BOBOLINK CATTLE DEMAND TROUGH

For cattle raisers, grazing is an important aspect which require their attention throughout the year. Water accounts for 50–80% of an animal's weight,and feed intake is directly related to water intake.Research has shown that livestock prefer alternativewater sources to surface water. Studies in westernCanada showed steers gained 16–19% more weightover a 90-day period when they drank from apump-fed trough versus directly from a dugout.Options for watering systems include pumpingwater from wells, dug-out ponds, or streams. These systems can be activated by a nose pump,or can feed into a trough where the water levelcan be controlled by a float or motion detector.Solar-powered pumps are an easy and relativelyinexpensive way to provide water to cattle, particularly in back fields where electricityis not available.

A Solar powered system consists of a PV solar panel which is connected to a battery bank of required capacity and voltage. During the day, the solar panel provides power to the equipment as well as re-charge the battery and at night the battery provides the power resulting in the battery getting discharged.

The Firefly battery string is charged by four PV panels, 1100 watts total peak power, and a 160 watt wind turbine, all located at the center of the 185 acre, 100% grassfed dairy farm in Western New Jersey, about an hour west of NYC.

The Firefly power plant powers a water system which provides the drinking water for the herd of 100 Bronze Age dairy cattle.

The water system consists of a drilled 450 foot well with submersible pump set at 150 feet, feeding a buried 3,600 feet loop of 1.5 inch plastic pipe, which feeds four buried concrete tanks, each located under one of our main pastures, each with a capacity of about 800 US gallons, each fitted with a float valve.Above each buried tank sits a Bobolink cattle demand trough, in which a small pump in the underground tank supplies water to a ten gallon drinking trough at the surface. The pump is activated by a motion detector, aimed at the trough to detect the presence of thirsty cattle.

When a cow trips the motion detector, the trough fills with water. A limit float switch prevents overflow. When the cow or cows are done drinking and leave, the pump shuts off and the trough drains by gravity, leaving the system unaffected by freezing.

The system is sized to provide all the water required by 100-150 cows, year round. The good news is that cows drink far more water in July than they do in December, so the application is well suited to solar power. The 160 watt wind turbine helps in cloudy weather and the low-insolation days of winter.