

## SMART GLAZING FOR ARCHITECTURAL USE

### WHAT IS SMART GLASS?

Smart glass (also known as switchable glass or dynamic glass) is a generic term for any glazing product which has dynamically alterable light transmission properties usually in response to electric voltage, light or heat. For example Smart glazing can quickly change from clear to tinted and can selectively block light, heat or glare independently. Currently there are several competing technologies being employed within this industry.

### WHERE IS SMART GLASS USED?

Smart glass products are used in the following market sectors: mass transportation, automobile, ship building and construction. For example, the Boeing 787 Dreamliner, the ICE 3 high speed trains and the Ferrari M Superamerica production car all use Smart glass in some of their components. Smart glazing is increasingly specified in a number of high-end architectural products including curtain walls, insulated glass units, laminated panels, windows, skylights, and doors. Smart glass has been used for years in 'transition' eyeglass lenses, where prescription lenses darken to sunglasses when outside, then transition back to clear once indoors. It has also been used for years in automobile rear-view mirrors to reduce glare from headlights approaching from the rear.

### WHAT ARE SMART GLASS TECHNOLOGIES?

Smart glass technologies include electrochromatic, photochromatic, thermochromatic, suspended particle, micro-blind and polymer dispersed liquid crystal devices. Generally Smart glass works by incorporating various films, coatings, conductive materials which are sandwiched between outer layers of glass. These laminated materials cause the changes in visible light transmittance (e.g., from transparent to translucent to opaque) in the glass in response to electric voltage or changing light and heat conditions. Most Smart glass products can also reduce ultra-violet light and may employ low-emissivity coatings.

### WHAT ARE THE BENEFITS OF ARCHITECTURAL SMART GLASS?

Smart glass helps to more uniformly regulate heat and glare and makes better use of daylighting. Better control of daylighting can, in turn, reduce the cost of heating and cooling a building by as much as 20%.

Also the elimination of blinds and shades will reduce cleaning and maintenance costs. For example, hospitals see major advantages in the Smart glass because it offers better privacy to patients and can be easily cleaned compared to blinds and shading devices which collect dirt, bugs and pathogens.

### WHAT IS THE APPROXIMATE COST OF SMART GLASS?

Smart glass currently costs double the price of conventional double pane insulated windows, but the technology can recoup the higher cost by reaping operational savings in a building's electrical consumption. According to a study by Lawrence Berkley Labs, prices of Smart windows have the potential to drop substantially in the near future, perhaps as low as \$100 per square ft. Conventional double-paned windows with static coating currently average about \$75 per square ft.

### THE FUTURE OF SMART GLASS

Smart glass will get much smarter in the near future. Building management systems will become fully integrated to include constant control and monitoring of Smart windows and skylights, lighting, water heating and HVAC systems. At the same time, individual control of Smart windows will function like a computer screen with the touch of a button.



### REFERENCES & RESOURCES

Houzz [www.houzz.com/ideabooks/](http://www.houzz.com/ideabooks/)

Glass APPS [www.glass-apps.com/products/smart-glass-windows](http://www.glass-apps.com/products/smart-glass-windows)

Suntuitive [www.discover.suntuitive.com](http://www.discover.suntuitive.com)