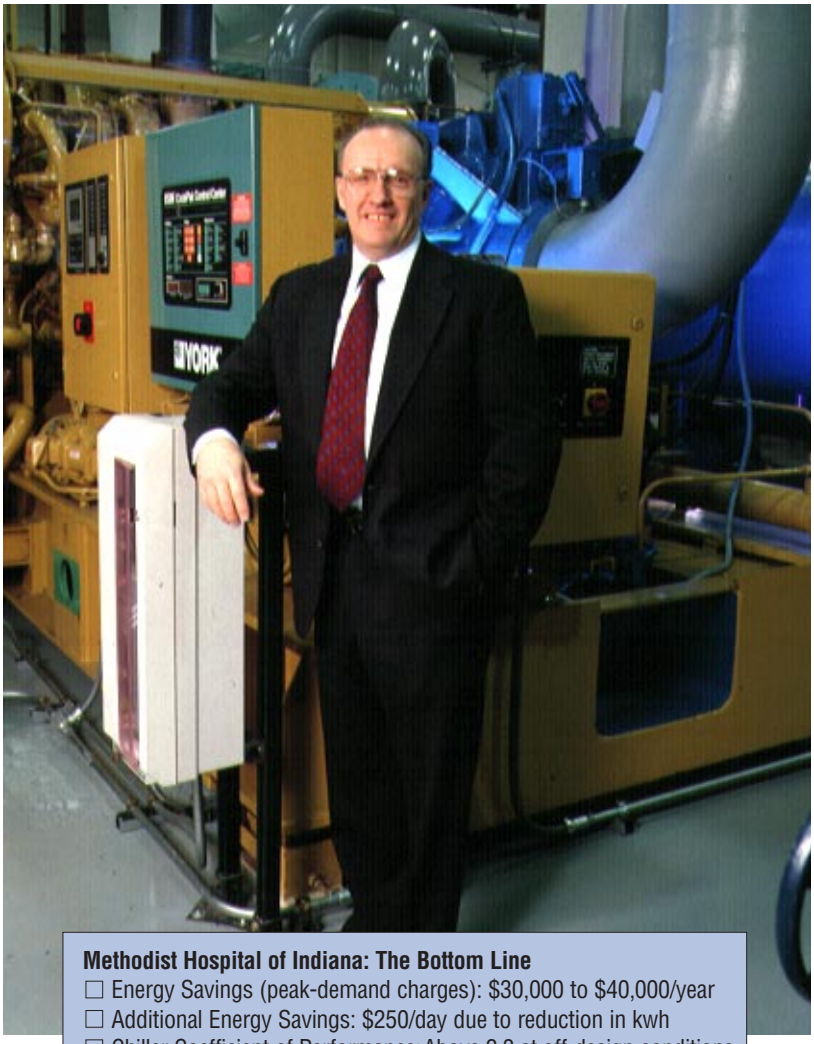
REPLACEMENT/RETROFIT

# profile

## Natural-gas, Engine-drive Chiller Makes A Believer



**Methodist Hospital of Indiana: The Bottom Line**

- ☐ Energy Savings (peak-demand charges): $30,000 to $40,000/year
- ☐ Additional Energy Savings: $250/day due to reduction in kwh
- ☐ Chiller Coefficient of Performance: Above 2.3 at off-design conditions

***Leroy White says the new YORK gas-engine-driven (GED) chiller performs "even better than advertised" at Methodist Hospital of Indiana.***

INDIANAPOLIS — Leroy White, P.E., is a believer.

White had heard the claim that the new YORK® Millennium™ natural-gas, engine-driven (GED) centrifugal chiller offers unprecedented part-load efficiency with the YORK patented, variable-speed control logic.

And he had heard that the Caterpillar natural-gas engine used to drive the YORK chiller gains efficiency as speed drops — to a part-load peak exceeding 2.3 Coefficient of Performance (COP).

But White didn't become a champion of the chiller's performance until he put the unit into operation at Methodist Hospital of Indiana in Indianapolis. This is the first completed installation of the GED chiller since it was introduced in 1994 by YORK, Caterpillar and the Gas Research Institute. Using a design/build concept, White collaborated on the project with Methodist Hospital engineers, a local contractor and the YORK-Caterpillar team.

The way White sees it, perception is reality.

"The gas-engine-driven chiller performs even better than advertised," White says. "You can tell the YORK people really did their homework — from design and manufacturing to installation and service."

White should know. He spearheaded the overhaul of the hospital's central chilled water plant, which involved replacing two 750-ton centrifugal chillers with the 1,350-ton Millennium GED unit. The 35-year-old, electric-driven chillers had reached the end of their useful life, and their energy efficiency was .90kW/ton at design (full-load) conditions. What's more, the units used

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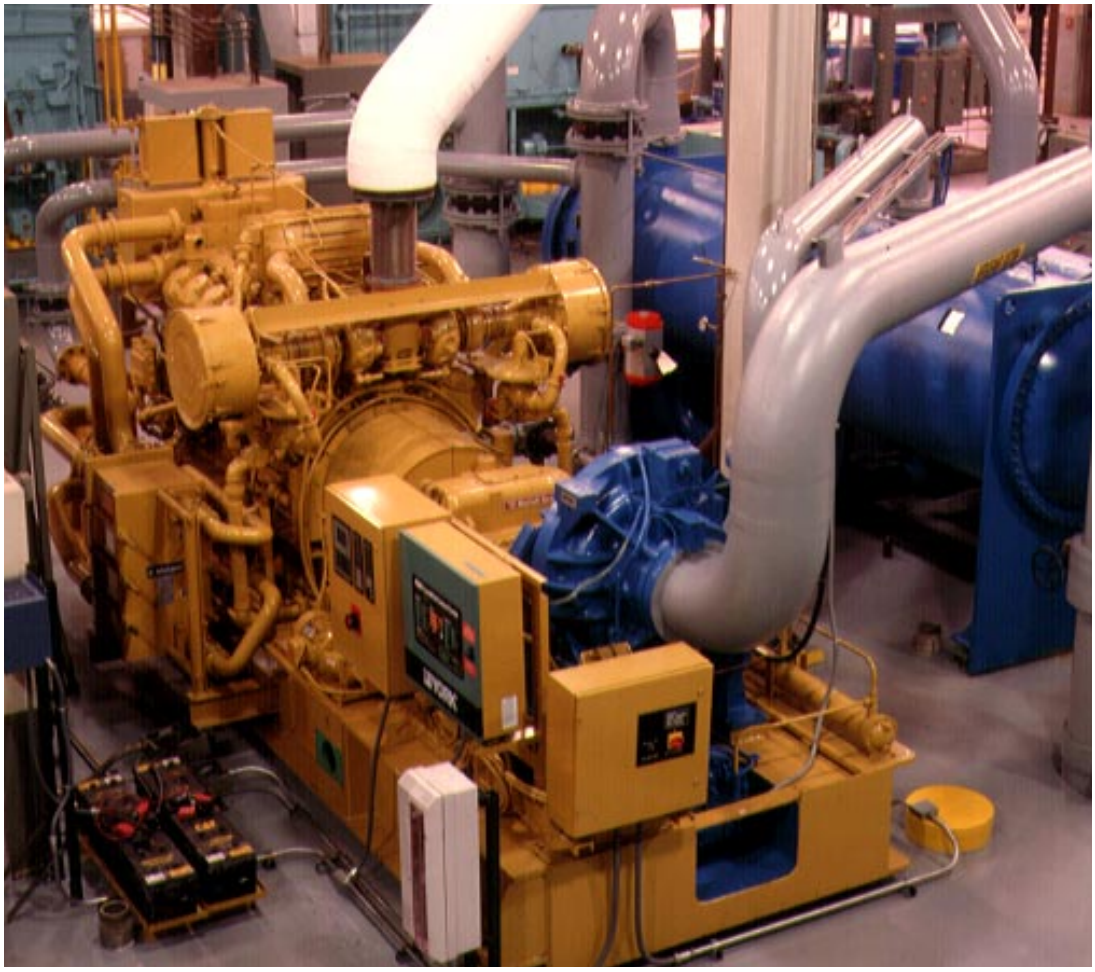


*The hospital recently overhauled its central chilled water plant, which involved replacing two 750-ton centrifugal chillers with the 1,350-ton YORK Millennium GED unit.*

CFC-12 refrigerant, which is no longer being produced.

"The electric chillers had to be removed," White says, "and replacing them with non-electric units made good economic sense. It was critical that the hospital reduce its electrical demand by peak-shaving, because the demand charge can be as much as $12 per kW."

White and YORK engineers considered several options from the wide range of YORK chiller offerings, including two-stage, steam-absorption chillers and two-stage, natural-gas-fired absorption units. Ultimately, the team chose the Millennium GED chiller because of energy efficiency, performance and the use of environmentally responsible HFC-134a refrigerant. But there were other factors involved.

"I was impressed with the integration of the YORK controls — they're top notch," says White. "They provide all the information you need to ensure reliable chiller performance. In addition, I felt comfortable with the Millennium GED chiller because I had already used YORK and Caterpillar products and services on previous projects."

Also weighing heavily in White's decision was an energy rebate from Citizens Gas, the local natural-gas utility. The rebate significantly reduced the project's overall cost.

"The rebate was critical," White says, "because it allowed us to shorten the payback period considerably."

White estimates that the hospital — a 1,100-bed facility covering 3.2 million square feet — will save approximately $30,000 to $40,000 a year in electric peak-demand charges alone. An additional $250 a day is being saved due to a reduction in kilowatt-hours, with the GED chiller operating at least 12 hours a day.

"Compared to a new electrically driven machine, the GED chiller had a projected two-year payback," says Todd Lieske, a sales engineer in the YORK Indianapolis office. "However, because the chiller performance has been above and beyond expectations, the payback may turn out to be less than one year."

Since the chiller's start-up in August 1995, White says the unit is "operating

efficiently and providing the cooling capacity the hospital needs, especially during the summer months." The unit runs 12-15 hours a day to reduce the electricity used by the central plant. It is tied into the central chilled-water loop and contributes to the cooling of the main buildings, patient rooms, hallways, lobby and office areas.

White also points out that the chiller operates relatively quietly. "The old electric-driven chillers ran at 90-95 dBA, compared to 94-99 dBA for the GED chiller. That's a very insignificant increase," he says.

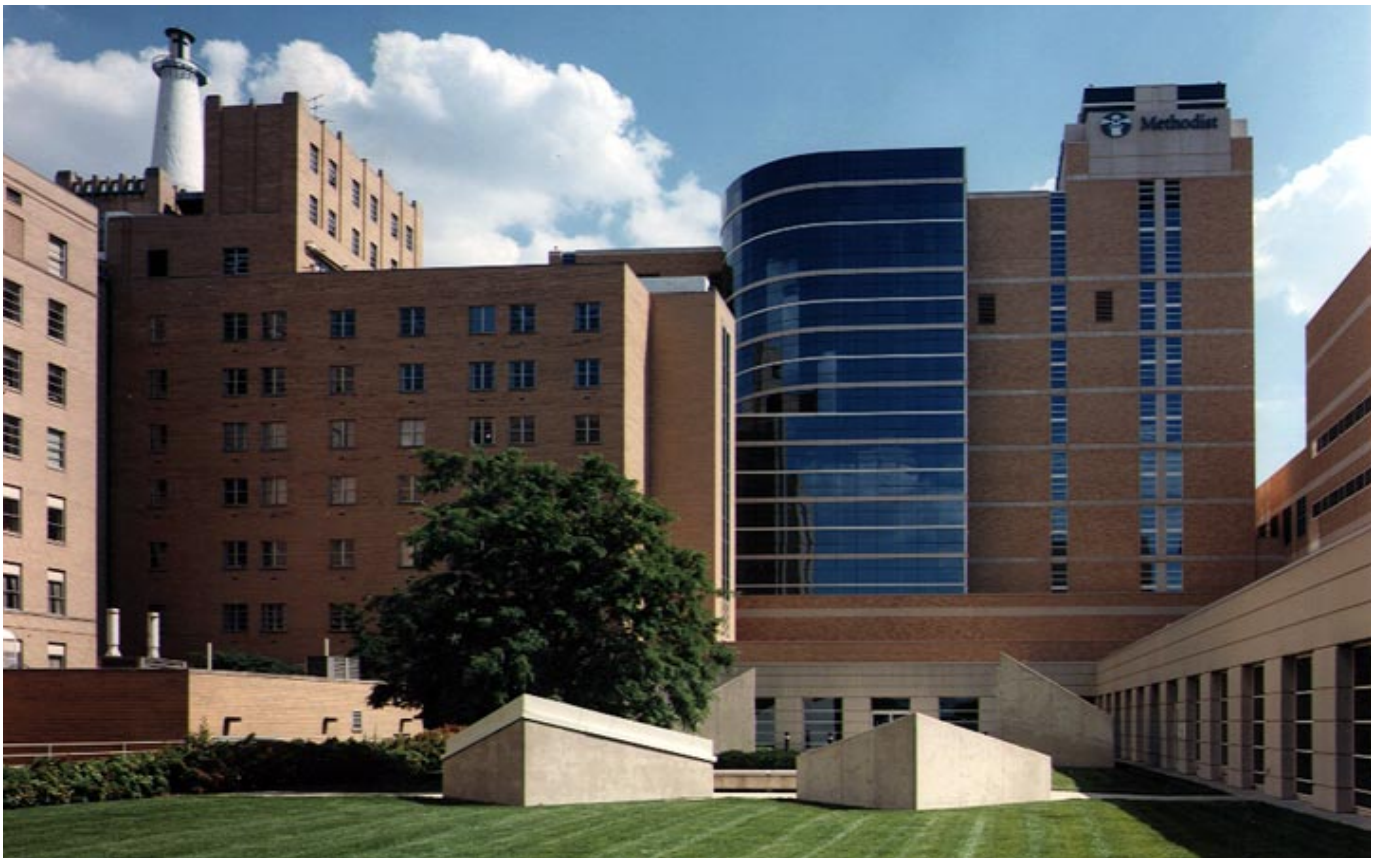
So far, the Millennium GED chiller has garnered rave reviews in the Indianapolis area. Local newspapers have reported on the hospital's successful use of alternative cooling equipment. Moreover, numerous YORK and Caterpillar personnel and customers have toured the plant to witness the chiller's operation. "This is a showcase job, a model for the HVAC&R industry," White says. "Gas-engine-driven cooling is a unique technology that can really help the owner achieve a high level of energy efficiency."

Indicative of the superior energy performance of the GED chiller is its efficiency at off-design (part-load) conditions. At these times, the COP of the chiller rises above 2.3.

The key to this unprecedented performance is the variable-speed control logic —the same control logic used in the YORK electronic variable-speed control for electric-drive centrifugal chillers.

"The GED chiller matches compressor speed precisely and continuously to the cooling load," says John Ostman, director of marketing for YORK Applied Systems. "In this case, we're controlling a gas engine rather than an electric motor. The gas engine provides a significant improvement in part-load performance because at lower loads and reduced rpm, the efficiency of a gas engine improves on a Btu/hp basis."

YORK Millennium GED centrifugal chillers are available from 400 to 2,100 tons. Installation flexibility is assured with over 110 available shell and compressor combinations, all matched with a series of high-performance, low-emission CAT natural-gas engines.




***Located in downtown Indianapolis, Methodist Hospital is a sprawling facility, amassing 3.2 million square feet and covering several city blocks.***