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Milk cooling energy optimization on a dairy farm through an energy audit approach

High energy cost in a dairy farm is of concern and in order to make the business viable serious energy efficient measures need to be taken into account. Mostly, in dairy farms, energy consumption is high during the cooling process of milk before it can be collected for processing. This study was conducted on an existing dairy farm and it presents the optimization of the cooling process of milk on a dairy farm through an energy audit approach. A data acquisition system comprising of a power and energy meter, temperature sensors and flow meter were designed and built to monitor the energy consumption of the milk cooling process, the temperature of the milk and the flow of hot water in the dairy farm. The paper emphasizes the utilization of the waste heat to preheat water that is used for sanitation purposes within the plant. Findings from the study revealed that harnessing low-grade waste heat from the milk before cooling can lead to energy reduction in hot water heating as well as improves the load factor of the bulk milk cooler significantly. An efficient and economical design is considered for retrofit purposes or for new plant designs.

Apply to be
 considered for a student
 award (Yes / No)?

No

Level for award
 (Hons, MSc,
 PhD, N/A)?

N/A

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