The Blog

Most Innovative Energy Efficient Window Technology Unveiled

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Pythagoras Solar SunGuard Windows

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The most innovative, energy-saving window technology was recently unveiled at the American Institute of Architects (AIA) Convention in Washington, DC. We've covered smart facades and other energy-saving window technologies, but these are the latest and greatest in windows and glazing related products.

High Efficiency Window Frames from Graham Windows

Debuting a new composite material for their high-efficiency window frames, Graham Fiberglass Windows are made from 80% fiberglass and 20% polyurethane resin which is not only thermally stable and extra durable (due in large measure to the higher glass fiber percentage which helps it achieve harder bond coatings), but also very energy efficient. Boasting U-factors as low as 0.15, these high performance windows are constructed with low-e glass to bring even better energy efficiency.

BIPV Photovoltaic Windows from Pythagoras Solar

Instead of applying a thin film PV or crystalline PV cell directly into the glass, the Pythagoras Solar (marketed by Guardian as SunGuard PVUG) technology inserts tiny PV cells as bars that intercept solar energy without compromising transmittance and daylighting. Though the view through the Pythagoras glazing is distorted because of the bars, transmittance is still 49% and visibility is better than other solar-enhanced glazing options. The window design also includes an argon gas fill to

improve the U-factor of the windows (0.28), and the PV system is able to generate 11.15 watts per square foot, with an efficiency of 12%.

Dynamic Glazing from Guardian Soladigm

Soladigm dynamic glass - green house plans

Much like the tintable dynamic glazings we've featured before, this Soladigm technology (marketed as SunGuard EC by Guardian) works by allowing the user to tint the glass on demand in order to reduce glare and minimize solar heat gain. Like other dynamic coatings, the Soladigm coating is most often added to the inner surface of the outer pane of glass (#2 surface), though it can also be combined with low-e coatings on the outer surface of the inner pane of glass (#3 surface). The visible transmittance ranges from 62% without tint to 2% will full tint, and can decrease solar heat gain coefficients from 0.47 to 0.09, with U-factors ranging from 0.29 to 0.24.

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Tags: BIPV, dynamic glazing, low-e coatings, smart facades, tinable windows

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