CASE STUDY: Commercial Secondary Windows Offer: Comfort, Savings, and Assured Efficiency

Introduction

The Commercial Secondary Window market is an attractive option for building managers, contractors, and other who work in the commercial space. Secondary windows, also known as low-e storm windows, insulating panels, or secondary glazing systems, attach to the interior or exterior of an existing window to improve occupant comfort and save the space on energy costs.

Commercial Secondary Windows include low-e storm windows, insulating panels, or secondary glazing systems that attach to the interior or exterior of existing windows.

Secondary windows improve occupant comfort while reducing HVAC energy use up to 20 percent at as little as half the cost of window replacement. **Per NEEA

The Department of Energy recently analyzed 400 technologies and ranked interior and exterior storm windows near the top (#3) for their potential impact on energy efficiency.

AERC's program offers third-party performance metrics and certification of secondary windows, enabling product-to-product comparisons.

The secondary windows can be used in many applications:

RETROFITTED UPGRADES

- Real World Scenario: A building manager of a commercial office space wants to save on energy costs, improve occupant comfort, and retain tenants

ADAPTIVE RE-USE

- Real World Scenario: A historic commercial building (i.e.: a theater, library, government building, etc.) needs to improve energy savings due to original windows, but still maintain historic aesthetic.

ACOUSTIC UPGRADES

- Real World Scenario: Rather than the focus being on energy savings and efficiency needs, some commercial spaces, like hotels or theaters, may need to make upgrade in order to reduce sound pollution from busy city and street noise outside.

LOW-BUDGET PROJECTS

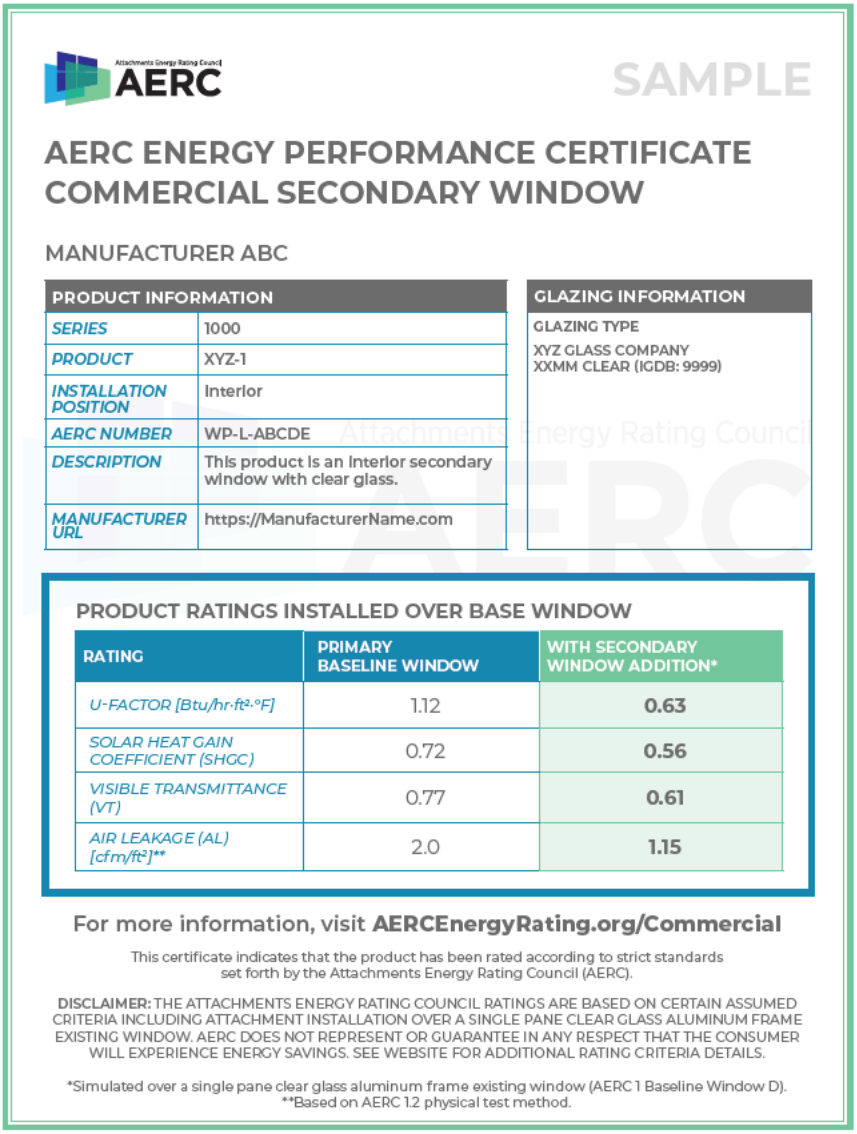
- Real World Scenario: Commercial spaces, such as low income multi-family units, may require energy and occupant comfort upgrades, but not have enough budget for a full window replacement. Secondary window systems offer a great, cost effective solution.

In any commercial setting or scenario, secondary window systems can be utilized, and for the building managers, architects, or contractors making the product and purchasing decisions, look for the Attachments Energy Rating Council's Energy Performance Certificate[1] to compare certified products and their important energy metrics like U-Factor, Solar Heat Gain Coefficient, Air Leakage, and Visual Transmittance. The certificate allows for professionals to get a better sense for how much energy savings they will realize after utilizing these products.

Throughout 2020 and 2021, a number of AERC member companies have certified their commercial secondary window products. Four interior storm window products from Larson Manufacturing Co., two interior and two exterior products from QUANTA Technologies Inc., and two window insert products from Indow Windows are now certified through AERC. Having followed AERC testing and reporting protocols, these products earned certificates establishing their performance.

[1] Attachment Energy Rating Council: https://aercnet.org/about/

AERC Secondary Window Certificate



AERC

SAMPLE

AERC ENERGY PERFORMANCE CERTIFICATE COMMERCIAL SECONDARY WINDOW

MANUFACTURER ABC

PRODUCT INFORMATION	
SERIES	1000
PRODUCT	XYZ-1
INSTALLATION POSITION	Interior
AERC NUMBER	WP-L-ABCDE
DESCRIPTION	This product is an interior secondary window with clear glass.
MANUFACTURER URL	https://ManufacturerName.com

GLAZING INFORMATION
GLAZING TYPE
XYZ GLASS COMPANY XXMM CLEAR (IGDB: 9999)

PRODUCT RATINGS INSTALLED OVER BASE WINDOW

RATING	PRIMARY BASELINE WINDOW	WITH SECONDARY WINDOW ADDITION*
U-FACTOR [Btu/hr·ft²·°F]	1.12	**0.63**
SOLAR HEAT GAIN COEFFICIENT (SHGC)	0.72	**0.56**
VISIBLE TRANSMITTANCE (VT)	0.77	**0.61**
AIR LEAKAGE (AL) [cfm/ft²]**	2.0	**1.15**

For more information, visit **AERCEnergyRating.org/Commercial**

This certificate indicates that the product has been rated according to strict standards set forth by the Attachments Energy Rating Council (AERC).

DISCLAIMER: THE ATTACHMENTS ENERGY RATING COUNCIL RATINGS ARE BASED ON CERTAIN ASSUMED CRITERIA INCLUDING ATTACHMENT INSTALLATION OVER A SINGLE PANE CLEAR GLASS ALUMINUM FRAME EXISTING WINDOW. AERC DOES NOT REPRESENT OR GUARANTEE IN ANY RESPECT THAT THE CONSUMER WILL EXPERIENCE ENERGY SAVINGS. SEE WEBSITE FOR ADDITIONAL RATING CRITERIA DETAILS.

*Simulated over a single pane clear glass aluminum frame existing window (AERC 1 Baseline Window D).
**Based on AERC 1.2 physical test method.

AERC CERTIFIED SECONDARY WINDOW SYSTEMS

INDOW Windows	Larson Manufacturing Co.	Quanta Technologies, Inc.
Acoustic Grade Window Insert Standard Grade Window Insert	• 1200E, ComfortSEAL Low-E Interior Single Hung Window • 1500E, ComfortSEAL Low-E Interior Picture Window • 1600E, ComfortSEAL Low-E Interior Slider Window • 1900C, Commercial Insider Interior Glazing Panel (low-e glass)	Interior Panels: • QUANTAPANEL 602-PW IGS • QUANTAPANEL 605-DH IGS Exterior Panels: • QUANTAPANEL 703-FP IGS • QUANTAPANEL 704-DH IGS
Indow Windows' inserts are used by commercial customers to block drafts completely and reduce noise. The secondary windows leads to a reduction in heating and cooling bills.	Larson Manufacturing's certified low-e storm windows are used as an additional layer of glass on the interior of existing windows to provide more comfortable spaces for occupants. The secondary glazing systems not only provide thermal benefits, but the added layer dampens outside noise.	QUANTAPANEL Insulating Glass Systems (IGS) are used in single-family homes, commercial, and multifamily buildings. These products are suitable for buildings in which the owner seeks to retain the original windows for architectural or historic purposes but also wants performance in terms of energy efficiency, noise reduction and occupant comfort.

CERTIFIED PRODUCTS IN ACTION

Larson Manufacturing Co.: Secondary Windows Reduce Outside Noise in a Marriott Hotel

Larson's secondary window solution fit the existing windows seamlessly, reduced noise and increased energy efficiency without affecting the guests' views.

The Marriott Hotel near the Seattle-Tacoma airport needed a way to reduce outside noise from entering guest rooms through the window glazing, to improve energy efficiency, and to prevent guests from operating the primary windows. Practical and cost concerns made replacing the entire windows undesirable, so the lead contractor worked with Larson Manufacturing to add a system of 450 interior glazing panels to the existing windows. Adding to the challenge, the hotel featured a variety of window conditions, with some openings having two vertical mullions while others had only one. For this project, the construction team used Commercial Insider from Larson with 3/16 tempered glass, blocking noise and saving energy without affecting guests' views. As a result of this project, and similar projects undertaken by Larson, the company made the decision to summit products for AERC certification resulting in their successful certification.

Indow Windows: Window Inserts Save County Money while Assisting the Homeless Population

When converting an office building with fixed windows into a homeless shelter, local officials in Arlington County, VA., selected commercial secondary windows for a variety of reasons. First, adding secondary windows saved cost compared with fully replacing the windows, which would have consumed than $1 million from tight budgets and required unsightly exterior scaffolding. For reduced cost, the county instead installed 304 Standard Grade Window Inserts from Indow, replacing a potentially dangerous makeshift solution of plastic sheeting and expensive space heaters. The 50-year-old single-pane windows perform like new double-pane windows. The graph illustrates the impressive results.

QUANTA Technologies Inc.: Historic Windows Meet Efficiency Requirement with Secondary Windows

Exterior QUANTAPANELS upgrade the energy efficiency of the Phoenixville Public Library's historic windows while protecting the exterior of the restored window unit.

Carnevale Eustis Architects employed customized secondary windows for updates to historic and expanded buildings in Phoenixville, PA. The first, a renovation of the original 1901 Carnegie Library, modernized the building's interior functions to meet the needs of current users while preserving the original aesthetic. A second project that expanded the Colonial Theatre in downtown Phoenixville repurposed the former 1924 National Bank building into two new theaters and a lobby. To upgrade the large steel windows, the construction team applied interior and exterior panels to windows throughout the building. Existing second-floor windows became a feature element of the new lobby mezzanine. The team was also able to preserve exterior window profiles and shadow lines to maintain an important feature of the exterior façade. Working with QUANTA, the team enhanced energy efficiency by specifying custom-color interior 602-PW IGS QUANTAPANELS and 702PW exterior secondary windows. The project results lead QUANTA to pursue and receive AERC certification.