

Carrier Announces New Benchmark In Chiller Efficiency

World's First Variable Speed Screw Chiller

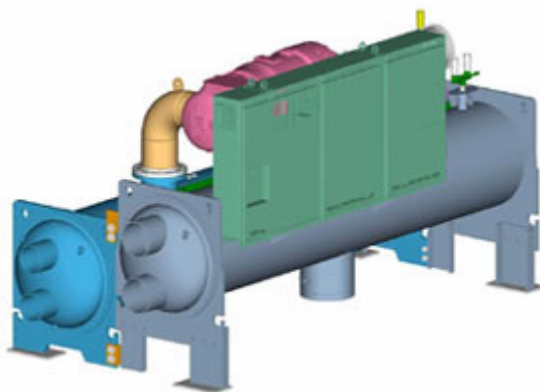
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Washington – Adding to a 100-year legacy of innovation pioneered by Willis Carrier, its founder and the inventor of scientific air conditioning, Carrier Corporation announced a new technology today that will set a new benchmark for chiller energy efficiency.

During a press and government briefing at the Earth Technologies Forum and Exhibition, Carrier unveiled "Evergreen VSS," a new technology that combines HFC-134a non-ozone depleting refrigerant and a high efficiency Variable Speed Screw (VSS) compressor-based chiller system. Carrier's new technology incorporates innovations in screw compressor design, advanced materials and manufacturing processes, bearing and lubrication systems, sound and vibration prediction and reduction, advanced variable frequency motor speed control, power factor improvement, harmonic distortion reduction and controls integration. The new technology will be available in the water-cooled chiller market's largest segment – below 500 tons, the size range that represents 60 percent of all large water-cooled chiller sales.



Carrier's John Mandycyk and UTC's Leslie Carothers discuss the benefits of Carrier's new Evergreen VSS Technology with the U.S. government's top environmentalist, EPA Administrator Gov. Christine Todd Whitman (*center*), at the 2002 Earth Technologies Forum and Exhibition, in Washington, D.C.



Carrier's Evergreen VSS Technology model

"The new Evergreen VSS technology will provide up to 48 percent better efficiency than comparable tonnage chillers that meet the ASHRAE* 90.1 Energy Standard," Carrier's Large Chiller Global Products Director Doug Bishop explained. "This technology will enable chillers to attain extraordinary efficiency levels while using environmentally sound HFC-134a."

The Evergreen VSS technology represents another industry first, according to Bishop. "It's the first time that a variable frequency motor speed controller has been integrated into a chiller and controls design as a standard product. The result is the optimization of efficiency across the entire operating range, increased reliability, as well as reduced system complexity and cost."

Once commercialized, the new Evergreen VSS technology will produce chillers that deliver the following customer benefits:

- Energy savings up to 48 percent better than the ASHRAE 90.1 Standard, which set new energy efficiency building construction standards for heating, ventilation and air

- conditioning (HVAC) and controls last year;
- Full load efficiencies below 0.52 kW/ton, which reduce peak demand charges, as well as power distribution equipment size requirements;
 - Integrated Part Load Value (IPLV) efficiency of 0.30 kW/ton, which reduces energy usage and cost;
 - Superior energy performance using non-ozone depleting refrigerant not subject to phase-out;
 - Power factor of 0.99 or better, which reduces costly energy transmission losses by nearly 20 percent, versus the industry average of 0.90;
 - Total harmonic distortion (THD) less than 5 percent at the machine versus at point of common coupling, which minimizes interference to sensitive electrical equipment, exceeding the IEEE's rigorous industry standard for total harmonic distortion;
 - Sound level below the industry average of 85 decibels (dBa); and,
 - Integrated, communicating microprocessor controls for entire system optimization and ease of customer interface.

Working with the United Technologies Research Center (UTRC) and its strategic partners, Carrier started development of the Evergreen VSS technology five years ago, with the goal of bringing exceptional performance at an affordable price to its commercial customers. They also believed that customers shouldn't have to compromise on either operational cost or environmental responsibility. Today, the Evergreen VSS technology is undergoing final rigorous operational testing.

"Once the testing is complete and our manufacturing process is ready, we'll bring this technology to market," Bishop said. Carrier expects to begin taking orders for the new Evergreen VSS chiller in the second half of 2002.

"We are confident that Evergreen VSS technology chillers will set the standard for innovation and large commercial customer value for many years to come," Bishop added.

The chillers produced with the Evergreen VSS technology will be the latest product addition to Carrier's "E3 Solutions" HVAC systems. The E3 Solutions are those systems that provide significant improvement in energy efficiency, environmental impact and economy, or customer value. To assist customers in making progress on global warming, ozone depletion and return on investment, Carrier is providing leadership on all product fronts, from small commercial rooftop air conditioners to vertical package units and water source heat pumps to the largest centrifugal chillers.