

# profile



#### CNN Center Hybrid Plant: The Bottom Line

- Electricity savings: \$433,000/year.
- Additional natural gas costs: \$204,000/year.
- Gas-chiller maintenance & additional electricity costs: \$58,400/year.
- Total net savings: \$171,000/year.
- Payback: 3.2 years.

## CNN Center Cashes In On Energy Savings With New Hybrid Cooling Plant

ATLANTA — CNN Center, global headquarters for Turner Broadcasting System, Inc., is saving \$171,000 a year in total operating costs — thanks to a new hybrid cooling plant that features an 1,800-ton YORK Millennium YG natural gas-engine-drive chiller.

### EXPANSION CREATES OPPORTUNITY

In late 1996, Turner Broadcasting System announced plans to expand CNN Center facilities by adding two new network production centers and a new studio. CNN Center is a 1.5 million square-foot, 14-story, twin-tower complex that houses the Turner Networks, its various news divisions, the Omni International Hotel, more than a dozen retail stores and a spacious, atrium food court.

After learning about the planned expansion, John Hester, facilities engineer for Turner Properties, informed management of the need for additional cooling. At the time, the center's cooling plant consisted of two YORK 1,500-ton and one YORK 1,200-ton electric centrifugal chillers. The 1,200-ton unit had operated for more than 20 years. All three chillers supplied comfort cooling for thousands of employees and visitors — as well as precise climate control for the sophisticated electronic equipment needed to produce each newscast.

"The smaller chiller had reached the end of its useful life and needed to be replaced anyway," Hester recalled. "We looked at several options and examined the life-cycle-cost of each option." All the options assumed a year-round cooling load, electricity prices that were higher in summer and lower in winter, and vice versa for gas prices.

*Clint Knudson (left), YORK sales engineer, and John Hester, facilities engineer for Turner Properties, worked closely to complete the new hybrid cooling plant at CNN Center.*



## **GAS CHILLER PROVIDES SOLUTION**

Hester considered replacing the smaller chiller with a larger electric unit, but after analyzing the projected life-cycle cost, he decided that a large gas-engine-drive chiller would provide a better payback in energy savings. In fact, the hybrid (gas/electric) plant provides the greatest flexibility in reducing electricity demand.

What's more, by selecting the YG chiller, CNN Center avoided a \$271,000 expenditure for a 2,500 kW emergency diesel generator to support a completely electric-driven plant. CNN Center now has 3,650 kW in electrical-generating capacity to back up the expanded chiller plant, critical broadcast applications, lighting and other vital electrical requirements.

Charged with HFC-134a, an environmentally responsible refrigerant with no phase-out date, the YG chiller carries the base load during the summer, keeping one electric chiller idle. During the shoulder months, Hester manages the plant based on the daily cost of gas and electricity to determine the lowest operating cost. The YG chiller is shut down during the winter, when both electric units are used.

"During the spring and fall, we can make a daily decision on whether to choose gas or

electric," Hester explains.

"Entering Condenser Water Temperature (ECWT) can affect the gas-electric decision," Hester adds. For example, when the "off-design" ECWT falls to 70°F, running the electric chillers is a good bet because electric rates are typically lower. Conversely, a hot, humid day may force the ECWT to reach 85°F — and increase electric rates in the process. In this scenario, operating the YG chiller is the best option.

"With the hybrid plant," Hester explains, "we are essentially creating more competition between the local gas and electric utilities. And as utility deregulation takes hold across the U.S., we're now in a much better position to deal with it."

Ian McGavisk, YORK's manager of Gas Cooling Products, agrees that a hybrid plant allows chiller-plant operators to maximize energy savings in the wake of utility deregulation.

"For facilities to benefit economically in a deregulated environment," he says, "electric chillers should operate primarily during low-load, low-cost hours of operation, while alternative-drive (natural gas or steam) chillers should run during high-load, high-cost hours. This is the key to lowest life-cycle-cost."





### TAKING ADVANTAGE OF RTP

At CNN Center, the hybrid plant allows Hester to take advantage of real-time pricing (RTP), which prices electricity on an hourly basis. Electric prices reflect the real cost of producing and delivering electricity at a given point in time. RTP prices are developed from daily cost information and can vary hourly, depending on conditions such as weather and demand. Generally, low prices occur during off-peak demand hours, while high prices are common during on-peak demand hours.

According to Hester, CNN Center's rate structure features a baseline curve, which is determined by historical data such as electricity consumption and demand. RTP rates are used above the curve, while time-of-use rates occur below the curve.

In the summer, for example, on-peak RTP rates range from \$.04/kWh to \$.30/kWh, depending on weather and demand. Summer off-peak rates hover around \$.02/kWh. During the winter, on-peak RTP rates are usually under \$.03/kWh, while off-peak rates average \$.017/kWh.

CNN Center is not only receiving favorable pricing from Georgia Power, the local electric utility, but natural-gas rates from Atlanta Gas Light Co. are now more competitive, according to Hester. Atlanta Gas Light charges \$.28/therm during the summer — down considerably from Hester's original estimate.

CNN Center also benefits from chiller-plant automation. Each unit features a YORK Millennium ISN Control Center, which feeds information to a central Millennium ISN Direct Digital Control Center (DDC<sup>o</sup>).

### SIMPLE PAYBACK OF 3.2 YEARS

Hester estimates that the hybrid plant will save CNN Center \$171,000 in total net costs (total gross electricity savings minus the cost of additional natural-gas consumption, gas-chiller maintenance and additional electricity to run auxiliary power to the gas chiller). Electricity savings are expected to total \$433,000 a year, while natural gas costs are expected to increase by \$204,000 a year.

When Hester factored in the cost of incremental equipment, including the YG chiller, the project provides a simple payback in 3.2 years.

*(upper left) – The hybrid cooling plant features an 1,800-ton YORK Millennium YG natural-gas-engine-drive chiller and two 1,500-ton YORK electric-drive centrifugal chillers.*

*(upper right) – Kevin Gathmann, HVAC manager for CNN Center, stands in front of the natural-gas-engine-drive chiller, which carries the base cooling load during the summer.*

