

GREEN MECHANICAL CONTRACTOR

School
District Cuts
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Small Job,
Big Green
Savings

Graywater
Reclamation
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The Power of Two

Wind turbine powers this home's
geothermal system to yield
net-zero energy use
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SCHOOL DISTRICT CUTS ENERGY COSTS

Harris County to save more than \$5 million over 10 years.

LINC SERVICES, HOUSTON, HAS performed energy-saving upgrades on nine administrative and educational buildings for the Harris County (Texas) Department of Education (HCDE). The upgrades are expected to save HCDE \$5.4 million over the next 10 years. The project earned Linc Services a second place 2009 Green Mechanical Award in the Best Commercial category.

During the initial meetings with HCDE, Linc Services emphasized how their company could help the Department reduce energy and comply with Texas House Bill #3693. The District's facility and maintenance personnel, however, got equally enthused about the opportunity to replace old, inefficient equipment.

"We weren't even finished with our initial presentation when Les Hooper, the District's executive director of facilities and construction, called the superintendent for an emergency executive meeting to look at our solutions to their problems. They were very excited," says Doug Smyers, Linc Services senior vice president.

The project was presented to the Board of Education in December 2008 and work commenced in January 2009. The \$3 million project was completed in September 2009 and came in on budget. During the 10-year life of the project, Harris County is expected to save 36% on its prior utility budget and 29% on the HVAC operating bud-



get. The upgrades are being financed through the prior operating budget, thus eliminating the need for new taxpayer funds.

All nine of the buildings were constructed in the 1970s and 1980s. Six of the buildings range from 6,000-sq.ft. to 47,000-sq.ft. The two largest buildings, which got the most upgrades, are the Ronald Reagan administrative building and the North Post Oak building. The Ronald Reagan building is 72,000-sq. ft. with an attached, 15,000-sq.ft. conference center. The North Post Oak building retrofits span 150,000-sq.ft.; the building's total square footage is 340,000, with 85,000-sq.ft. occupied at present.

The scope of the work included:

- Lighting retrofits in all nine buildings — this involved replacing older T12 lamps and early-generation T8 fluorescent lamps and electronic ballasts with new, energy-saving T8 fluorescent lamps and ballasts; lamps in incandescent fixtures were replaced with compact fluorescent lamps
- Lighting occupancy sensors were installed in the Ronald Reagan and North Post Oak buildings
- Control upgrades in all nine

buildings — conventional, programmable thermostats were replaced with a centralized DDC energy management system

- HVAC upgrades for seven buildings — old rooftop units and split systems were replaced by new, high-efficiency units
- A chiller replacement in the Ronald Reagan building
- New VAV controls and balancing in two buildings
- The addition of five variable-frequency-speed drives on air handling units in the Ronald Reagan building
- A new high-efficiency roof for one building
- Solar panels to provide water heating in the Ronald Reagan and North Post Oak buildings
- A solar PV system to provide emergency backup power in the Ronald Reagan building
- Water-saving devices on toilets (automatic flushers) and faucets (low-flow models) in the Ronald Reagan and North Post Oak buildings
- A solar PV system to provide emergency backup power in the Ronald Reagan building.

INTERNATIONAL EMERGING TECHNOLOGY SYMPOSIUM

MAY 11 - 12, 2010 • ONTARIO, CALIFORNIA - DOUBLETREE ONTARIO AIRPORT HOTEL

CO-CONVENED BY IAPMO AND WORLD PLUMBING COUNCIL



WHAT IS IT?

This two-day event will provide participants with an opportunity to view presentations and engage in timely discussions on how the water utility, manufacturing, engineering and trade industries have found solutions through emerging technologies in the water efficiency, plumbing and mechanical industries.

This event is a follow-up to the overwhelmingly successful inaugural Emerging Technologies Symposium that was held in Chicago in August of 2008 and is designed to provide a portal for IAPMO's partners to display and demonstrate their innovative solutions to water and energy efficiency related needs and regulatory development. Presentations and panels will discuss emerging trends, practices and products.

IAPMO is seeking sponsors, presenters and panelists to participate in the symposium; especially experts in the following fields:

- Water Quality, Sanitation and Health
- Water Reuse
- Water and Embedded Energy
- Solar, Geothermal and other renewable technologies
- New Technologies in Fat, Oil and Grease (FOG) Discharge Mitigation
- Other topics as suggested by participants

GOALS OF THE EMERGING TECHNOLOGY SYMPOSIUM

- Provide outstanding networking opportunities to meet experts in the fields of water and energy efficiency.
- Expose participants to emerging products and practices.
- Exchange views on new trends in the industry.
- Share ideas and approaches on bringing emerging technologies to market
- Discuss innovative green plumbing and mechanical concepts
- Provide a vision for a more efficient future for plumbing and mechanical systems.

To view video excerpts from the inaugural Emerging Technology Symposium, visit: www.iapmovideos.org

If you would like to join us at this revolutionary symposium or if you have any questions, please contact: Sol Alba

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Seven of the buildings received HVAC upgrades. Old rooftop units and split systems were replaced by new, high-efficiency units.



Prior to starting the project, Linc's energy experts conducted detailed, on-site surveys of the buildings. They also collected utility bills and compiled operating costs to compare them with national benchmarks. Energy conservation measures (ECMs) were evaluated based on their ability to save energy, provide better occupant comfort and provide building enhancements for the facilities. Each ECM was evaluated from the standpoint of applicability to the specific building, impact on the ability of the systems to provide climate control, and the net financial impact of the measure.

"In addition to the high operating costs, prior to the retrofit there were some comfort and maintenance issues," Smyers says. "The staff was having trouble keeping up with the maintenance and repairs involved with the existing equipment. Some of the units were obsolete and it was tough to find repair parts. They don't have a large staff, and that made things difficult as well."

"The age of the equipment in our facilities was not allowing for peak operational efficiency, so we're looking forward to the energy and operational

savings that Linc will provide with the newer systems," Hooper says. "Going green is an objective toward which all schools are striving, and now we've put a project in place that will help us achieve that goal."

To ensure that the energy-saving estimates stay on course, utility consumption will be monitored, recorded and posted on a customized Web site.

"We are guaranteeing the savings per year, and will help the District year after year to ensure that the long-term guaranteed savings are met," Smyers says.

This project was particularly satisfying for various reasons, Smyers says. "A contractor typically might do one or two upgrades at a time. For this project, we were able to offer many different solutions; these 'bundled energy solutions' have qualified for \$120,000 to \$150,000 in rebates from the utility company, CenterPoint Energy. In addition, we've made the buildings more comfortable and improved the learning environment."

After more time has passed and enough energy-usage data has been compiled, the team will submit one or more of the buildings for ENERGY

STAR certification. ENERGY STAR is more challenging to obtain for existing buildings, but Linc Services did so recently with another project, the Shelton School, a 250,000-sq-ft. private school built in the late 1960s.

"The ENERGY STAR certification will distinguish the Harris County Department of Education as an energy-conscious school system," says Bill Maurer, Linc's vice president of bundled energy solutions. "By decreasing its utility costs and showing greater environmental awareness, the county is doing its part to go green."

Smyers adds that schools are an attractive market for today's green mechanical contractor. "Schools are very interested in alternative energy sources. The new technologies save the districts money and are also very interesting to the students and adult learners." ♻️

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