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Our Advanced Window Technology.

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Because you don’t need brand-new windows.
Your windows need brand-new technology.

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This 1902 Historic Landmark in the heart of the Greenbrier Valley underwent an energy improvement project in 2013. The architect specified the QUANTAPANEL® 602-PW (interior, fixed panel) to achieve state-of-the-art energy performance while being essentially invisible from the exterior and interior of the building.

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- Window insulating properties (improved U-Factor and SHGC),
- Substantially reduced air infiltration,
- 95% reduction in noise infiltration (STC),
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PERFORMANCE

Installation of the QUANTAPANEL® Insulating Glass System on the interior of your existing windows can have a substantial impact on your energy utilization and occupant comfort. QUANTAPANEL® Systems can:

• IMPROVE the Thermal Performance of your existing windows by a factor of 2 – 3 times, with minimal impact on visible light transmission.
• REDUCE air infiltration by up to 10X, depending on condition of existing window.
• REDUCE exterior noise transmission by 95%.
• ENHANCE COMFORT by maintaining more uniform room temperature, and room-to-room temperature.
• Can be substantially lower or higher than reasonable range of interior air temp.

PERFORMANCE IMPACT

<table>
<thead>
<tr>
<th>Thermal Performance</th>
<th>U-Factor (baseline, single glazed window)</th>
<th>1.06 BTU/hr-ft^2 F</th>
<th>0.38 BTU/hr-ft^2 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Transfer</td>
<td>U-Factor (baseline, single glazed window)</td>
<td>0.72</td>
<td>0.56</td>
</tr>
<tr>
<td>Visual Performance</td>
<td>SHGC</td>
<td>0.77</td>
<td>0.60</td>
</tr>
<tr>
<td>Air/Dirt Infiltration</td>
<td>10X Reduction</td>
<td>0.4 – 4.0 cfm/ft^2</td>
<td>&lt; 0.1 cfm/ft^2</td>
</tr>
<tr>
<td>Noise Reduction</td>
<td>STC (Sound Transmission Class)</td>
<td>STC = 40</td>
<td>STC = 25</td>
</tr>
<tr>
<td>Comfort Factors</td>
<td>Interior Glass Temperature</td>
<td>Can be substantially lower or higher than interior air temp.</td>
<td>Typically within reasonable range of internal air temp.</td>
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777 Main Street (Hartford, CT)

This 26 story tower, built in 1969, was the former world headquarters for the Hartford National Bank and is being converted into 295,000 SF of residential space with 286 units.

The existing windows are large monolithic glass retained within the exposed aggregate structure of the exterior façade. The building owner has a goal to achieve a 30% energy reduction compared to an ASHRAE baseline. The interior low-e glass system developed for this property will enhance energy performance while improving occupant comfort.

111 4th Avenue (New York City, NY)

This Greenwich Village full-service loft co-op building was developed by Teitelbaum Holdings. Each floor has 11 different units with 13’ 6” ceilings and 10-ft high windows. Under a program implemented by the Co-op Board, individual residents have opted to install the QUANTAPANEL® 600 Insulating Glass System (interior). In addition to the drastic improvement in energy and comfort, the QUANTAPANEL® 600 Series has provided residents with a substantial reduction in exterior noise.

ENERGY SAVINGS

The actual energy savings will vary by building type, the age and condition of the existing windows, the heating & cooling system (fuel), climate and other factors. Energy savings can be substantial and provide the means to achieve a reasonable payback on the investment.

The chart below shows annual and peak load energy savings in a five story, multi-family, building with 40,000 square feet of conditioned space using natural gas with a 25% window-to-wall ratio with existing metal-frame single glazed windows in five different metropolitan areas. The annual energy savings is the reduction in the building’s annual heating/cooling cost attributed solely to the window retrofit. Peak load (heating and cooling) is shown as well; this is most relevant if the building is considering an upgrade or modification in the existing HVAC system, in which case appropriately sizing the system for a better insulated building may reduce capital cost.

Building operating cost improvement can also be realized by reducing the time required to achieve temperature set points after periods of non-use.

French Apartments (NYC, NY)

This New York City based multifamily property undertook a major energy improvement project in 2013 which included the installation of the QUANTAPANEL® 605-DH Insulating Glass System (operable, double hung, interior installation).

The project objective was to achieve a 38% energy reduction, a major portion of that improvement being realized by reduced air infiltration and enhanced thermal properties in the existing windows. A prototype test of the QUANTAPANEL® 605-DH IGS demonstrated an Effective Leakage Area (ELA) reduction of 77 – 95% over windows with and without AC units. This translated into an estimated 30% reduction of air infiltration in the overall building.

Zion Garden Apartments (Philadelphia, PA)

Located in Philadelphia, this apartment complex, built in 1963, has two three story buildings with 101 apartment units. In 2012, the building management elected to install the QUANTAPANEL® 504-DH IGS (interior, operable) to replace existing old-style storm windows. A one-year post-installation analysis of performance revealed the following benefits attributable solely to the QUANTAPANEL® window retrofit: a 10% reduction in overall apartment air leakage, a 20% reduction in heating energy use, and a 9 – 15% reduction in cooling energy use.

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Performance
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**PERFORMANCE IMPACT**

<table>
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<tr>
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<th>Unconditioned</th>
<th>Conditioned</th>
</tr>
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<tbody>
<tr>
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<td>SHGC</td>
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