



Absorption Chillers in Industry

Time

to

Take

a

Closer

Look...





For Robust Performance – Look to the Horizon™ Series of Absorption Chillers

With deregulation and recent advances, absorption can be the best suited chiller option available.

Recent advances in chiller design have many design engineers looking closer at absorption. More robust than ever, modern absorption technology takes full advantage of microprocessor controls, variable speed pump drives, and industrial grade construction. As a result, very high levels of chiller performance, efficiency and reliability are now possible.

Design engineers also know that with deregulation and shifting energy prices, absorption can be the best suited chiller option available. Today's absorption does more than deliver chilled water using energy-saving process steams, hot fluids or economical fuels. The time is right to take a closer look at what advanced absorption technology has to offer.

When Reliable Operation is Critical

Even under high temperature, corrosive, or diverse conditions, reliable chilled water delivery is critical to the process application. Trane uses the heaviest absorption chiller construction in the industry. Trane's superior weld quality control methods and rigorous pre-ship testing contribute to trouble-free start-up, maximum efficiency and reliable operation.

Built for the Industrial Environment

In the early 1990s, with the assistance of the Gas Research Institute, Trane designed an advanced series of Horizon absorption water chillers. Designed for the rugged nature of industrial applications, these chillers feature a far superior method of controlling the capacity of the machine.

Trane accomplishes this through the use of adjustable frequency drives on the solution pumps. This type of control gives the chiller the ability to utilize the thermal mass in the absorber to immediately react to changes in load. The absorber has the ability to stay on line even in situations where the cooling tower is subject to large temperature swings. This ability to react to changing loads is particularly beneficial in industrial process applications, where quick and/or frequent load variances are typical.

This state-of-the-art chiller design can produce chilled water temperatures as cold as 40 F and start-up with tower water temperatures as low as 45 F, or 55 F, depending on the Horizon chiller you choose. These lower operating temperatures can significantly reduce system energy consumption and cost.

The Horizon™ absorption family now includes a full range of chillers suitable for industrial applications.

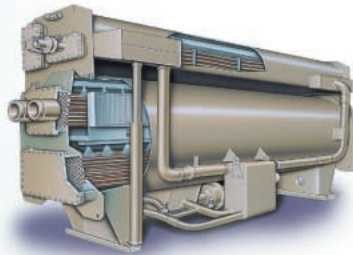
Absorption is a Good Environmental Choice

The purchase of a Horizon chiller is not only a good economic decision, it is also an excellent environmental choice that your employees, shareholders, and neighbors can feel good about. The use of Horizon chillers reduces one's dependence on electric energy and reduces waste disposal impact and expense. Helping to keep air pollutants to a minimum, direct-fired Horizon chillers use high efficiency, low NO_x emissions burners. In addition, Horizon chillers use water as the base refrigerant, eliminating environmental concerns about leaks and disposal.

Trane Horizon chillers have the robust design, advanced alloys and heavy-gauge construction to thrive under trying conditions.

Single-Stage Absorption

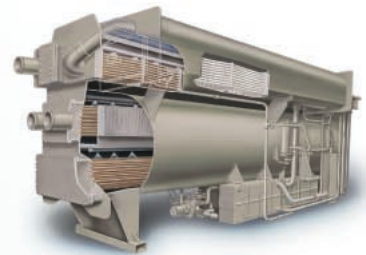
Horizon single-stage chillers use low pressure 12 psig steam or 270 F hot water from a wide range of industrial sources. Energy conserving applications such as waste heat recovery, cogeneration equipment and solar energy powered cooling can be maximized with this machine. Typical industrial applications might be pulp mills, oil refiners, the food processing industry or any other application that has a waste heat output.



Horizon single-stage absorption for applications with low temperature steam, water or other hot fluids.

Two-Stage Absorption

Horizon two-stage absorption chillers offer maximum thermal efficiency in situations where process steam is available at pressures as high as 135 psig or hot water is available at temperatures as high as 370 F. Designed around 3.6 gpm/ton cooling tower waterflow, the two-stage design is lower than Air Conditioning Refrigeration Institute's (ARI) 4.0 gpm/ton standard for two-stage absorption chillers. Lower gpm's through the condenser and absorber section gives the design engineer the opportunity to downsize the cooling tower and cooling tower pumps. This means lower equipment costs and reduced chiller plant electrical usage. Examples of possible applications might be steam or gas turbine electric generation facilities, chemical plants, paper mills, or other facilities where medium-pressure steam is available.



Horizon two-stage absorption for applications with high-temperature steam, water or other hot fluids.



Two-Stage Direct-Fired Absorption

Horizon™ direct-fired units provide maximum value for those who already have an on-site fuel resource of natural gas or No. 2 fuel oil. Because of the two-stage design, energy conversion efficiency is maximized. Firing natural gas, the burner has an 8:1 turndown capability, allowing economical delivery of chilled water down to 12 percent of full load. No other direct-fired absorber in the industrial market has this capability. In addition, Horizon uses high-efficiency, low NO_x emissions burners. Possible applications include hybrid chiller plants and locations where natural gas is an attractive energy option.



Horizon direct-fired absorption for applications with access to economical natural gas or No. 2 fuel oil.

For More Information

A Trane sales engineer can meet with you and evaluate your opportunity to use absorption technology in your process environment. This representative can help you select exactly the right size and type chiller for your needs. Let us know when you'd like to get started.

Typical applications

Absorption chillers are used in diverse industrial applications. Here are some examples:



- **Petroleum refiners** use process waste gases and fuels to fire boilers both for process steam and to supply absorption chillers for process chilled water.



- In the **pulp and paper industries**, wood wastes are fired to provide both process steam and steam for absorption chillers. The chilled water can be used for process or comfort applications.



- **Food canning and freezing industries** recover waste heat from cooking and blanching operations to supply absorption chillers. Chilled water can be used for product processing or comfort cooling.



- In the **plastics, petrochemical, glass and metallurgical industries**, waste process heat can be used directly in the form of hot water or steam to supply absorption machines for process chilled water.



- In applications where **combustion turbines** are used for electric generation, exhaust heat can be captured in a waste heat boiler to supply an absorber for comfort cooling or turbine inlet cooling for increased unit efficiency.



- In many **other industrial applications** where there is low cost process steam, waste heat or low cost gas fuel.

If one or more of these conditions prevail at your site, it's worth your time to consider the absorption option.

- 1 Electric energy rates are high or uncertain.
- 2 Electric demand charges are significant and the need for chilled water coincides with the utility's peak electric demand.
- 3 Economical fuel options are available – natural gas or other fuels.
- 4 Steam is available from a process boiler or a waste heat boiler.
- 5 Cogeneration heat is available from a combustion turbine generator or diesel generator set.
- 6 Waste heat is available from process hot water.
- 7 Low acoustic profile or low vibration solutions are needed.



TRANE

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