Renovate by
FACADE RETROFIT SYSTEM

Berkowitz™

Renovate by Berkowitz Transforms 400 Market Street into a Model of Energy Efficiency

DOE-funded study demonstrates potential of the Better Buildings Initiative

Like hundreds of aging, high-rise buildings throughout North America, 400 Market Street in Philadelphia was in need of a major upgrade to help it compete with newer buildings in a hyper-competitive commercial real estate market.

Now, the 12-story, 200,000-square-foot building is dramatically cutting energy use and increasing tenant comfort, while becoming a national model for the **Better Buildings Initiative** (BBI), a $4 billion partnership between private industry and the federal government that is focused on improving the energy efficiency of commercial office buildings by 20 percent by 2020.

Old Single-Glazed Windows Waste Energy

While expansive windows and views are attractive selling points for any commercial building, older structures like 400 Market Street were typically constructed with single-pane windows. That makes them big energy wasters, according to the federal government.

The Environmental Protection Agency (EPA) estimates that inefficient windows account for as much as 25 percent of a typical building's heating load in cold climates and 50 percent of the cooling load in warm climates. Upgrading these windows in aging commercial buildings such as 400 Market Street, particularly throughout the Northeast and Midwest, represents a significant opportunity to cut America's energy use.

CASE HISTORY: 400 MARKET STREET

400 Market Street Finds a Cost-Effective Solution

Opened in 1972, 400 Market Street was one of the first buildings in the country to incorporate Renovate by Berkowitz™ (Renovate), a revolutionary facade retrofitting system that converts old single-pane facades into highly efficient, triple-glazed insulating glass units, enabling owners to avoid the expense and disruption of traditional "rip-out-and-replace" facade upgrade projects.

Carolyn Pfeiffer, property manager for Kaiserman Company, which owns 400 Market Street, said the **Renovate** system was selected after her firm did extensive research into more traditional renovation alternatives.

"We were looking to upgrade the efficiency of the building envelope to help improve our ENERGY STAR® rating, reduce operating expenses, and improve the comfort level for our tenants," she explained. "We previously used window film, but it would lose its effectiveness and was subject to scratching and color changes, and would only help keep the building slightly cooler in the summer. It wouldn't help keep the building warm in the winter. We also considered full window replacement, but the cost was prohibitive even without the supplemental cost of temporarily relocating tenants and disrupting their businesses."

Pfeiffer said the **Renovate** system helped mitigate all of those concerns. "The new system was about half the estimated cost of a traditional window replacement project and helped make us eligible for a tax deduction of up to $.60 per square foot," she explained. "The contractor was able to replace 18,000 square feet of glazing (525 windows) in 50 working days, which was two to three times quicker than the estimates for the traditional replacement scenarios."

Installation by Certified Installers

Because 400 Market Street remained completely enclosed, occupants only encountered minimal disruptions to their work areas throughout the retrofitting project, which was another factor in deciding to implement the system. "Overall, our tenants were pleased with the installation," Pfeiffer noted. "We were able to avoid the time, cost, and hassle of temporarily relocating them.

"The RbB system made transforming 400 Market Street into an energy-efficient, competitive building a cost-effective reality."

– Carolyn Pfeiffer, Property Manager/ Kaiserman Company, Inc.

Results Are In: DOE-Funded Study Verifies Energy Savings

From 2012 through 2013, 400 Market Street served as a research case study for a $1.6 million U.S. Department of Energy (DOE)-funded study completed by the Home Innovation Research Labs and Quanta Technologies, Inc., to demonstrate the ability of low-e retrofit glazing systems to improve the energy efficiency of older commercial buildings.

Project manager Thomas Culp, of Birch Point Consulting, LLC, said, "At more than 25 percent, the whole building's heating and cooling energy savings were significant and on par with what I expected, but frankly, I was surprised by how much the savings were in the perimeter offices—up to 35-60 percent, depending on orientation. It shows the potential the **Renovate** system has for significantly improving an existing commercial building with more glass surface area."

Renovate Offers More Benefits

"We are certainly thrilled with the energy savings, but we also accomplished our others goals, such as improving the comfort level for our tenants," Pfeiffer said. "As you can imagine, sitting next to inefficient glass can be cold in the winter and warm in the summer, potentially leading to discomfort and decreased productivity for whoever sits next to the window. We've heard comments about how much more comfortable the building has been since the installation of the **Renovate** system, and tenants on the lower floors have mentioned a decrease in street noise."

To quantify the improvements to indoor comfort, Culp said the study paid particular attention to four unoccupied perimeter offices in the building, two facing east and two facing north. One office in each pair was retrofitted with the **Renovate** system, while the other was left untouched.

"The data showed that the surface temperatures of the retrofitted windows were typically 20 degrees warmer on winter days and 10-20 degrees cooler on summer days, substantially improving comfort and usability of the space," he said. "In addition, the day-night temperature swings were reduced from 50 to 20 degrees for east-facing windows, and from 20 to 4 degrees for north-facing windows."

"The **Renovate** system made transforming 400 Market Street into an energy-efficient, competitive building a cost-effective reality," Pfeiffer said. "We anticipate the renovation will be a key factor in retaining and acquiring tenants."

ABOUT THE RENOVATE SYSTEM

About the Renovate System

The **Renovate** system features lites of low-e glasses, separated by an argon-gas-filled cavity. A specially developed spacer system "hermetically" seals the insulating glass unit to the interior surface of the existing glass, creating a permanent, no-maintenance attachment.

Available in three configurations, the **Renovate** system can offer solar heat gain coefficients as low as 0.27, winter U-values as low as 0.15, and R-values up to 6.67. For more information on the **Renovate** system, visit **www.RbBwindow.com**.

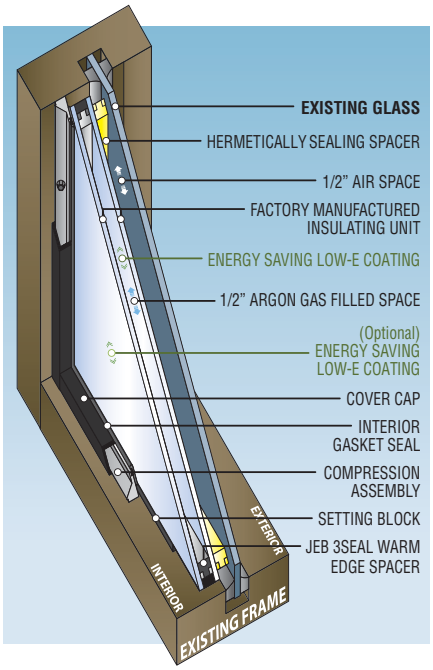
SYSTEM OPTIONS

	RbB Platinum	RbB Platinum Plus II	RbB Platinum Plus II XL
Double Silver Low-E	●	●	
Triple Silver Low-E			●
Pyrolytic Low-E Coated Glass		●	●
Argon-Filled Air Space	●	●	●

SYSTEM PERFORMANCE

Data	Existing 1/4" Clear	Platinum	Platinum Plus II	Platinum Plus II XL
R-Value[1] (Center of Glass)	.97	5.56	6.67	6.67
SHGC[2] (Solar Heat Gain Coefficient)	.84	.42	.35	.27
STC[3] (Sound Transmission)	30	37	37	37
Winter U-Value[4] (Center of Glass)	1.02	.18	.15	.15
VLT (Visible Light Transmission)	89%	63%	57%	50%

[1]R-Value – Higher is better [2]SHGC – Lower is better [3]STC – Higher is better [4]U-Value – Lower is better



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