



Turn to the experts

AquaEdge® 19XR Two-Stage Centrifugal Chiller



High Efficiency Two-Stage Compression
600 to 3,400 Tons / 2,110 to 11,957 kW

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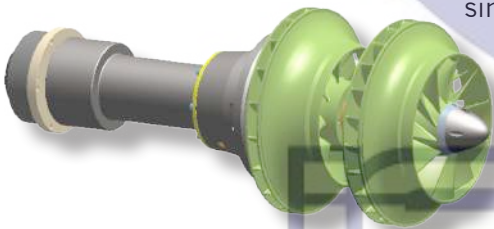


Proven Two-Stage Compression Technology for Increased Efficiency

In collaboration with the United Technologies Research Center — among the largest private research centers in the U.S. — Carrier has advanced two-stage compressor technology proven in earlier model 19EX and 19FA chillers, to craft the continuing evolution of large chillers, the AquaEdge® 19XR.

Two-Stage Compression Technology Advantage in Large Tonnage Applications

Carrier's two-stage design provides improved cycle efficiency by leveraging an interstage flash economizer. This improvement reduces compressor power while simultaneously increasing refrigeration effect and capacity, resulting in high energy efficiency at highly loaded conditions.



Wide Operating Envelope

- Two-stage design is ideally suited for large process or comfort cooling applications
- Energy saving cold condenser water operation down to 55°F (12.8°C) ECWT
- Parallel and Series configurations
- Variable orifice design provides a wide range of operational flexibility
- Optional VFD significantly improves efficiency at part load conditions

Semi-Hermetic Design

Semi-hermetic motors are the overwhelming choice in the industry due to higher reliability, leak-free design and reduced need for additional mechanical room cooling. These motors are located inside the refrigerant boundary, eliminating:

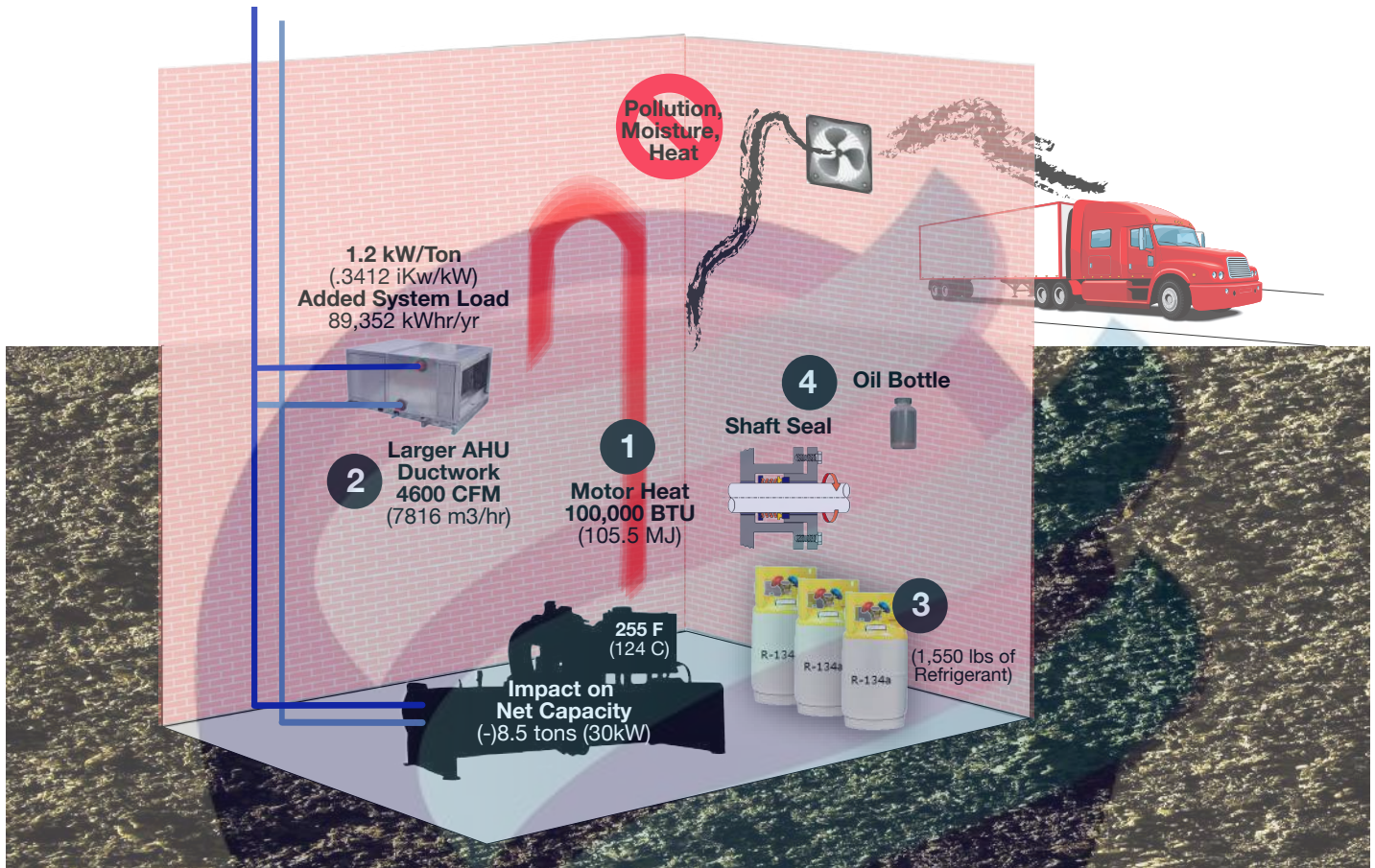
- Service, maintenance and refrigerant/oil loss associated with shaft seals
- Exposure to contaminants that can degrade insulation and shorten motor life
- Exposure to vapors and dust that can coat the stator winding, increase operating temperature and shorten motor life
- Exposure to moisture and/or condensation which can reduce motor insulation resistance and cause catastrophic failure. (Semi-hermetic motors do not require motor winding heaters to prevent condensation as open motors do.)

In addition, refrigerant cooled semi-hermetic motors operate ~100°F (56°C) cooler than open drive motors, inherently giving semi-hermetic motors a longer motor life expectancy.

Delivering the Edge You Are Looking For

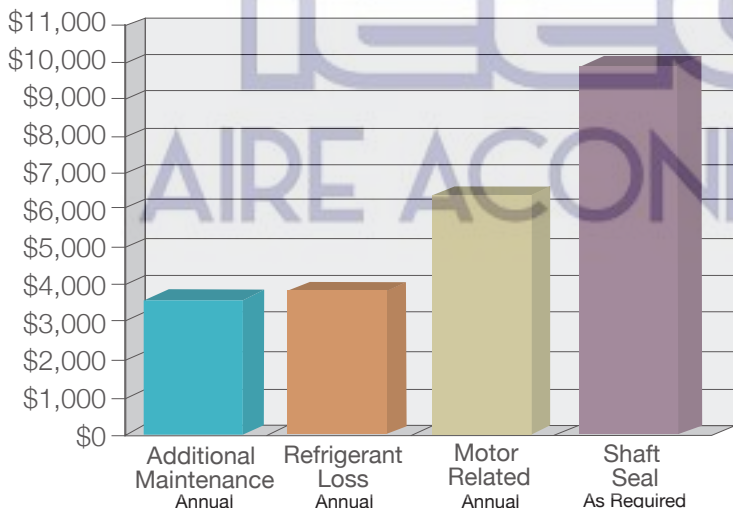
Installation / Operations / Energy / Maintenance

(per 1,000 tons of open drive chiller)



1. Motor Heat = $.60 \text{ kW/ton} \times 1,000 \text{ tons} \times (1 - .95 \text{ motor efficiency}) \times 3,412 \text{ BTU/kWh}$
2. Sensible cooling load $Q = 1.08 \times \text{cfm} \times \Delta T$. CFM = 100 btuh heat rejection per chiller ton / $1.08 \times 20^\circ\text{F}$. System kW/Ton estimated at 1.2 kW/Ton includes chiller pumps and AHU fan energy. Annual added system load = $1.2\text{kW} \times 8.5 \text{ tons} \times 8,760 \text{ hours}$.
3. Lifetime Refrigerant Loss = $3.1 \text{ lbs per ton} \times 2 \text{ percent leak rate} \times 25 \text{ years}$. Estimated charge for 1000 ton chiller is 3100 lbs. Open drive seals lose estimated 1/2 percent to 4 percent annually. (2 percent used for calculations.)
4. Shaft Seal maintenance...\$10K every 4-7 years. Oil Bottle routine inspection required.

Estimated Cost Avoidance Items Associated with Open Drive Chillers**



Additional Maintenance includes cleaning oil cooler, weekly inspection of shaft seal and replacing VFD glycol.

Refrigerant Loss of 2 percent results in 1.5 percent loss in efficiency (2,000 tons x 0.58 x 6,000 hours operation x 0.0057 kW/Ton x \$0.10/kWh). Based on an IPLV of 0.380.

Motor Related expenses include: removal of motor heat rejection, motor winding heater power and megger testing of motor.

Shaft Seal expenses assume \$10,000 for material and labor every 4-7 years.

***Savings may vary based on unit capacity, operating conditions, environment and unit configuration.*

AquaEdge® 19XR Centrifugal Chiller

Simple Installation

- Single-piece factory package
- Bolt-together modular construction
- In-chiller refrigerant storage
- Compact footprint (tons/sq.ft.)
- Thermowells, Schrader valves as standard
- Optional factory refrigerant charge

Precise, Easy-to-Use Controls

- Integrated controls optimize chiller operation according to operational needs
- Convenient adjustable touchscreen display¹ assures comfortable viewing from four possible mounting locations
- Full diagnostics, trending and data logging
- Controls compatible with BACnet² and Modbus³ for integration with Carrier or other HVAC and building automation systems

Meet Environmental Mandates

- Positive pressure, non-phaseout HFC-134a or HFC/HFO-513A refrigerant does not contribute to ozone depletion, minimizing chiller's environmental impact
- Meet your green mandate without compromise



SEISMICOMPLIANT*

*Meets IBC 2006, ASCE-7-05, CBC 2007, and OSHPD seismic requirements (select models).

Water cooled chillers within the scope of the AHRI WCCL certification program are certified in accordance with the AHRI Water-Cooled Water-Chilling and Heat Pump Water-Heating Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at www.ahridirectory.org. Condenserless versions of these units are not certified under the AHRI certification program.

19XR Benefits at a Glance

For Building Owners and Managers

- Reduces operating expenses
- Easy to maintain
- Quiet, reliable operation
- No shaft seal means lower maintenance costs
- No purge — eliminating weekly inspections
- Building automation system compatible
- Environmentally sustainable refrigerant
- Optional hinged water box covers

For Consulting Engineers

- ASHRAE 90.1 compliant
- HFC-134a or HFC/HFO-513A refrigerant
- High-efficiency optimization
- Ideal for replacement projects
- Semi-hermetic motor
- ASME-certified heat exchangers
- Variable orifice for wide operating range

For Contractors

- Bolt-together modular construction
- Optional factory charge
- Diagnostic controls
- Compressors factory run-tested
- Reduces installation expenses
- Compact footprint (tons/sq.ft.)
- In-chiller refrigerant storage
- Thermowells, Schrader valves standard

¹Touchscreen display where applicable.

²BACnet is a registered trademark of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.

³Modbus is a registered trademark of Schneider Electric USA, Inc.



Turn to the experts

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