ICE AIR®
World Class Comfort®

Introducing Ice Air's Cold Climate Heat Pump Domestic Hot Water Heaters

Welcome to a new era of sustainable zero emission DHW heating

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Sustainable DHW Generation in Cold Climates

The Path to a Sustainable Future

The world of plumbing is undergoing a transformation that is being lead by progressive cities, states, and building owners that are looking to reduce their carbon emissions.

To transition away from fossil fuel heating of buildings and domestic hot water plants, buildings need to "electrify" their HVAC and plumbing systems.

Defying Physics?

When people think of using electricity for heating they typically think of electric resistance heating. Electric resistance heaters are 99% efficient, which you may think would be the upper limit of efficiency, but it turns out it is not. With the magic of the refrigeration cycle, we are able to achieve Coefficients of Performance (C.O.P.s) in excess of 5.36 when it's hot out (115°F on the roof) or 1.42 when it is extremely cold (-13°F). A C.O.P. = 1.42 is 1.43-times better than electric resistant heating!

For example, a C.O.P. = 4.0 means that for every 1-kW of electricity a building owner pays for, they get 4-kW of heat. How is that possible? Are we defying physics? No. We're using physics!

Revealing the Secret

The formula below is the key. Refrigeration systems transfer energy from the environment (the outside air) and transfer it to the load (in this case, domestic hot water).

$$\text{C.O.P.} = \frac{\text{Energy Transferred to the Load}}{\text{Energy Paid For} + \textit{Free Energy Provided by the Environment}}$$

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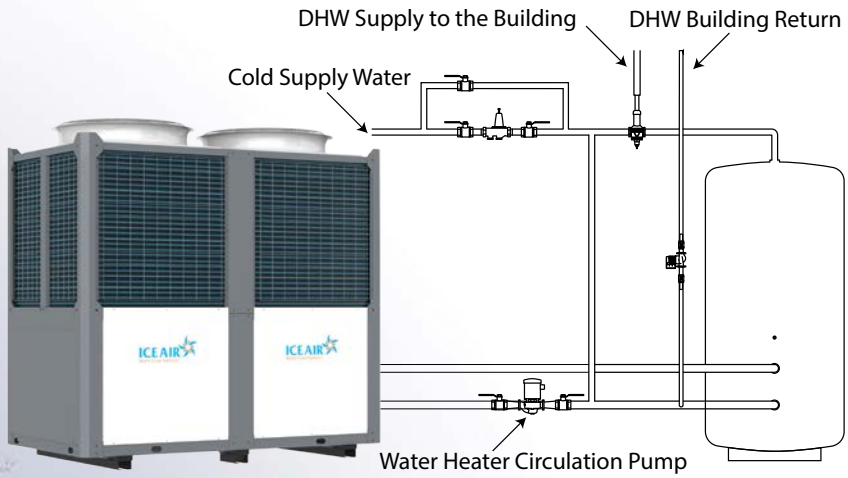
Making hot water from *cold air!*



What seems like magic is actually old technology...

The refrigeration cycle is old. The commercial refrigeration market is over 100 years old, and very mature. When you think refrigeration, you likely think of cooling. However, the refrigeration circuit always has a hot side opposite of the cold side. Typically, when we cool an internal space, we are heating up outside air. When we use refrigeration to heat something, we reverse the refrigeration cycle, which cools the environment (while absorbing the environment's energy).

What's new...

Advances in heat pump technology have allowed air-source equipment to extract the environment's energy down to very low ambient temperatures. The Ice Air CCHPD-series units are tested to –13°F, providing code compliant domestic hot water (DHW) supply temperature when it is extremely cold outside!

Surprisingly little change...

These water heaters are installed just like traditional water heaters with respect to how they interface with DHW storage tanks, cold water supply, and DHW recirculation pumps. The main difference is these water heaters are installed outside, either on grade or on roofs. It is recommended to heat trace external piping. The CCHPD-series units are provided with a compressor driven freeze protection function, along with heat trace on the hydronic components, and a terminal for emergency power supply to keep the piping warm during a winter power outage.

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Ice Air is dedicated to doing our part to usher in a better tomorrow

Key benefits of Ice Air's Heat Pump Domestic Hot Water Heaters

Electrification...made easier

Electrifying domestic hot water is tricky business. DHW loads are large and electric resistance options in a commercial setting are often prohibitive from a first cost and operation perspective. Refrigerant based DHW heaters operate with high C.O.P.'s, offering the best path to an electric solution.

Innovation is the Key

Ice Air has products to enable customers to electrify their HVAC and Plumbing systems to comply with stringent energy codes such as New York City's *Local Law 97* and the city's *80x50 goals*. Find out more today. Call or email us and let's get to work.

Ice Air's CCHPD series air-source cold climate heat pump domestic hot water heaters allow building owners to generate domestic hot water with highly efficient refrigerant based heating plants and zero emissions.

- High coefficient of performance (C.O.P.); Nominal C.O.P.=4.4 @ 68°F, Max C.O.P.=5.36 @110°F.
- Average seasonal performance during winter in NYC: C.O.P. = 3.75.
- Low ambient heating operation down to –13°F; eliminating the need for supplemental heat
- Two means of freeze protection: 1) Compressor heat cycle, 2) Electric heat trace powered by building emergency power.
- Units can be roof mounted or mounted on grade reducing mechanical room requirements.
- Ability to be remote installed allows for quicker/ easier turnover as easy as 1,2,3.
- Retrofitting an old system with these units enables system change over prior to demolition of the old system.

CCHPD325
325-MBH capacity

CCHPD650
650-MBH capacity

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