

Saving energy in the Data Center with Stulz-ATS CyberAiR® Precision Air Conditioners

featuring

Water & Outside-Air Economizers



The greener way of cooling your data center.

A main concern of every business is reducing their carbon footprint. One immediate solution for mission critical environments like data centers and co-location facilities is the implementation of intelligent, reliable, cooling.

Stulz-ATS CyberAiR® family of precision air conditioners gives you the flexibility to choose the best way to reduce cooling costs specific to your application by providing the most robust line of computer room air conditioners in the industry.

Stulz-ATS CyberAiR® precision air conditioners are designed to unlock the energy saving potential of EC Plug Fans.

Our large capacity dual compressor DX & chilled water precision air conditioners and computer room air handlers with EC plug fans allow you to achieve an immediate energy cost savings up to 30% when compared to traditional fans. This, *plus* the additional savings potential made available with our water and outside-air economizers, provides an even greener way of cooling your data center.

Efficiency is also a matter of intelligence. That's why the intelligent microprocessor controller on the Stulz-ATS CyberAiR® family of precision air conditioners controls fan and cooling circuits independently to achieve the most efficient combination for precision and energy consumption.

Stulz-ATS CyberAiR® precision air conditioners

- **Flexible**
 - DX & CW
 - Free Cooling & Alternate Water Source
 - Advanced Air & Water Economizers
 - Up and down-flow air patterns
 - Footprints fitting server rooms to the largest data centers in North America
- **Scalable**
 - Up to 8 units per pLAN
- **Reliable**
 - Standard 2-year parts warranty



One size does not fit all.

Engineers face various technical challenges when planning the construction of a data center. The local climate, room configuration, environmental conditions, noise protection and safety all have a direct influence on the amount invested and running costs.

The Stulz-ATS CyberAiR® precision air conditioners answer to all these demands; providing innovative energy saving solutions have been part of our mission for decades.

All Stulz-ATS direct expansion (DX) precision air conditioners (ranging from 1.5 - 30 tons) already offer energy saving water economizer methods as part of the standard offering.

Advanced **Dynamic Free-Cooling water-side economizers** are available on the CyberTWO (VFS) and **100% outside air-side economizers** are available on both the CyberTWO (VFS) DX and Compact-Line Chilled Water (CWE) answering all your energy saving challenges.



Learn more about these advanced energy saving options inside!

Dynamic Free Cool (DFC) water-side economizers increase energy savings potential

Stulz-ATS CyberAir® family of precision air conditioners, with cooling capacities ranging 6 - 30 tons, using EC Fan Technology, and **Dynamic Free Cooling (DFC)**, automatically switch to the best operating mode on the basis of the heat load in the data center and seasonal variations in outside temperature.

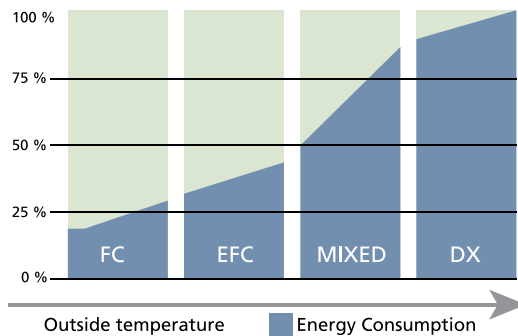


Energy savings with DFC

- Up to 60% energy savings
- The world's first system with automatic efficiency optimization
- Automatic switch between compressor cooling and indirect free cooling
- Networking of all active components: A/C and standby units, control valves, compressors, EC plug fans, pumps, dry coolers.

Full hybrid with indirect free cooling

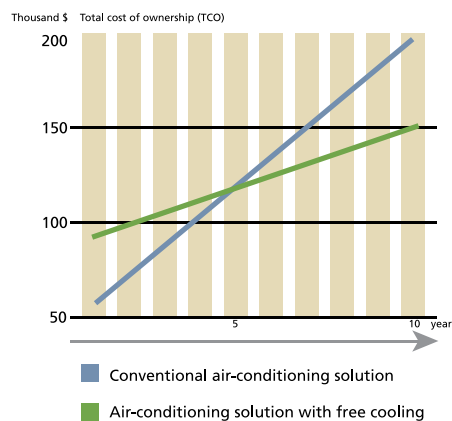
DFC combines compressor cooling and free cooling in four stages, rather than the traditional two stage approach, and automatically searches for the most economical operating mode.



In cool weather, DFC makes use of economical indirect free cooling, which extracts all its cooling power from the outside air. Energy-intensive compressor cooling (DX) is only switched on when absolutely necessary.

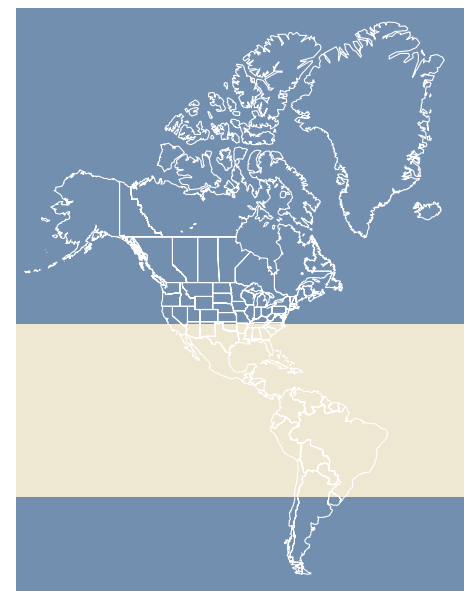
Complete electronic control for DFC savings

With utmost sensitivity and precision, DFC selects the most energy-saving mode, controls the speed of the EC fans in the air-conditioning unit and those of the dry cooler, regulates the position of the control valves, reduces the electricity consumption of the pumps and ensures precise interior climate control.



Don't just stand by.

DFC mode maximizes the use of standby units by keeping all units, pumps and dry coolers in perfect balance in energy-saving partial load mode.



In moderate climates north and south of the equatorial zone, the energy saving advantages of the Stulz-ATS CyberAir precision air conditioners with DFC can be exploited to the full.

100% Outside Air to keep your data center cool

Let mother nature do the work.

Available on the Compact-CWE (CCD), chilled water, line from 10-70 tons and the CyberTWO (VFS), dual-compressor DX, from 6-30 tons, the Stulz-ATS CyberAir® precision air conditioners with outside air economizers save energy by letting nature provide the cooling.

Units operate as an air handling system that manages the outside air intake via damper control, using 100% outside air mixed with return air to meet required room conditions. When outside conditions do not allow 100% outside air cooling, the unit can switch-over to DX or CW control to either assist with less outside air or control the room in a closed loop.

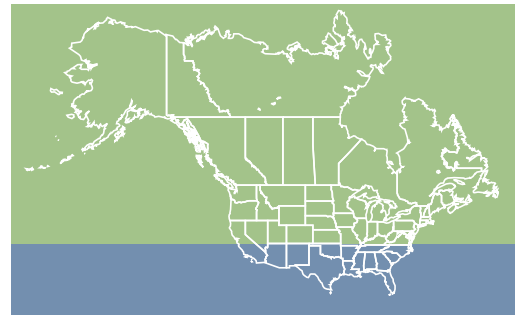
Location, location, location.

Depending on your location, outside air economizers can save tremendous amounts of energy. Since chillers and compressors are not required when the unit is in 100% outside air mode, the only significant electrical draw is from the fans.

For example, in the chart below, we have a Chicago, Illinois DX installation with 270-ton sensible cooling requirement at 75°FDB, 50%RH and 55°F supply air temperature. The energy cost is assumed to be \$0.13/kWh.

At this location, it would be possible to operate in free cooling mode during more than 50% of the year on average, thus resulting in a reduction in operating cost of 42%; from \$575k down to only \$336k.

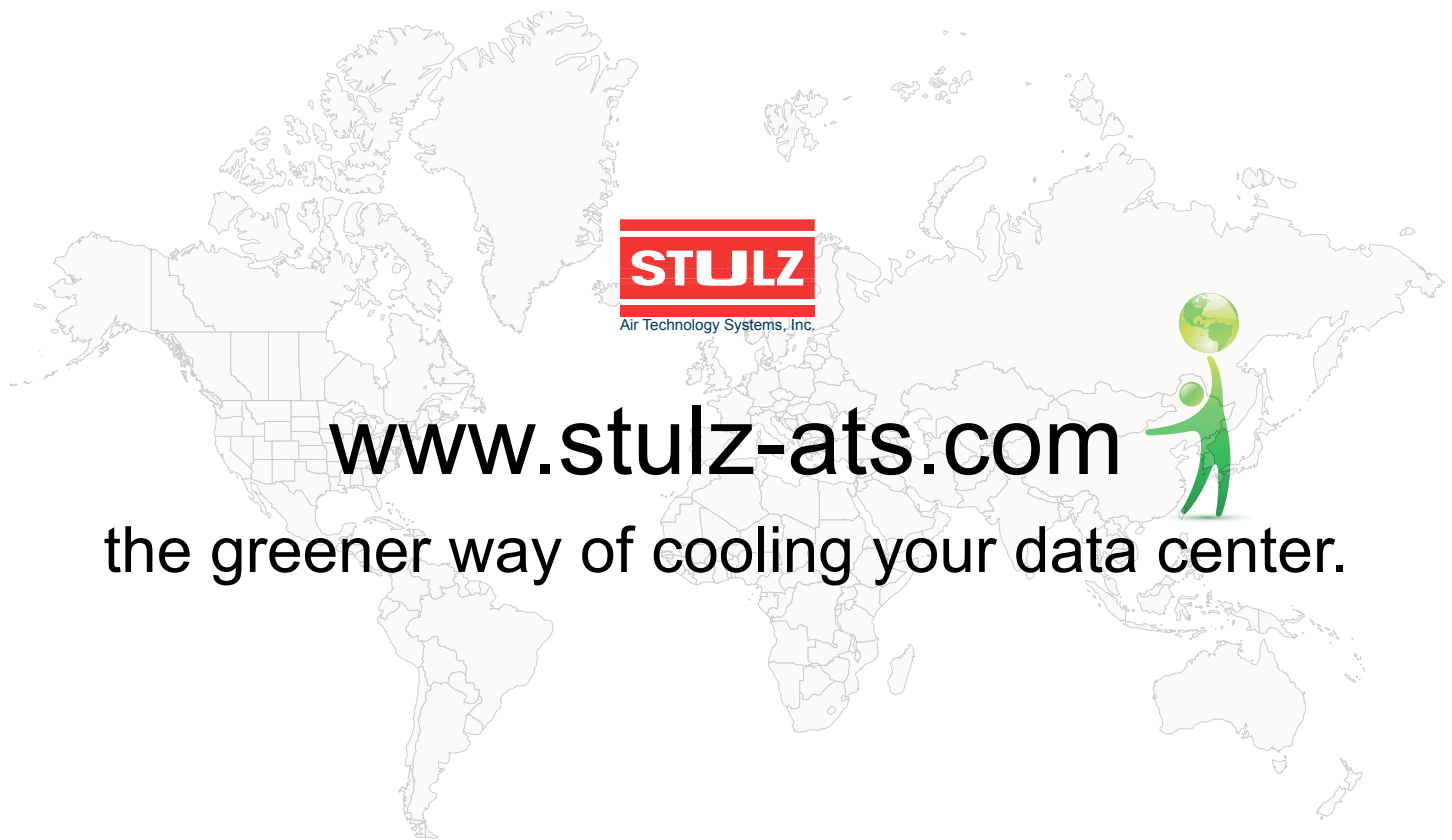
This 42% savings below, in addition to the immediate savings inherent to the air conditioner's unique design using EC Fans, can add up to more than 60% savings when compared to legacy DX systems using centrifugal fans. Savings that cannot be easily overlooked by today's data center designer.



Generally speaking, temperate zones in the middle and high latitudes are ideally suited for outdoor air economizers. Refer to ASHRAE 90.1 climate maps for specific climate zones.

**Updating a legacy data center or building a new facility?
An ideal solution for both!**

Location: Chicago, IL		(10) VFS-360-DW-D-EC	
Operating cost with 100% outside air free cooling			
Operating Condition:			
Temp Range	Hours	Unit operation modes	Average operating Cost/year
Ta>55°F	4,225 h	Full DX	\$27,755.42
Ta<55°F	4,535 h	Full free cool	\$5,864.55
Total Unit Operating Cost			\$33,619.96
Total System Operating Cost			\$336,199.64
Operating cost with DX only			
Temp Range	Hours	Unit operation modes	Average operating Cost/year
all year	8,760	Full DX	\$57,547.32
Total Unit Operating Cost			\$57,547.32
Total System Operating Cost			\$575,473.22
Cost reduction			\$ 239,273.58 = 42%



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QC-FCX0057 Rev -

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