

The Hurt Building

Getting Older and Wiser

Owners Embrace Technology, Create Intelligent Building



BY Shannon Westberg
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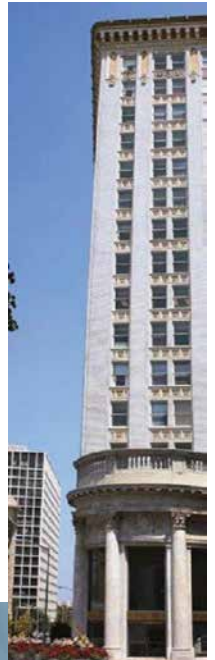
The Hurt Building—an Atlanta icon and a member of the National Register of Historic Places since 1977—is not likely what comes to mind when one thinks of an “intelligent building.” However, with smart investments over time, the building ownership and management team have applied the right type and amount of technology, while putting processes in place to use that technology to full advantage, making the building more intelligent as it has aged.

The first thing most people think about when they hear the term “intelligent building” is advanced technology—lots of it. And what most people picture is a super modern structure with a futuristic architectural design. They don’t think of a building opened in 1913 that exemplifies the craftsmanship of the early 1900s: uninterrupted marble, glazed brick piers, ornamental terra cotta spandrels and heavy decorative cornice. The original 1913 plaster chandelier continues to provide light in the building’s three-story domed rotunda today. The original Coal-Tar-Pitch roof remains in place and the mechanical equipment that operates the 12 building elevators dates back to technology from the 1950s, while the original cabs remain in use. Even the main air handling systems were installed in 1956. Despite these old-fashioned features, the Hurt Building truly is an intelligent building and has been getting wiser as it has been getting older.

Intelligent Buildings International Journal writes, “An intelligent building provides a sustainable, responsive, effective and supportive environment within which individuals and organizations can achieve their objectives. Technology is fundamental, but is an enabler rather than an end in itself.”

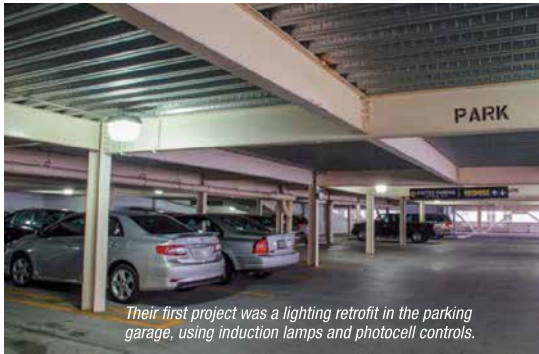
To that end, the Hurt Building combines judicious and strategic application of technology along with people and processes designed to deliver results.

Energy retrofits implemented over the years have replaced aging infrastructure and taken advantage of new technologies as they have become cost effective. These included replacement of the chillers and cooling tower, as well as multiple lighting retrofits that have evolved along with the development of lighting technology.



Building





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When Boxer Property purchased the building in early 2012, the new owners recognized that continued investment in energy efficiency, done strategically, could provide further savings with a very attractive return on investment. Their first project was a lighting retrofit in the parking garage, using induction lamps and photocell controls. In the months since the December 2012 completion of the project, electricity use in the garage has been reduced by 59 percent, and electric costs have dropped 68 percent. This investment is on track to achieve a payback in less than two years.

The retrofit program for the building itself is following a three-tiered approach:

- 1) Reduce the cooling load, which is a major driver of overall building energy use, to the furthest extent possible;
- 2) Ensure the HVAC systems can operate efficiently at part load, to take full advantage of the cooling load reductions; and

- 3) Provide control systems to enable advanced operating strategies and ongoing savings.

Continuing interior lighting retrofits with current generation T-8 fluorescent technology and the introduction of LED lamps in some applications—along with extensive new lighting controls including central control of all common area lighting and occupancy sensors for tenant area lighting—are aimed at direct electricity savings, as well as reducing internal cooling load.

The recently completed occupancy sensor project—eliminating the energy waste associated with lights left on during the many times of the day when people are not in their offices—involved installation of nearly 700 sensors throughout the building by in-house staff. Another recent project was aimed at reducing the cooling load by improving thermal performance of the building envelope through the installation of solar window film on more than 23,000 square feet of glazing. The new film cuts solar heat load of the windows by 65 percent, greatly impacting the building's peak summer cooling load.

The key technology for enabling efficient part load operation of HVAC equipment to take advantage of the reduced cooling loads is the variable frequency drive (VFD). VFDs reduce the speed of rotating equipment, such as fans and pumps, as their load varies, providing dramatic energy savings due to the speed reduction.



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For example, a typical supply fan operating at 80 percent of full speed will use 64 percent or less of the full speed energy. As the quality and reliability of VFDs have increased, and the costs have come down dramatically, the Hurt Building has installed them on more and more equipment. VFDs are currently controlling the chillers, cooling tower fans, main air handling supply fans and the main circulating pumps, with future projects anticipated to cover smaller circulating pumps and fans as well.

A Building Automation System (BAS) is fundamental to any intelligent building, and the Hurt Building is no exception. The building's initial installation of a modern BAS in 2008 was a quantum leap in HVAC control. It introduced electronic control of the chiller plant, boiler



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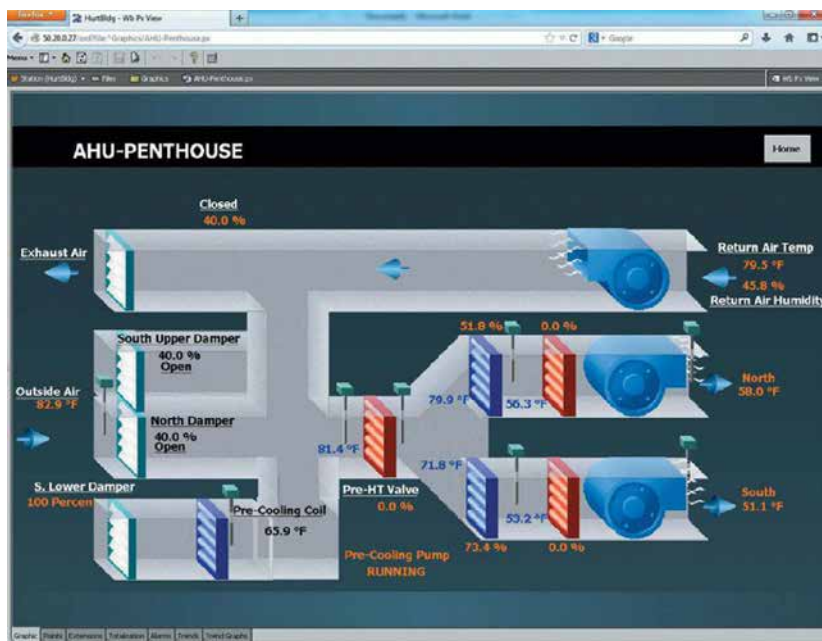
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The Hurt Building's automation system uses an open protocol platform laying the basis for easier and more economical expansion and further modernization.

plant and primary air handling systems, providing visibility into system operations and the ability to apply advanced control strategies. This is most apparent in the control of the perimeter induction air handling system which, as mentioned above, was installed in 1956. The original 100 percent outside air design has been modified to incorporate return air mixed with outside air, while the major elements and configuration of the system remain as originally installed.

The system was advanced for its time, providing zoned comfort control with components utilizing a combination of conditioned air and water that could be installed in an existing building that had not been previously air conditioned. But it accomplished this at very high energy usage as it required constant air flow and a great deal of simultaneous heating and cooling through much of the year. The BAS now controls this system much more efficiently, with the capability of varying the air flow and resetting primary air and secondary water loop temperatures in the north and south zones based on outside air conditions, eliminating simultaneous heating and cooling and bringing in more fresh air when the weather is favorable.

The original BAS installation was web-enabled but utilized mainly proprietary controls and communication protocols. Since then it has been migrated to an open protocol platform,

laying the basis for easier and more economical expansion and further modernization. The operating system and platform were upgraded early 2013.

The latest buzz around building technology involves big-data and cloud-based energy analytics and management. The Hurt Building, in its 100th year of existence, has just entered that realm. Pulling building data into the cloud makes it possible to analyze large quantities of data on a continuous basis, an activity that would quickly overwhelm the memory capacity of an on-site BAS. Applying advanced analytics, cloud-based fault detection and diagnostic systems can uncover anomalies and equipment malfunctions that would otherwise go undetected.

The Hurt Building recently installed SClenergy's SClwatch technology, and the initial results have already proven valuable. Most notably, this technology solution was implemented without any hardware or physical installation work at the building; the data is simply accessed through the BAS remotely and pulled into the cloud, and the results are presented on a web platform. Some of the findings from just the first couple of weeks of operation have been quite interesting and illuminating, such as detecting deviations in the chiller plant operating schedule, several temperature sensor anomalies and some quirky operating patterns of the cooling tower fan VFDs. SClwatch was implemented as a tool to

assist the retro-commissioning effort underway as part of the LEED recertification process, providing powerful trend analysis capabilities along with automatic fault detection. It also provides the basis for automated ongoing commissioning, ensuring that savings continue into the future.

So, the question is: How do you take a century-old, tenant-occupied, historical asset that is tenant occupied and make it perform on par with a modern day intelligent building? For the Hurt Building, the answer to that question is to partner with the most knowledgeable controls company and the best energy consultant in the marketplace. Facility Controls Group analyzed the building HVAC system and recommended and installed the best BAS for the existing equipment. Servidyne, a SClenergy Company, has guided the long-term energy strategy to ensure optimum performance.



The results speak for themselves. The Hurt Building has achieved ENERGY STAR® six years in a row since 2007. It was also the first LEED-EB Gold commercial office building in Georgia in 2009; the first BOMA 360 building in Georgia in 2009; and the BOMA Southern Region Earth Award in 2010. And the building has its eye on the prize. Currently in process for LEED-EB recertification in 2013, The Hurt Building has a goal of achieving LEED-EB Platinum. Thanks to the implementation of intelligent building technologies, this goal is well within reach.

ABOUT THE AUTHOR

Shannon Westberg has been in commercial real estate high rise management for nearly 20 years. She has managed many local, high-profile assets and is currently the property manager of the Hurt Building with Boxer Property Management.