

Solar Powered Flake Ice Machine

Production of Flake Ice for the cooling of fish and horticultural goods

What is a Solar Powered Flake Ice Machine?

The fish and horticultural value chains in East Africa are characterized by high levels of lost business opportunities and low income. Due to non-existent or non-operational cold storage facilities agricultural produce cannot be safely stored and aggregated before selling it off. Existing ice machines are powered by either diesel generators or the grid thus experiencing high running energy costs. Ice production using solar energy is the ultimate solution to this challenge.

What are the main features?

A flake ice machine yields consistently sized ice that will be easy to pack, ensuring even and consistent cooling. The flake ice thickness is around 1.5~2.2 mm. The ice making machine has total power consumption of 22.75 kW and can produce up to 5 tons of ice in 24 hours. The system is powered by a 30 kW_p solar generator coupled to a battery bank and 3-phase inverter.

What are common uses?

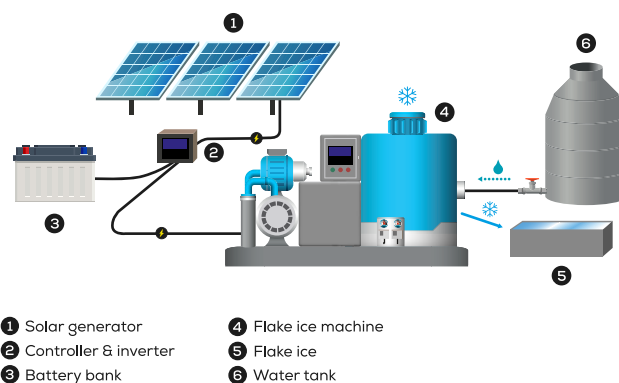
Flake ice is mostly used for the preservation of fish but can also help to cool other meat types and horticultural products. It can be transported, e.g. on fishing boats, so that the product can be cooled instantly and during transit to markets. With the dimensions of the ice flakes, the surface area in contact with the product is high, supporting a quick and uniform cooling. As the flake ice melts, it helps to moisten the product, keeping its quality high.

Market Development

The production and sale of flake ice is a profitable business in regions where demand from e.g. fisher communities is high. Different sizes of conventional flake ice machines exist in the market, designed to be powered with electricity from the grid. Solarizing these conventional machines requires the introduction of inverters and batteries, resulting in large initial investment cost. However, payback periods can be shorter due to the low running costs. A number of companies are slowly getting into the market with specialised ice machines that are designed for the use with photovoltaics.

Project overview

Partner: WEIHub Victoria Ltd. (WeTu)
Type: integrated Development Partnership with the Private Sector (iDPP)
Focus: Integrated Solar Cooling Solutions at Lake Victoria
Duration: 03.2021-12.2022
Country: Kenya



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