

## Switchable Projection Window

Switchable Projection Window™ is a newly invented product to the market and represents the latest technology in home theater design. It can virtually turn any window into TV screen while remaining a full function of a normal window. Switchable Projection Window (SPW) mainly consists with two parts, that is, 3G Switchable Glass and outdoor rotary blinds. 3G Switchable Glass is made of liquid crystal display (LCD) and can be switched from opaque to clear by flick of a switch. In its opaque state, 3G Switchable Glass can be perfectly used as a projection screen. Outdoor rotary blinds function as a light shutter. Switchable Projection Window has multi functions including normal window function like open, close and see-through, switching privacy function from clear to opaque, projection screen function showing high quality of images for HD TV, movie or presentation and dry-erase whiteboard function. It also can be easily converted into a touch screen. SPW has four basic states and functions as shown in pictures on right and a table on next page.

Switchable Projection Window is very useful for many applications. For example, it can be used in home theater. A room may receive sunlight through SPW when used for an activity not requiring darkness. Thus, the room may be multi-purpose, serving as a family room, game room, study room or office. When darkness is required for an activity such as movie watching, SPW may be used as a projection screen. Thus, SPW increases the utility, efficacy, energy-efficiency, and versatility of the home, resulting a great saving in overall home cost. This application changes liquid crystal switchable glass from a luxury product to a necessary home building materials. It is first time for a window to have 12 functions, or open, close, see-through, adjustable opacity, privacy & energy saving, movie, TV, presentation, both side viewable, dry-erase whiteboard, tough screen and holographic projection. In general, any transition of a product closing to people is a very important leap for its industry, market and consumers, like main frame computer to personal computer and table phone to cellular phone. This application is strongly supported by several advantages in technology, cost and feasibility. [Click here for video.](#)

First, quality of projected image is better than other existing technologies such as LCD TV or plasma TV, because projected images have more gray scales or colors. Due to less colors, images on LCD TV are “too sharp” or “hard and flat” still having feeling of cartoon pictures. Since projection is capable to deliver much more information with much more gray scales for digital graphic images, the images of people and scene are rich with gradation of colors and look softer and closer to real world situations. A digital projection can deliver much more (up to billions) colors than what directly displayed with LCD TV. This is why projection presents the highest quality for color images.



Projection State



Opaque State



Clear State



Open State

No.	3G Switchable Glass		Outdoor Rotary Blinds	Function and Result
	Physical State	Optical State	Physical State	
1 Projection	Close	Opaque	Close	When outside light is blocked by outdoor rotary blinds and 3G Switchable Glass is in opaque status, high quality projected images, such as TV, movie or presentation, can be shown on the 3G Switchable Glass.
2 Opaque	Close	Opaque	Open	When outdoor rotary blinds are open and 3G Switchable Glass is in opaque state, 3G Switchable Glass can function as a light diffuser and window film to bring soft light into room and save energy by rejecting heat/infrared. This window can be also used as dry-erase whiteboard.
3 Clear	Close	Clear	Open	When outdoor rotary blinds are open and 3G Switchable Glass is in transparent status, 3G Switchable Glass functions as a traditional closed window, allowing a viewer to see through from either side of the window and allowing outdoor light to pass through.
4 Open	Open	Any	Open	When both 3G Switchable Glass and outdoor rotary blinds are open, both light and air can pass through, like an opened normal window.

Second, this application has advantage in cost. As we know, projection TV usually is less expensive than LCD TV especially for large sizes. When sizes are over 70", prices of LCD TV jump very high. The price of 100" LCD TV is even too high to be a consumer product. On the other hand, Switchable Projection Windows not only have lower prices in comparing with same sizes of LCD TV, its application position can be helpful in reducing the cost. Since a Switchable Projection Window is placed at a window position in a house and cost of a wall is more expensive than a regular window, using SPW may reduce area of wall. With compensation of the wall cost, adding a Switchable Projection Window to a new house could be a little or no additional cost. Architects and home builders are so welcome to such luxury and advanced product because it not only represents the latest innovation in home theater, but also brings a net benefit to homes and promotes sales. This benefit will eventually transfer to home owners who are real force to enhance the demand and then complete a positive loop in house market.

Third, SPW has the best feasibility among all available technologies and products in the market so far. Besides unavailability and very high prices of large sizes of LCD TV or plasma TV, SPW is best fit on home theater, because it has a wide range of application temperature from -30 °C to 80 °C (-22 °F to 176 °F), great UV stability and water resistance. Since SPW is made of 3G Switchable Film™ which utilizes non-linear optical system, it has the highest level in uniformity of brightness and true colors. Since it also has an absolutely wide viewing angle (360°), the images can be viewed from both sides of the screen. For example, if a SPW is facing to a swimming pool or backyard, people may also enjoy watching a movie in their swimming pool or backyard. If a SPW is placed between bedroom and family room, it is good for see-through at day time and good for privacy at opaque. Two rooms may share one TV/window and people can watch TV from both sides. A good thing is that people may choose any size of TV to watch if smaller than the window size. Actually entire wall between main bed room and main bathroom can be built with 3G Switchable Glass for a great view at day time and it can be turned to opaque for privacy when needed. 3G Switchable Film can be directly installed on existing windows to have a function of window shades in flick of a switch and reject 70% heat. Its cost is same as motorized window shades, and the opacity can be gradually controlled in different levels.

This application will not be limited in home use. It virtually can turn any window into an TV screen and is especially useful in offices and public areas. When used in offices, any existing window in a company can be converted into a Media Window™ for presentation, dry-erase whiteboard or privacy, or for TV and movie watching, while remaining full window functions of open close, and see-through. It is even more powerful when used for advertising in public areas like stores, malls and airports. Entire building can be covered and used as advertising billboard without blocking any window. In the market, consumers usually admire a product having one of advantages in leading technology, low cost or best feasibility. Now Switchable Projection Window has all of these advantages. For more information, please visit [www.scienstry.us](http://www.scienstry.us)