

Minnesota Fact Sheet 374a Farmstead Energy Improvement Dairy Equipment

Purpose

The purpose of this practice is to implement improvements to reduce or improve energy efficiency of on-farm energy use.

Dairy Equipment

Plate Cooler



Well water precoolers are heat exchange units that use well water to cool milk before it reaches the bulk tank. The warmed water can be used for livestock watering or washing. Plate coolers can counteract benefits of a compressor heat recovery system because they reduce

the amount of heat that is available for the heat recovery unit to utilize to heat water.

Scroll Compressor

Scroll compressors are utilized in refrigeration systems in dairies and more efficient than older styles of compressors. Replacing a less efficient compressor with a scroll compressor has a potential to reduce milk cooling costs by as much as 20%.



Water Heating

Hot water is necessary in dairies for proper sanitation and cleaning of equipment. High efficiency conventional style storage water heaters, heat pump water heaters or tankless (on demand) water heaters can help reduce energy consumption required to heat water to temperatures needed for proper operation of the dairy.

Compressor Heat Recovery



Compressor Heat Recovery units, also called refrigeration heat recovery units, are used to capture waste heat from the milk refrigeration system and utilize it to heat water. The benefits of a compressor heat recovery system can be reduced if used in conjunction with a plate cooler because the amount of waste heat available for use by the heat recovery system is reduced.

High Efficiency Laundry Equipment

Some dairies include their own laundry facilities to wash towels used to clean cow's udders during milking. High capacity, high efficiency commercial washers conserve energy by reducing power consumption during the wash cycle. Washer-extractor units further reduce energy usage by removing more water from the clean laundry which reduces the amount of energy needed during drying time.

Low Energy Waterers

In northern climates heated livestock waterers are common in facilities with outdoor lots. Energy free or geothermal fountains are designed to utilize heat from the ground as a heat source, eliminating the need to heat the waterers using electricity.

Lighting Requirements for Dairies

Recommended illuminance levels are provided in ASAE EP344.4, Lighting Systems for Agricultural Facilities. A copy of the standard can be purchased from the American Society of Agricultural and Biological Engineers website at <http://elibrary.asabe.org/>. Additional criteria related to lighting can also be found in NRCS Practice Standard 670 Lighting System Improvement.

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