



Energy-Efficient
Vacuum Ice Maker (VIM)
for Thermal Energy Storage (TES)



IDE's Vacuum Ice Maker

Most efficient ice maker -
less than 1 kW/tonR

Use of ice slurry for Thermal Energy Storage (TES) enables utilization of the latent heat of ice and, therefore, allows reduction of the TES tank volume. Furthermore, it enables the flexibility of rapid discharge to address growing load demand.

The VIM is capable of producing up to 1,000 tonR (3,500 kW) cooling capacity at all ambient temperatures.

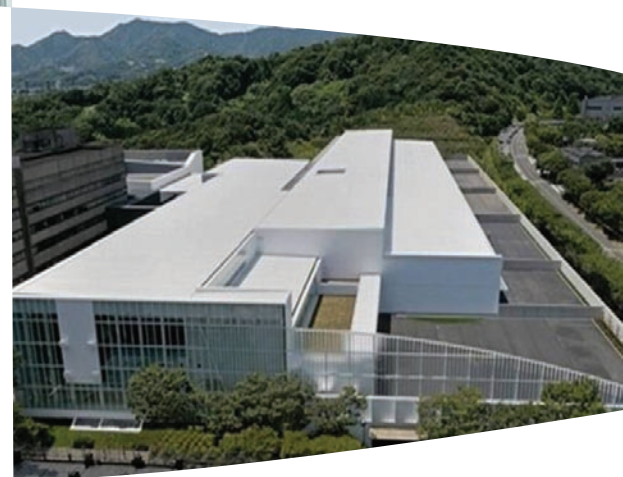
The VIM is based on IDE's proven technology, which has been operating worldwide for more than 20 years.



Sanken, Japan
Capacity: 100 tonR (350 kW)

Benefits:

- Low energy consumption - less than 1 kW/tonR
- A simple and low cost storage tank
- Utilization of the latent heat of ice and reduction of TES tank volume
- Production of pumpable and non-coagulative ice slurry
- Very rapid discharge capabilities
- 3.5 MW refrigeration per unit
- Environmentally friendly, employs water as primary refrigerant



Nissan Tech. Center, Japan
Capacity: 400 tonR (1,500 kW)

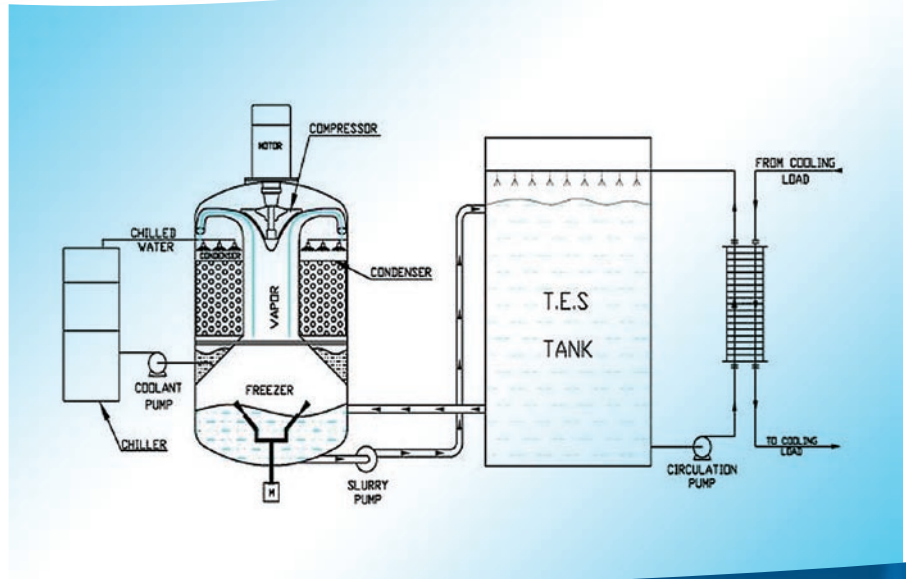
IDE's Vacuum Ice Maker (VIM) Technology

Inside the VIM freezer, water is exposed to deep vacuum. The vacuum forces a small part of the water to evaporate while the remaining water freezes forming water-ice mixture.

The mixture is circulated between the VIM and TES tank during the charge cycle until ice concentration reaches 50%.

In order to maintain the deep vacuum in the freezer, the water vapor is continuously evacuated from the freezer, compressed and fed into the condenser by IDE's unique centrifugal compressor. Condensing the vapor requires cooling water at 41°F (5°C), which is supplied in a closed loop circuit by a standard water chiller.

During TES discharge cycle chilled water at -32°F (0°C) from the bottom of the TES tank is circulated through the heat exchanger in order to meet the required cooling load demand.



Specifications	VIM 400 (Ice)	VIM 850 (Ice)
Cooling Capacity	1.750 kW / 500tonR	3.500 kW / 1000tonR
Electrical Supply	400V / 50Hz / 3 Phase or 480V / 60HZ 3 Phase	
Specific Power per tonR ⁽¹⁾	0.44 kW/tonR	0.38 kW/tonR
Freezer Type	Direct Contact Evaporator Chamber	
Condenser Type	Direct Contact	
Refrigerant Type	Water	
TES Tank Type	Standard Empty Tank w/o Internals	
Max. Ice Concentration in the TES Tank	50%	
Ice Grain Size	0.5-1.0 mm 0.02-0.04 inch	

⁽¹⁾ The declared power consumption refers to the VIM unit only and does not include the supporting cooling system (Chiller, cooling tower and its circulation pump).

About IDE

IDE Technologies Ltd. is a world leader and pioneer in the development and construction of seawater desalination, water treatment and ice-making plants. Active since 1965, IDE has 400 plants installed in over 40 countries worldwide.

Hadera, Israel

World's Largest Sea Water Desalination Plant (SWRO)

Capacity: 92 MG/day (348,000 m³/day)

Commission Date: 2009



Tianjin SDIC, China

China's Largest Thermal Desalination Plant

Capacity: 26 MG/day (100,000 m³/day)

Commission Date: 2010



IDE
technologies ltd.

WE MADE
OUR MARK
IN WATER