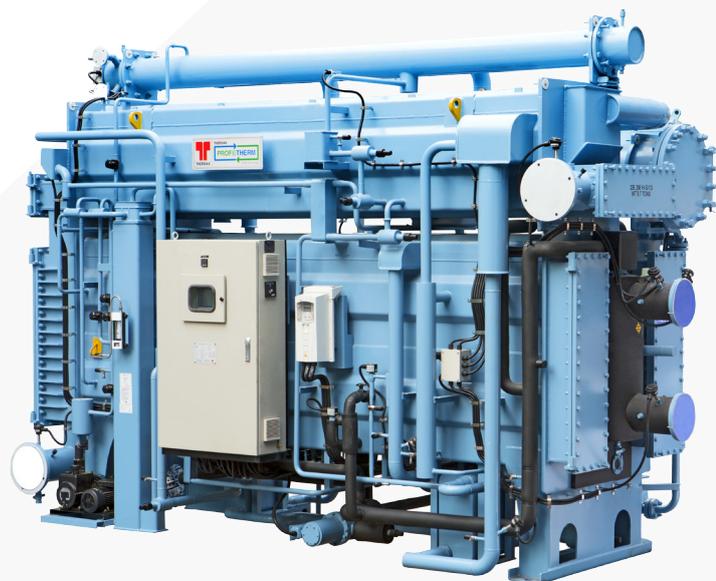# HIGH EFFICIENCY SIMULTANEOUS CHILLER-HEATER

**Driving Heat Source**
Steam, Hot Water, Exhaust, Fuel firing, thermic fluid

**Hot water for process**
Up to 90$^\text{O}$C

**Chilled water for process** up to 1$^\text{O}$C
**Chilled water with glycol** up to -2$^\text{O}$C

**Cost optimization**
20-25 % savings in operational costs

**Water Savings**
20% reduction in evaporation losses

**Patented technology**

**Space Optimization**
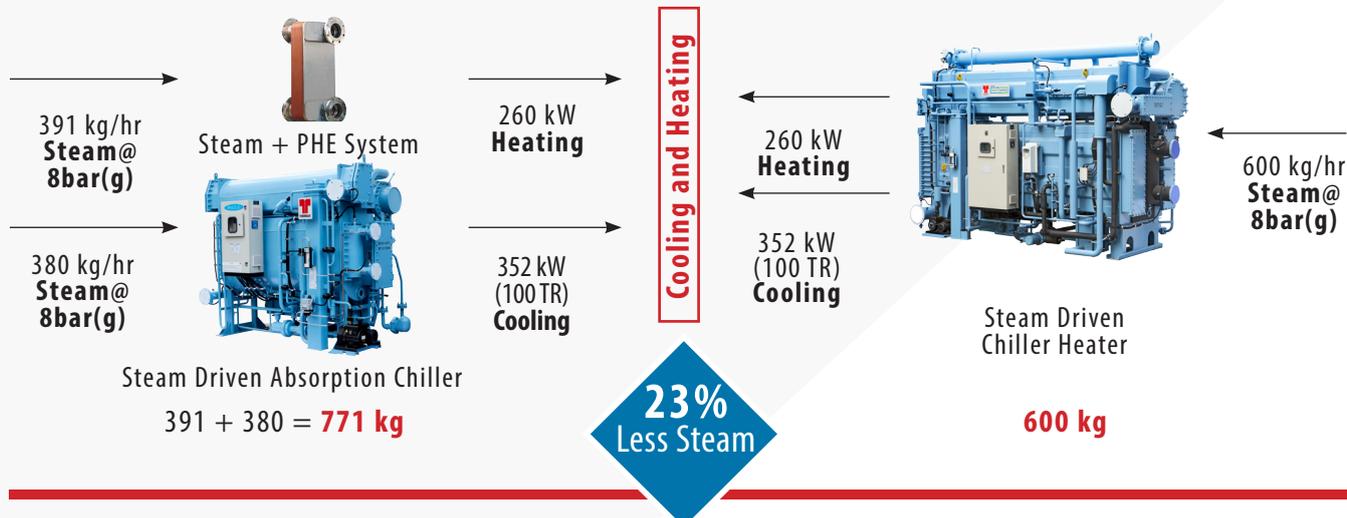Single equipment for cooling and heating needs

Thermax's high-efficiency Chiller-Heater is a Lithium bromide based vapour absorption machine producing chilled and hot water foreither cooling or heating as well as both simultaneously.

In these products 40%of heat required for generating hot water is recovered from low temperature chilled water, while the remaining 60 % is recovered from external heat source.

Thereby, 40 % reduction in direct external heat source can be achieved for heating hot water as compared to conventional hot water generator. Additionally, refrigeration is also generated simultaneously.

As a result, not only does the fuel consumption for the heating reduce, but the heat rejection in the cooling tower also reduces.

## Conventional System  vs  Thermax's Chiller Heater

391 kg/hr
**Steam@ 8bar(g)**

Steam + PHE System

260 kW
**Heating**

380 kg/hr
**Steam@ 8bar(g)**

352 kW
(100 TR)
**Cooling**

Steam Driven Absorption Chiller
391 + 380 = **771 kg**

**Cooling and Heating**

260 kW
**Heating**

352 kW
(100 TR)
**Cooling**

600 kg/hr
**Steam@ 8bar(g)**

Steam Driven
Chiller Heater

**600 kg**

**23%**
Less Steam

# Advantages of Thermax's high efficiency chiller-heater

- Part of the Hot water heating duty is recovered from within the cooling cycle and hence 40% savings can be attained in external heat source consumption as compared to a conventional hot water generator.
- This VAM has inbuilt flexibility to operate either as a chiller or heater or both simultaneously.
- Since part of the chiller heat rejection is in hot water, cooling tower heat rejection is reduced. Thereby nearly 17% reduction on cooling water evaporative losses required for chilling can be attained.
- Further benefit of reduction in $CO_2$ emissions (carbon credits) can be attained due to lower energy consumption.

- Maximum heating capacity in simultaneous cooling and heating mode - 75-80% of the cooling load. That is, for every 100 kW of cooling, up to 75 kW of heating can be generated
- In the absence of cooling load, 100% heating capacity can be produced after change over to heating mode.
- Also there is a reduction in the scope of utilities to be handled daily as single product is used in place of two systems.
- Additionally, vapour absorption machines attract higher rate of depreciation as an energy conservation device and hence the feasibility can be further improved due to tax savings

## Our Footprints

**Customer:** Umang Dairy, India

**Total Capacity:** 400 TR cooling and 1050 kW heating

**Application:** Milk chilling

**Heat Source:** Steam

**$CO_2$ Savings:** 1551 tons/annum

**Customer:** Fruit and Nutty, Nigeria

**Total Capacity:** 600 TR cooling and 1540 kW heating

**Application:** Cooling in chocolate making process and plant room cooling

**Heat Source:** Multi-energy (Exhaust gas and direct firing)

**$CO_2$ Savings:** 2361 tons/annum

**Customer:** Coca Cola, India

**Total Capacity:** 750 TR cooling and 625 kW heating

**Application:** Beverage cooling

**Heat Source:** Steam

**$CO_2$ Savings:** 2966 tons/ annum

**Customer:** KTV Health Foods, India

**Total Capacity:** 420 TR cooling and 1090 kW heating

**Application:** Edible oil processing

**Heat Source:** Steam

**$CO_2$ Savings:** 1635 tons/annum

## Industries Served

**Food and Beverage**
Narasus Coffee, India
TATA Global Beverage, India

**Brewery**
United Breweries, India
United Spirits, India

**Dairy**
Adinath Dairy, India
Heritage Foods, India

**Edible Oil**
Emami Biotech, India
Kaleesuwari Refinery Pvt.Ltd., India

**Thermax Ltd**
D-13 MIDC Chinchwad, Pune 411 019, India
**Tel.:** +91-20-6612 2999 **I Fax:** +91-20-27475907
**Email:** coolinginfo@thermaxglobal.com
**Website:** www.thermaxglobal.com

Connect with us

Thermax Cooling    @thermaxcooling    Thermax Cooling