The North Carolina Museum of Art (NCMA) was experiencing variances in humidity of 30% in the winter and up to 60% in the summer. In order to host high profile traveling exhibitions, NCMA needed to tightly control the humidity in the galleries.

**SOLUTION**
A single MeeFog™ humidification system was installed replacing 92 distributed steam humidifiers. The MeeFog™ system also eliminated the need for boiler system steam for humidification, and helped reduce the utility and operating budgets.

**THE PHYSICAL SITE**
The main NCMA building was built in 1982. A four-story, 171,870 square foot building that includes exhibit space, restaurant and offices. The museum is occupied 7 days a week, and open to the public Tuesday through Sunday. NCMA employs 150 people and hosts around 25,000 visitors per month.
CONTROLLING THE OUTSIDE AIR

Raleigh, N.C., has a subtropical climate with winter lows averaging 35°F and summer highs averaging around 90°F. To manage the amount of outside air entering the facility, a dual-mode, dedicated outside air unit was installed to pretreat, measure and control the airflow and dew point of the outside air being brought into the building. The unit was set to maintain the building at a slightly positive pressure. During unoccupied hours, the airflow is reduced to account for the reduction in exhaust air from the building since a number of exhaust fans are cycled off at the end of the day. Using a single unit for all outside air pretreatment greatly simplified the museum’s climate control system.

Using hot water pre-heat coils, chilled water cooling coils and a high-pressure MeeFog™ adiabatic humidification system, the pretreated air is then distributed to the main air-handling units at a constant 52°F dew point. Since the museum’s temperature requirements are 70°F in all zones, the use of a MeeFog™ system reduced the number of humidifiers from 92 distributed steam humidifiers down to one centralized MeeFog™ humidifier, also eliminating the need for boiler system steam for humidification.

CONCLUSION

The improvements reduced maintenance activities. Removing the steam system reduced plumbing fixture maintenance and repairs. The system efficiency upgrades not only improved the energy performance and indoor air quality, it also allowed the museum to move from a large service electric tariff to a small service tariff, saving the museum more than $30,000 per year. “Without the upgrades, many traveling exhibits, including the American Chronicles: The Art of Norman Rockwell and Rembrandt, could not come to the state capital.” says Larry Wheeler, director for the North Carolina Museum of Art.

“This tightly controlled museum environment is now protecting priceless collections for generations to come.”

— Larry Wheeler, director for the North Carolina Museum of Art