

Cold storage rapid cooling application using slurry ice.



Case Study

Slurry ice is a crystallized water-based ice solution which can be pumped and offers a secondary cooling medium for thermal energy storage while remaining fluid enough to pump. It flows like conventional chilled water while providing 5 to 6 times the cooling capacity.

The slurry ice machine is designed to operate until the tank is full or during rapid cooling periods in order to introduce ice into the cooling circuit. The stored energy produced during off-peak/low-load periods is later utilized to satisfy the short and sharp peak loads. The installed refrigeration machinery is 1/3 of the equivalent capacity of a conventional direct cooling system.

Harvested fresh vegetables are subjected to rapid cooling in this cold storage facility in England. Slurry ice generated by an ORE-25 unit is pumped to the cooling coils which provide temperatures as low as 32°F (0°C) during rapid cooling periods.

Client: Olga, United Kingdom

Project Description:

Installed an 88 kW (25 TR) slurry ice machine and an associated 10 m³ ice storage tank to satisfy a peak space cooling load of 180 kW (51TR) in a vegetable cold storage facility.

Project Scope:

- ▲ 51 TR (180 kW) peak cooling load
- ▲ 1,000 cubic meter storage facility
- ▲ 25 TR (88 kW) ice making capacity
- ▲ Daily cycle TES strategy
- ▲ Refrigerant: R-22

Project Financial Summary:

- ▲ \$10,000 USD/yr energy savings
- ▲ 2 year payback
- ▲ Flexible system
- ▲ Full stand-by capability
- ▲ Green solution



APPLYING INTELLIGENT ENERGY