




## Facts about the Trane® Series S™ CenTraVac™ Chiller

<p><b>What is the Trane® Series S™ CenTraVac™ chiller?</b></p>	<p>The new Trane® Series S™ CenTraVac™ chiller delivers best-in-class full and part-load efficiencies for centrifugal chillers in the 180-390 ton range.</p> <p>Perfect for any application, the design philosophy was particularly focused on the unique requirements of replacement and retrofit applications. The chiller features a smaller footprint and bolt-together design for easier installation into tighter spaces. The system also incorporates technological innovations to deliver superior performance, industry-leading reliability and the lowest total cost of ownership.</p> 
<p><b>Features</b></p>	<p><b>AdaptiSpeed™ Technology:</b> At the core of the Series S™ CenTraVac™ chiller's performance is AdaptiSpeed™ technology — the integration of an all-new direct-drive compressor, utilizing the industry's first mixed-flow impeller design and optimized specific speed, a permanent-magnet motor and third generation Trane Adaptive Frequency™ Drive (AFD3). This fusion of technologies delivers unmatched efficiency with the lowest sound levels in the heating, ventilation and air conditioning (HVAC) industry.</p> <p><b>Advanced Compressor Design</b> Each Series S CenTraVac chiller's compressor is optimized to precisely match load requirements and operating conditions, delivering superior efficiency across a wide operating envelope.</p> <ul style="list-style-type: none"> <li>• <b>Mixed-flow, balanced impellers</b> The new specific-speed compressor features the industry's first "mixed-flow" impeller design. Offering the best attributes of both radial and axial designs, these impellers — coupled with the specific speed — enable the compressor to deliver better efficiency across a wide operating range. In addition, the back-to-back impeller orientation provides a balanced thrust load on the driveline, reducing stress on the bearings adding to overall unit reliability and maximizing chiller uptime.</li> <li>• <b>Hybrid ceramic bearing system</b> The high-strength hybrid ceramic bearings — proven through extensive field operation for more than 10 years — offer a reliable oil-free solution without back-up bearings and complex electronics to address extreme operating conditions.</li> </ul>



<b>Features, continued</b>	<p><b>Permanent-Magnet Motor</b> Because it does not have the efficiency losses associated with the rotational slip in an induction motor, a permanent-magnet motor can achieve up to 4 percent better efficiency than a comparable induction motor.</p> <p><b>Trane Third-Generation Adaptive Frequency™ Drive (AFD3)</b> Designed to last the life of the chiller, the Adaptive Frequency Drive (AFD3) consumes less energy at all operating points without the risk of incurring excessive demand charges during near-full-load operation. The AFD3 can effectively handle electrical dips, surges and other imbalances to maintain reliable chiller operation on any utility power source, including renewable power.</p> <p>Unique to the industry, the Trane true 24-pulse drive produces low harmonic distortion levels that meet the stringent requirements of IEEE 519.</p> <p>Unique in the industry, the AFD3 is a fully integrated variable-speed drive working with the motor and Tracer AdaptiView™ unit controller to continuously optimize chiller efficiency through compressor speed and guide vane position.</p> <p><b>Faster, Easier Installations in More Locations</b> The Trane® Series S™ CenTraVac™ chiller is designed to fit in more locations with less time spent on installation, addressing a key challenge when installing a chiller in existing buildings. The design of the chiller allows it to ship from the factory ready to pass through a set of standard 72-by-80-inch double doors. When access is tighter, the bolt-together design allows the chiller to be easily disassembled into its major components (condenser, evaporator, compressor and AFD3 drive) and moved into a building individually, and then reassembled onsite.</p> <p><b>Tracer AdaptiView™ controller</b> As with the entire CenTraVac™ chiller line, the operator-friendly Tracer AdaptiView™ controller provides the intelligence behind the Series S™ CenTraVac™ chiller. Using proprietary control algorithms, the controller responds to a variety of conditions to maintain efficient chiller plant operation. An open-protocol design allows the controller to work with any building automation system without the need for gateways (e.g., BACnet™, Modbus RTU and LonTalk™).</p> <p><b>Safety First with “Shore Power”</b> Commissioning the chiller and servicing the AFD3 drive panel can be performed with only 110 volts of power through a standard extension cord — a design that helps protect technicians from higher line voltages.</p>
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<p><b>Features, continued</b></p>	<p><b>Flash Economizer</b>          The Trane® Series S™ CenTraVac™ chiller has a single-stage economizer that provides up to 4.5 percent greater efficiency than designs with no economizer. Since the chiller uses two impellers, it is able to flash refrigerant gas at an intermediate pressure between the evaporator and condenser, significantly increasing chiller efficiency. This improvement in efficiency is not possible from single-stage chillers, in which all compression is done by one impeller.</p> <p><b>Refrigerant Cooling System</b>          This unique and highly effective system provides cooling to the motor, bearings and AFD3 drive, delivering exceptional unit life without the added maintenance of stand-alone glycol systems.</p>
<p><b>Benefits</b></p>	<p>The Trane® Series S™ CenTraVac™ chiller with AdaptiSpeed™ technology delivers:</p> <ul style="list-style-type: none"> <li>• Best-in-class efficiencies</li> <li>• Lowest cost of ownership</li> <li>• Faster, easier installation in more locations</li> <li>• Ultra quiet operation</li> <li>• Faster, easier and safer commissioning and chiller maintenance</li> <li>• Superior temperature control</li> <li>• Compatibility with a variety of uninterruptable power supplies to support mission-critical facilities</li> <li>• Reliable chiller plant operation, even under extreme conditions</li> <li>• Long life and reliable operation backed by an optional ten-year parts, labor and refrigerant warranty</li> <li>• An industrial solution for the oil-free market</li> </ul>
<p><b>Key Markets</b></p>	<p>The Trane® Series S™ CenTraVac™ chiller was designed with the replacement and retrofit markets in mind and is also ideal for a wide variety of building types and sizes — both new construction and existing buildings — including educational institutions, health facilities and government buildings.</p>

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Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a global business committed to a world of sustainable progress and enduring results. Trane solutions optimize indoor environments with a broad portfolio of energy efficient heating, ventilation and air conditioning systems, building and contracting services, parts support and advanced control. For more information, visit [ingersollrand.com](http://ingersollrand.com) or [trane.com](http://trane.com).

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