING WATER HEATING ACTIONS

### NO/LOW COST "TO DO" LIST

- Reduce water heater set point temperature. In dairy applications, the key code requirement is to have a minimum detergent wash solution temperature of 120°F when the solution is dumped down the drain. If the temperature is higher, reduce the water heater's set point temperature by 10°F to 20°F.
- Ensure pre-rinse water temperatures are 100°F to 110°F.
- Use a cold acid rinse cycle. This controls mineral buildup on milk lines and discourages bacteria growth.
- Repair leaky faucets.
- Insulate water heater tanks. A typical water heater tank has significant standby heat losses. Add an insulation blanket around the tank to reduce these losses on water heaters with less than two inches of foam insulation. Insulation kits are available at most lumber and hardware stores.
- Insulate all water pipes. Use foam insulation to prevent heat loss on hot water pipes and sweating on cold water pipes.
- Tune up the milking system's washing system and reduce the amount of hot water needed.
- Install a heat trap above the water heater to prevent thermo siphoning. Hot water rises from the tank into the pipes, which increases heat loss. Heat traps reduce the distance heat can travel.
- Install aerators on sink faucets

### MODERATE COST "TO DO" LIST

- Replace electric water heaters with high efficiency gas, propane, or oil-fired units that have an energy factor of 0.61 or higher.

### LONGER TERM "TO DO" LIST

- Retrofit milk pipelines to proper size. Oversized milk pipelines require more water to complete washing tasks.
- Install a refrigeration heat recovery unit. These units heat well water from heat rejected by the refrigeration system before it enters the water heater.

### KEY BENEFITS OF TAKING ANY OF THESE ACTIONS

- Improve milk quality
- Reduce energy costs
- Increase operational effectiveness
- Lengthen equipment life