



Dairy Energy Efficiency - ASP Presentation Outline

The intent of this lesson is to provide information and skills to the attendees who have an interest in Energy Efficiency on their Dairy Farm as a means to reduce their farm energy costs.

Slides 1 through 3: Introduction. The presenter introduces self and points out that while the topic is a bit complicated, it will be worth their while in so far as their understanding of which equipment uses the most energy and how to estimate potential energy savings. The third slide outlines the content of the module and the topics included.

Slide 4: Presentation overview.

Slides 5 and 6: Define energy efficiency and energy conservation with examples of each.

Slide 7: Graphic of energy use on the dairy farm.

Slides 8 and 9 list the top opportunities for energy efficiency improvement often found on the dairy farm.

Slides 10 through 14: Introduce the Variable Speed Drive (VSD) (aka variable frequency drive (VFD)) and its ability to control electric motors such that the motors only operate as fast and as much as needed to perform the needed amount of work. Slide 10 contains an image of a small VSD. Slide 14 addresses vacuum pump and milk pump applications.

Slide 15: Graphic showing the relationship between motor speed and energy use.

Slide 16: Typical size of dairy herds in PA. This helps establish the parameters for an energy efficiency improvement example calculation.

Slides 17 through 19: Further develop the variables used in the example calculation. It also yields the simple payback period.

Slide 20: An example VSD that might be used to control a 7.5 horsepower vacuum pump. It also provides the cost of the pump in a configuration that might be used in the example dairy operation.

Slides 21 and 22: Introduce barn ventilation and cooling with a description of typical efficiencies for some ventilation equipment. Generally the larger the fan diameter, the more efficient it is.

Slides 23 and 24: Describe high volume, low speed fans in more detail along with some of the benefits derived from their use.

Slide 25: An image of high volume low speed fans in a barn.

Slide 26: A graphic illustrating the relationship between fan speed, air flow (volume) and energy use, just to reinforce the point that a lower fan speed can pay big dividend in energy savings.

Slides 27 and 28: Describe the energy efficiency of various lighting sources and what it takes to maintain improved lighting efficiency.

Slide 29: Introduces the use of timers to control engine block heaters. Rather than turning on the block heater the night before and leaving it on perhaps 10 or 12 hours, using a timer that turns it on two or three hours before starting time can save substantial energy over the winter period.

Slides 30 through 32: Describe keeping track of energy use so that meaningful comparisons can be made among various energy sources on the farm. Some effort is required just to know how much energy is actually used and therefore what savings may occur from a change in energy source.

Slide 33: Introduces the USDA Energy Estimator. Fuel changes and efficiency improvements.

Slides 34 through 40: Working through the estimator starting with sample existing farm conditions, finally arriving at estimated energy savings derived from the proposed improvements.

Slide 41: Some electric companies offer pricing schemes that vary during the day. To benefit from such an arrangement, you have to be careful when you use most of your electricity.

Slide 42: Suggests that you check out available rebates that may reduce your cost of upgrading your farm's energy efficiency.

Slide 43: Summary that restates the goals of the module.

Slide 44: Placeholder for questions.

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