Keeping the culture cool at the Phoenix Art Museum

Creating efficiency gains averaging 10% on a Trane 350-Ton water-cooled chiller.

Overview

The Phoenix Art Museum has a rich history of displaying some of the world's most prolific art for over 60 years. At any time it houses nearly 20,000 pieces of art which is enjoyed by over 300,000 visitors annually. To protect the highly valued art, the museum is required to maintain stringent temperature and humidity conditions along with backup air conditioning systems.

The art museum facility is maintained by the City of Phoenix. As a result, the building's energy consumption and carbon emissions impact the city's operating costs, as well as its goal to become carbon neutral by the year 2050.

Phoenix Leadership engaged with ECM Technologies to work with the city's energy-planning and facilities and sustainability teams to treat the art museum's HVAC systems with ThermaClear™ .

Savings

Estimated annual energy reduction

106,756 kWh

CO_2 equivalent savings

75.7 metric tons

Estimated annual carbon reduction

8,513 gallons of gasoline

"I was extremely pleased with the ease of the treatment process. Applying this Energy Conservation Measure was quick with virtually no involvement of the client nor did it require any downtime of the equipment."

CHILLER EQUIPMENT SERVICE TECHNICIAN

Proving the efficacy of ThermaClear™

Unit Type

350-Ton Water-cooled chiller

TRANE

Conditioned Space

285,000 ft²

Installed by

COMFORT SYSTEMS USA Southwest

Critical cooling needs

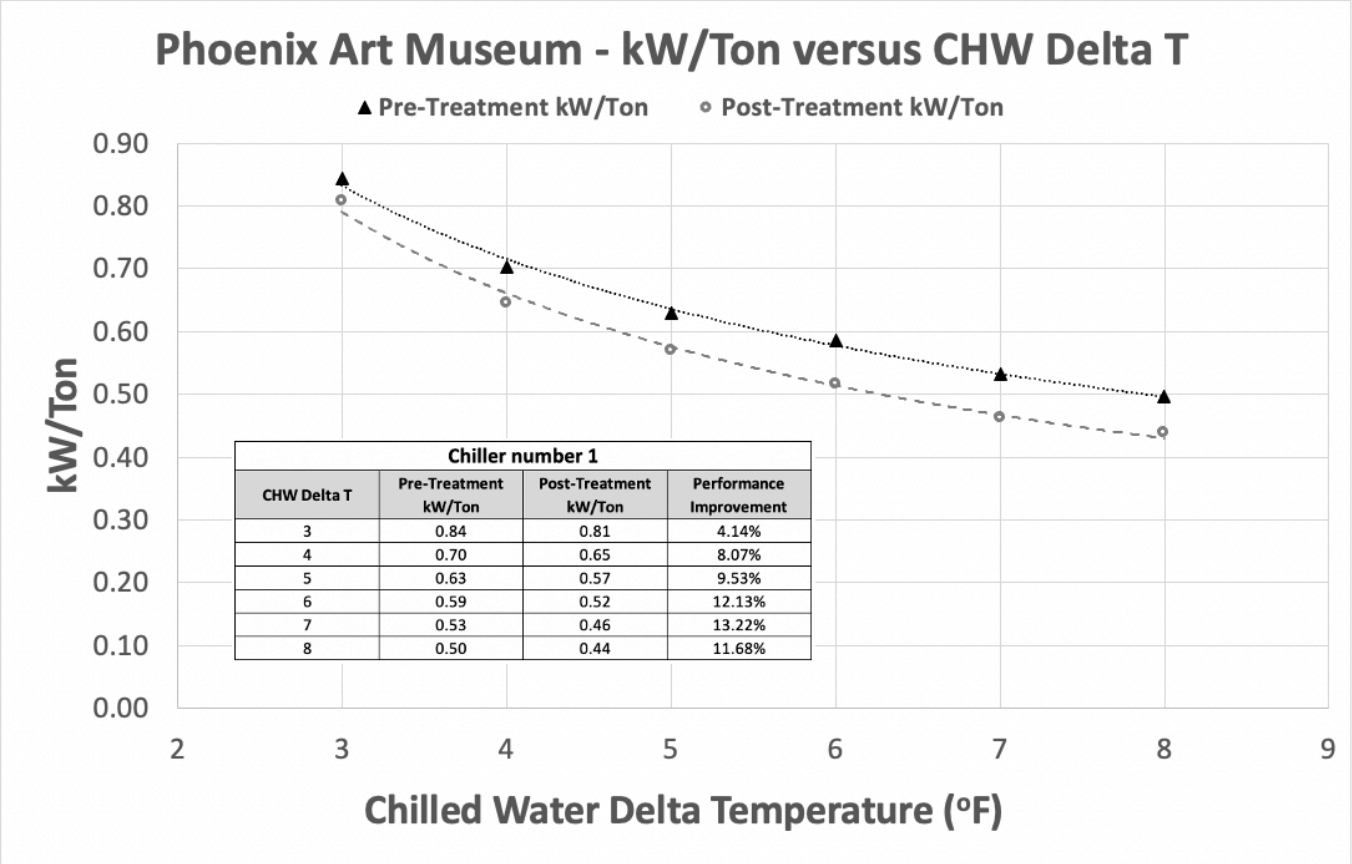
Tightly controlled temperature and humidity are required to preserve fine art work.

Verified controls with built in backups, including additional backup chillers.

Year-round cooling required.

Performance Measurement & Verification

ThermaClear™ performance was validated through comprehensive, real-time monitoring throughout ECM Technologies research and development process. Our monitoring system adhered to International Performance Measurement and Verification Protocol standards to capture key indoor and outdoor metrics like temperature, humidity, chilled water / air flow and energy consumption. Data was recorded every minute over an extended testing period, ranging between 3 and 9 months per test, to capture both pre- and post-treatment data.



Chiller number 1			
CHW Delta T	Pre-Treatment kW/Ton	Post-Treatment kW/Ton	Performance Improvement
3	0.84	0.81	4.14%
4	0.70	0.65	8.07%
5	0.63	0.57	9.53%
6	0.59	0.52	12.13%
7	0.53	0.46	13.22%
8	0.50	0.44	11.68%