POWER SWITCH

This new high school is a spark for students—and the neighborhood
By Laurie Peterson

Reuse of an abandoned structure for a totally new purpose requires equal doses of imagination and determination. Conversion of an obsolete but landmarked power plant into a LEED-certified charter high school required maximum amounts of both.

The project’s complexity is merely hinted at by its full name, Henry Ford Academy: Power House High in the Charles H. Shaw Technology and Learning Center. Designed by Hart Associates, the school opened its doors in Chicago’s Lawndale neighborhood at the beginning of the current academic year. The building owner and client was the Human Arthritis Foundation and significant input was provided by the anchor tenant, the Henry Ford Learning Institute. The HFL had pioneered a successful charter school in Dearborn, Mich., and wanted to replicate its academic model in Chicago.
The result is a showcase on many levels: preservation, adaptive reuse, community development, educational innovation, and sustainability. To succeed meant constantly balancing competing demands. Should energy-saving but attractive brick walls be hidden behind drywall? Were geothermal wells worth the very high cost? How could the power plant's unique qualities be retained while creating a functional school? And how could it serve the community in addition to the student population? "It was beyond a lot of people's imagination how you could make this into a practical space," according to Bever Shav, widow of the developer for whom the TLC is named and a major benefactor of the project.

The original building's unusual configuration had allowed a full inspection of the street façade, where there are different rooflines and stringcourses. Constructed in 1905, to power 5 million square feet of buildings. In the Sears, Roebuck and Co. complex, the north half held chilling equipment, and the south half housed a coal-fired heating plant. Each consisted of a three-story-high space, a three-foot-thick wall divides them, and is supported by columns in the shared lower level.

The gargantuan north half had greater aesthetic potential, with large arched windows on three sides and interior walls covered in glazed white brick. This would become the grand gathering space for school functions as well as community events. The southern half held a Dickensian array of pipes, coal chutes and catwalks, removing them would allow for insertion of three stories of classrooms centered on a large staircase.

The building's working history was made tangible in many ways, with pieces of equipment strategically left in place. The great hall has a huge portion of an old chiller that helps define the space behind it for the cafeteria. It also features an old pump, a few brick chimneys used to support machinery, and a gantry crane suspended high above. In the former heating plant, some of the classrooms have coal hoppers near the ceiling, and the basement has museum displays of coal-related technology. The most intriguing of these are remnants of the closed loop coal delivery system: a chain-driven conveyor belt, fitted with bits that ran through the building to deliver coal from the train cars to the furnaces and return ash back to the cars.

The display of century-old technology is well-suited to the experiential learning philosophy of Henry Ford Academy, especially since an equal effort was made to showcase the green technology that now powers the building. "There are teaching tools everywhere," says Jonathan Breyer, a principal at Fair/Associates. "The building was designed to have students interact with it.

The goals of preservation and sustainability were often, but not always, in harmony. Windows in the great hall were repaired and refitted with double glazing, maintaining their original appearance while tripling their energy performance. The skylights that run the length of the north and south halves of the building were rebuilt with plexiglass, which not only has greater insulating value but provides more diffuse, controlled illumination. The steel structure on the south façade, which once supported a gantry crane for unloading tractors on the rail spur, not only provides shade but was able to be modified to offer code-required emergency access.

One of the thorniest issues was how to deal with the brick walls in the classroom half of trouble building. Because they were attractive but had very poor thermal qualities. Drywall went out due to the vast energy savings it would provide. Cost was a constant factor in balancing competing mandates of preservation, functionality and energy use. Although the Chicago Public Schools provide grant money for an operating budget, all capital and start-up funds must be raised privately. Preservation tax credits and grants were therefore critical pieces of the very complex financing puzzle, accounting for roughly $27 million of the $60 million budget.

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Carroll integration of old and new building elements is another teaching tool as well as a mandate of historic preservation. In the great hall, the architects were able to preserve along strip of the original red and white floor tiles, and in the entry vestibule they created a new mosaic with salvaged tiles. The mezzanine was expanded to provide seating areas above new office and food service spaces. Drywall ceiling, a new elevator is painted yellow to differentiate it as a recent intervention. Such touches of color are used sparingly to call out new elements throughout the building except at the basement, where bright splashes of color enliven the monochromatic concrete foundations.

Of Chicago Architect (Jan Breyer)
The building is one of four in the George Nimmons-designed Sears complex that is listed on the National Register of Historic Places. The smokestack was repaired with a Partners in Preservation grant from the National Trust for Historic Preservation after being deemed worthy of the honor in a 2007 online poll about Chicago projects.

As with every budget item, investments in energy-saving technology were evaluated very carefully. “We asked ourselves, ‘What can we not live without?’” says Kristin Dean, president of the Homan Artington Foundation. Heat recovery and demand-based ventilation were easy to keep, but the $2.7 million cost of the geothermal wells was a harder sell. It was approved because the return on investment would be realized in less than a decade, an appropriate time frame for institutional clients. Overall, the project is applying for enough points to easily win LEED-Gold certification and is close to the Platinum level.

Unlike traditional public school buildings that sit vacant after 3 p.m. and for long stretches of vacation time, the Shaw TLC will be used by both the school and the community for classes and events after hours and year round. Although this increases energy consumption, Boyer notes that overall “this is a much more sustainable model for all schools.”

Programmatic synergy with the community goes both ways. In addition to classrooms being used for adult education, the great hall can be used for public events, displays of artwork, or private functions such as weddings. Dean says they are always asking themselves, “What could we do here that would be as innovative as the space itself?” On the other hand, students use the gymnasium, pool, and health services of the community center campus across the street, which allowed these space-intensive functions to be eliminated from the building program.

Community support for the project had to be cultivated rather than taken for granted. Aging brick walls and century-old steel structure have limited charm for those who live amid urban decay and usually see new construction as the best hope for revitalization. “Members of the community asked, ‘Why aren’t we getting a new school?’” says Boyer, “and we responded by designing something better: a new school, within a historic shell, that provides a symbol of how the community’s existing buildings can be reborn.”

The stakes were high for the neighborhood, because a top-quality high school was the last remaining major component of the redevelopment of Homan Square. Beginning in the 1980s when Sears finally ceased all operations on its former headquarters campus, developer Charles Shaw envisioned a three-stage revitalization process that would begin by creating housing, continue with economic development and provision of community services, and finally provide excellent new schools. With the K-8 Holy Family Lutheran School located on the community center campus across the street, and LEARN Charter School just a few blocks south, a flagship high school was the last unfilled goal.

This goal fit well with the vision of the Henry Ford Learning Institute, which includes removing “boundaries between school and the real world” and “creating dynamic community change agents.” The conversion of the power house to a Henry Ford Academy is a model of the visionary yet practical thinking that the school aims to instill in its students. CA