



Turn to the experts

## Heat Reclaim Chillers



Capturing Heat for Useful Energy Savings







## Capturing Heat for Useful Energy Savings

Buildings are responsible for 40 percent of total energy consumption. Of the energy consumed in commercial buildings, 43 percent is used for space and water heating. If a more efficient means of providing heat could be implemented, it would represent a tremendous opportunity to reduce energy consumption in buildings.

There is a more efficient means of generating hot water through the application of chiller systems with heat reclaim capabilities. Carrier chillers with heat reclaim capabilities can do just that: produce chilled water controlled to the necessary temperature while generating hot water as a by-product of the refrigeration cycle.

### How It Works

During cooling only operation, the chiller produces a controlled source of chilled water leaving the evaporator while dissipating heat through the condenser and ultimately to the environment. When there is a simultaneous need for chilled water and hot water, these chillers have the capability to operate in heat recovery mode. The recovered heat can be redirected for various heating needs, which saves energy while maintaining design conditions.

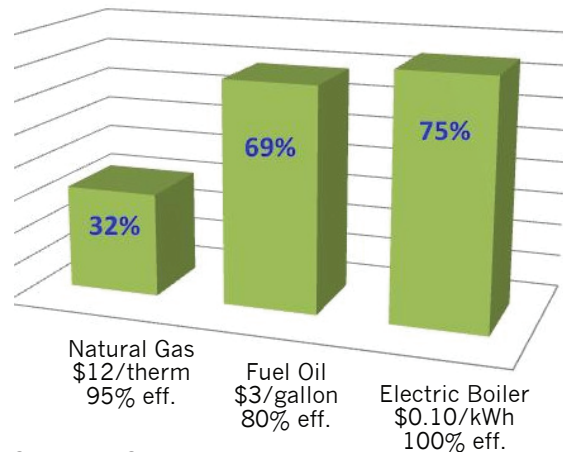
### Energy Savings

A simple way to determine the viability of a heat reclaim system is to compare the potential energy cost savings between a conventional boiler and the heat reclaim chiller:

- A 100 ton (352 kW) Carrier chiller operating in heat reclaim mode can provide 1.7 million BTUs/hr of heat for your building.
- The same 100 ton (352 kW) Carrier chiller operating in heat reclaim mode can *reduce* natural gas costs for heating by over \$75,000 per year (4,500 run hours per year, \$.80/therm natural gas, vs. 80 percent efficient boiler)

In many applications, payback is obtainable in approximately one to two years. Contact your Carrier sales representative to perform a simple cost savings analysis for your facility.

### Operating Savings vs. Typical Boilers



Source: U.S. Department of Energy

## Flexibility and Efficiency

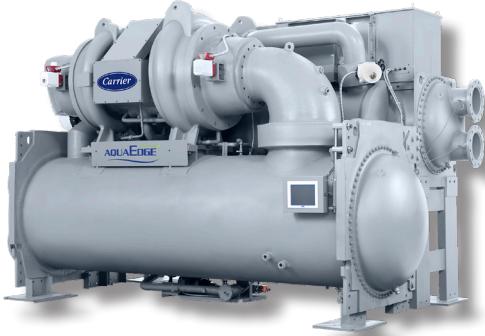
Heat reclaim captures energy that would otherwise be wasted to the atmosphere. It is possible to capture the rejected heat from the condenser and use it to produce hot water in your facility. Therefore, overall system efficiencies can be significantly increased. Unlike typical boilers with COPs (coefficient of performance) less than 1.0, capturing waste heat from a heat reclaim chiller can result in COPs exceeding 5.0.

# Heat Reclaim Chillers

## AquaEdge® 19DV

- 350 to 800 tons (1,231-2,814 kW)
- Hot water up to 120°F (48.9°C)
- HFO-1233zd(E) refrigerant
- Exceeds ASHRAE 90.1 standards
- Carrier touchscreen controls

*External controls required to control to a leaving condenser water setpoint for 19DV.*



## AquaSnap® 30MP

- 16 to 550+ tons (56-1,934+ kW)
- Hot water up to 140°F (60°C)\*
- Puron® refrigerant (HFC-410A)
- Exceeds ASHRAE 90.1 standards
- Condenserless version available
- Carrier ComfortLink controls

*External controls required to control to a leaving condenser water setpoint for 30MP.*

*\*30MP 016 and 032 models make up to 110F(43.3C) and 104F(40C) hot water, respectively.*



## AquaForce® 30XW

- 150 to 400 tons (528-1,407 kW)
- Hot water up to 140°F (60°C)
- HFC-134a refrigerant
- Exceeds ASHRAE 90.1 standards
- Carrier ComfortLink controls



## AquaForce® 30HX

- 75 to 265 tons (264-932 kW)
- Hot water up to 135°F (57.2°C)
- Potable water available
- HFC-134a refrigerant
- Exceeds ASHRAE 90.1 standards
- Condenserless version available
- Carrier ComfortLink controls



## AquaSnap® 30RB

- 60 to 300 tons (211-1,055 kW)
- Hot water up to 140°F (60°C)
- De-Superheater
- Puron® refrigerant (HFC-410A)
- Exceeds ASHRAE 90.1 part-load standards with Variable Speed Fans
- Carrier ComfortLink controls



# Selection Guide

## Applications

There are many different types of heat recovery applications, including:

- Hotels
- Universities
- Hospitals
- Manufacturing Plants
- Casinos
- Office Buildings

Model	Chiller Type	Nominal Cooling Capacity, Tons*	Nominal Heat Capacity, MBH*/**	Condensing Type
19DV	Water-Cooled	350 – 800 (1,231-2,814 kW)	5,250 – 10,320	Full
30MP	Water-Cooled	16 – 71 (56-250 kW)	213 – 945	Full
30HX	Water-Cooled	75 – 265 (264-932 kW)	1,027 – 3,864	Partial or Full
30XW	Water-Cooled	150 – 400 (528-1,407 kW)	1,935 – 5,160	Full
30RB	Air-Cooled	60 – 300 (211-1,055 kW)	770 – 4,127	De-Superheater

\* Hot water from 115°F to 130°F (46.11 - 54.44°C). Chilled water 44°F / 54°F (6.67 - 12.22°C) except for the 19DV which is based on 110°F to 120°F (43.33 - 48.89°C), Chilled water 44°F / 54°F (6.67-12.22°C).

\*\* 1MBH = 1,000 BTU/hr

Standard condensing temperatures (up to 120°F (48.9°C) water produced) are ideal for many applications, including VAV reheat, radiant floor heating, pool heating and pre-heating domestic water.

Elevated condensing temperatures (up to 140°F (60°C) water produced) can produce point of use water for domestic applications (with an appropriate intermediate heat exchanger), laundry and various process applications.

Controls leverage Greenspeed® intelligence variable-speed technology to vary the compressor speed, enabling the 19DV to provide a much wider operating

range and still be significantly more efficient at standard AHRI conditions versus conventional chillers.

## Environmental Leadership

Carrier has long been committed to the environment and its sustainability. Carrier's heat reclaim solutions combine the ability to capture heat with high efficiency chillers for overall mechanical system efficiency. This can maximize your opportunity to obtain LEED®<sup>1</sup> (Leadership in Energy and Environmental Design) credits and reduce your facility's overall carbon footprint.

## Heat Reclaim Benefits at a Glance

### For Building Owners and Managers

- Reduces operating expenses
- Easy to maintain
- Quiet operation
- Reliable operation
- Environmentally sound refrigerant
- Building automation system compatible

### For Consulting Engineers

- ASHRAE 90.1 compliant
- HFC and HFC/HFO refrigerants
- High-efficiency optimization
- Ideal for replacement projects
- Semi-hermetic motor

### For Contractors

- Easy to break down
- Ideal for replacement
- Diagnostic controls
- Reliable performance
- Reduces installation expenses
- Compact footprint

<sup>1</sup>LEED® is a registered trademark of the U.S. Green Building Council.



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