Trane Introduces Oil-Free Chiller

Breakthrough Technology Sustains Optimal Efficiency of New Trane Chiller

WASHINGTON, DC (March 25, 2002) – Trane, the air conditioning systems and services division of American Standard Companies Inc. (NYSE: ASD), today announced the introduction of a new CenTraVac™ chiller that eliminates the use of oil. This new patented oil-free chiller has a simpler design that achieves high efficiency, reduced environmental emissions and a lower total cost of ownership for optimal performance over the lifetime of the chiller.

Sustained Efficiency Reduces Environmental Impact, Lowers Total Cost of Ownership

Trane incorporates this oil-free technology in its new S-Series EarthWise™ CenTraVac chiller, available in 2003. The simplicity of the S-Series’ design is one of several factors that sustain its efficiency, decreasing utility-generated greenhouse gas emissions and reducing operating costs. There is no oil to contaminate the refrigerant, a common and potentially significant cause of efficiency loss in traditional CFC chiller designs. The unit is hermetically sealed so that its initial refrigerant charge is most likely its final charge, and a chiller running on a full refrigerant charge helps maintain peak efficiency, taking much less energy — and money — to operate.

To ensure a full charge and continuous optimal efficiency, all S-Series chillers come standard with an EarthWise™ purge, a device used to expel non-condensables from the chiller. Purge run time is monitored and documented so leaks can be found and fixed before even minute amounts of refrigerant are lost.

The Difference is in the Design

The S-Series chiller uses a direct-drive design that eliminates the need for gears and, therefore, the need for an oil-based lubrication system altogether. The HCFC-123 refrigerant used in the chiller not only enables this direct-drive design; it allows for 5 to 20 percent greater chiller efficiency and provides the lubrication for the unit. "Hybrid ceramic ball bearings and the use of low-pressure HCFC-123 refrigerant are absolutely critical to this oil-free design," says Jerry Arndt, vice president and general manager of Trane’s centrifugal and absorption chiller business. The hybrid ceramic bearings, developed and manufactured by SKF, have a unique self-healing characteristic that helps prevent bearing degradation and failure. This simpler, more reliable design reduces the overall parts count of the chiller by approximately 40 percent. "By utilizing a chiller designed for sustained high efficiency and low emissions," says Arndt, "engineers, facility managers, and owners are reducing their total cost of ownership and maximizing their return on investment."

The S-Series chiller builds upon the tradition of Trane's EarthWise CenTraVac, the only chiller ever to receive the U.S. Environmental Protection Agency's prestigious Climate Protection award.

Decreased Maintenance Costs Complement Energy Savings

The simpler design of the S-Series chiller also translates into reduced maintenance costs. No oil means no oil checks, no filter changes, no costly oil changes, and no oil sump heater. In addition, the unit's hermetic integrity helps prevent refrigerant loss, decreasing costs associated with adding refrigerant and minimizing impact on the environment.

Documented Sustainability: High Efficiency, Low Emissions

The heart of every S-Series chiller is its ability to sustain, monitor and document the highest level of efficiency and lowest level of emissions throughout the lifetime of the chiller. Through Trane's Integrated Comfort™ systems (ICS) and Tracer™ building management system, customers can monitor key chiller information such as purge run time, condenser and evaporator approach temperatures, real-time energy consumption, and evaporator and condenser temperature differential to ensure optimal performance. ICS and Tracer come standard with every S-Series chiller.

EarthWise Systems, Integrated Comfort™ Systems Provide Total Sustainable Solution
The benefits of the S-Series chiller are significant, and yet the chiller is just one part of a total system that can reduce both first cost and operating cost while improving comfort, acoustics and indoor air quality. Ideally, the S-Series chiller is incorporated into an EarthWise system design. This sustainable design is based on three primary tenets: low flow, low chilled water and air temperatures, and high efficiency. Trane applies the design to both the airside and waterside to deliver high efficiency and superior comfort for less money than conventional designs.

Customers achieve improved results when an EarthWise system is combined with Integrated Comfort systems (ICS): factory-mounted controls that ensure consistent quality, fast and easy start-up, and reliable operation. ICS provides single-source maintenance and documented performance of the HVAC system. ICS works with the Tracer Summit building management system to provide superior building control and optimization.

With HVAC costs accounting for up to half of a building's operating expenses, lowering total cost of ownership through EarthWise systems and Integrated Comfort systems provides a powerful competitive advantage for building managers and owners. Combined with the documented sustainability of the S-Series chiller, Trane is pleased to continue its environmental and economic leadership in the HVAC industry. (www.trane.com)

Editor's Note: Definitions

**CHILLER:** A device that produces chilled water to provide air conditioning for large buildings or cooling for process applications.

**REFRIGERANT CHARGE:** The amount of refrigerant contained within the chiller and required for proper operation.

**CONDENSER APPROACH TEMPERATURE:** The temperature difference between the condenser’s refrigerant temperature and the leaving condenser water temperature. An ideal indicator of fouling of condenser tubes, which can significantly degrade chiller efficiency.

**EVAPORATOR APPROACH TEMPERATURE:** The temperature difference between the evaporator's refrigerant temperature and the leaving chilled water temperature.

**TEMPERATURE DIFFERENTIAL:** The difference between the entering and leaving temperature for a given fluid. For example, a 10-degree evaporator temperature differential for a chiller would describe an operating condition where the entering water temperature is 54 degrees and the leaving is 44 degrees.

Trane is a worldwide manufacturer and supplier of central air conditioning systems, equipment, controls, service and parts for commercial, industrial and institutional buildings and a premier brand for residential air conditioning. Trane is a division of American Standard, a global manufacturer with market leading positions in three businesses: air conditioning systems and service, sold under the Trane® and American Standard® brands for commercial, institutional and residential buildings; plumbing products, sold under such brands as American Standard® and Ideal Standard®; and vehicle control systems, including electronic braking and air suspension systems, sold under the WABCO® name to the world's leading manufacturers of heavy-duty trucks, buses, SUVs and luxury cars. The company employs approximately 60,000 people and has manufacturing operations in 27 countries. American Standard is included in the Standard & Poor’s MidCap 400 Index.