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Cut water heating, milk cooling

## costs

UNIVERSITY PARK — Milk can be used to save energy and money for a darry farmer. Agricultural engineers have studied ways for farmers to use heat exchangers to draw heat from milk and heat water in milkhouses and parlors.

"the idea is not new," says James W. Garthe, Penn State Extension agricultural engineer. The concept of a heat exchanger system was researched in the mid-'60s, when electricity was a relatively cheap commodity.

"But interest has changed or developed with increased cost of energy," he says, "and heat exchangers have only been in commercial competition the last few years."

Garthe says the heat exchanger is part of the refrigeration system used to cool milk. Rather than using a fan to blow excess heat outside, these devices use that heat to warm water. Many types and models are available, with some more efficient than others.

Most dairy operations, says Garthe, use between two to three gallons of hot water per cow per day. Farmers can cut water heating cost in half by installing a heat exchanger.

Approximately one kilowatt hour heats four gallons of tap water to 140 F. A 100-cow herd uses about 200 gallons a day and pays the electric company over \$2.50 a day, or over \$900 a year. Half of that amount or about \$450 is a welcome savings, thanks to these heat exchangers.

"The payback on these units is about

three to four years, if properly sized to your herd's milk output and hot water needs," Garthe says.

Depending on the setup, some systems can heat water in a range of temperatures — tepid enough for washing udders or hot enough for sanitizing.

To aid the dairy farmer, Penn State has developed a computer program to select the right type of exchanger for heating water. A brief worksheet will be sent to interested farmers. This service is free to all Pennsylvania dairy farmers.

For more information, write or call: Steve Spencer, Dairy Science Extension, 213 Borland Lab., University Park, PA 16802, telephone 314/365-5491.