

ABSTRACT

The Photovoltaics for Sustainable Milk for Africa through Refrigeration Technology (PV-SMART) uses direct drive PV for off-grid milk cooling under the USAID Powering Agriculture Energy Grand Challenge Program (PAEGC). The project is implemented by Winrock International and SunDanzer Refrigeration Inc. refrigeration. The PV chillers are direct drive using a dc compressor that chills ice stored in the walls of the refrigeration unit. This eliminates the need for electro-chemical batteries and successfully chills milk to 10°C in 2 hours and 4°C by morning preventing bacteriological growth. Farmers can receive a premium price for providing higher quality, refrigerated evening milk to dairy processors that would otherwise spoil. These PV farm milk chillers are the first of their kind with 80 pilot units deployed in Kenya.