While chiller efficiencies have improved dramatically over the past twenty years, for most commercial buildings the single largest energy user is still the chilled water system. A Trane® Adaptive Frequency Drive (AFD) can improve chilled water system efficiency without sacrificing comfort. Adaptive Frequency is a trademarked term for a Trane variable speed drive which is made to Trane specifications and uses proprietary control logic.

A variable speed drive maximizes chiller efficiency and reduces power consumption by adapting the compressor motor speed and inlet guide vanes to the chiller operating temperatures.

**Features and benefits**

**Energy reduction**

Conventional chillers use inlet guide vanes to provide stable operation at partload conditions. Capacity is reduced by closing the vanes while maintaining a constant motor speed.

While AFDs can increase the off-design efficiency of chillers, adding them for every application may not be appropriate. Intelligent control of the condenser and chilled water temperatures is crucial for AFD savings in chiller system applications.

As with any chiller plant design strategy, it’s important to look at various alternatives and use tools such as Trane System Analyzer™ or TRACE™ 700 HVAC system analysis software programs to determine the best overall design strategy.

The myPLV™ Chiller Performance Evaluation Tool provides a simple tool for quick and reliable chiller economic comparisons considering both full and part load ratings. To learn more or to download a free copy of the myPLV tool, please visit www.trane.com/myPLV.

**Patented Adaptive Control™ chiller controller**

The combination of speed control and inlet guide vane position is optimized mathematically and controlled simultaneously to meet the dual requirements of water temperature control and efficiency.

Tracer AdaptiView™ AFD control reaches the optimum speed faster, responds to changes more quickly, and provides improved water temperature stability. The chiller controller reduces speed to the surge boundary based on the current differential operating pressure, making instantaneous corrections to speed and guide vane settings as conditions change, to optimize chiller efficiency.
Remote (free-standing) AFD

The compact design of this AFD offers a flexible option for installation in mechanical rooms in which space is limited and a unit-mounted drive may not fit. The AFD is designed for front access only and ships completely factory-tested and wired.

The drive has a DC link choke that minimizes harmonic distortion and results in a Total Demand Distortion (TDD) of approximately 30%.

Design information

Tonnage range: CenTraVac chillers, 120-1600 tons.
Voltage: 460/480V and 575/600V 60 Hz input power, ±10%.
Efficiency: Minimum efficiency of 97% at rated load.
Power factor: Displacement power factor of 0.96 at all loads.
Enclosure: NEMA 1 ventilated enclosure\(^1\) with tested short circuit current rating (SCCR) of 65,000 amps. Includes padlockable door-mounted circuit breaker/shunt trip with ampere interrupting capacity (AIC) rating of 65,000 amps.\(^2\)
The entire package is UL/CUL listed.

\(^1\) option for NEMA 12 enclosure
\(^2\) SCCR/AIC of 65,000 amps standard for 460/480V with option for 100,000 amps.

Data Table

<table>
<thead>
<tr>
<th>Frame</th>
<th>460/480V</th>
<th>575/600V</th>
<th>Dimensions (inches)</th>
<th>Estimated Weight (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Power (hp)</td>
<td>Max. Amps</td>
<td>Power (hp)</td>
<td>Max. Amps</td>
</tr>
<tr>
<td>D3h</td>
<td>150-200</td>
<td>213</td>
<td>150-200</td>
<td>171</td>
</tr>
<tr>
<td>D4h</td>
<td>250-350</td>
<td>394</td>
<td>250-400</td>
<td>356</td>
</tr>
<tr>
<td></td>
<td>450</td>
<td>476</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2</td>
<td>500-600</td>
<td>649</td>
<td>500-650</td>
<td>560</td>
</tr>
<tr>
<td>F3</td>
<td>650-750</td>
<td>791</td>
<td>750-1050</td>
<td>840</td>
</tr>
<tr>
<td></td>
<td>900-1100</td>
<td>1031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td>1200-1350</td>
<td>1360</td>
<td>1150-1350</td>
<td>1120</td>
</tr>
</tbody>
</table>

Weights and dimensions are provided for general information only. Always refer to the Trane submittal package for information specific to your chiller.

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\(^\circ\), Ingersoll Rand\(^\circ\), Thermo King\(^\circ\) and Trane\(^\circ\)—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.

We are committed to using environmentally conscious print practices. ©2016 Ingersoll Rand All Rights Reserved CTV-SLB031-EN January 28, 2016