

ControLite® - Intelligent Dynamic Daylighting System

Intelligent Glazing Panel with Self-Adjusting Light Transmission Properties

- ❑ Maintains Perfect Balance Between Light Transmission and Thermal Performance
- ❑ Provides Dramatic Reduction of Light Pollution at Night
- ❑ Fosters Comforting, Livable and Productive Environment All Year Long
- ❑ Provides Major Savings on Energy-Related Expenses



ControLite® self-adjusted
to 6% light transmission



ControLite® self-adjusted
to 60% light transmission

Above:

ControLite® glazing panels self-adjust light transmission properties from maximum to minimum light levels to suit user preference.

ControLite® takes daylighting design to a new level. This patented innovation is a **cost-effective**, fully automatic, glazing panel with built-in intelligent light controllers and an embedded program that senses the daylight outside and manages the level of light and solar heat gain inside.

This convenient system enables users to **control natural daylight and comfort levels** in any space all day long, and all year long, simply by setting desired light levels. The ControLite® glazing panel maintains the level of light inside by continuously adjusting its light transmission properties according to the sunlight outside.

ControLite® glazing panels optimize the daylighting system's **shading coefficient** by reducing solar heat gain on hot summer days, and during peak sunlight hours year round; while providing maximum light on cold winter days and when most needed. In addition, ControLite® minimizes glare and direct sunlight at peak

sunlight periods, ensuring comfort for anyone who occupies the space.

By balancing light transmission and thermal performance -- two of the most important architectural parameters of any daylighting design -- ControLite® also **empowers architects with greater design flexibility**, freeing them from limitations on daylighting. Once liberated from the fixed light transmission constraint, the architect has so many more daylighting options to design a large glazed area, maximizing light without the burden of unmanaged heat gain.

ControLite® is a unique system, one of a kind in the daylighting industry. This is not simply a set of add-on blinds or a shading device -- it is a cost-effective daylighting system of intelligent glazing panels that guarantee a **wide range of light levels** and intelligently adjust the system continuously based on user preference and current daylight conditions.

THE HEART OF THE SYSTEM - THE CONTROLITE® GLAZING PANELS

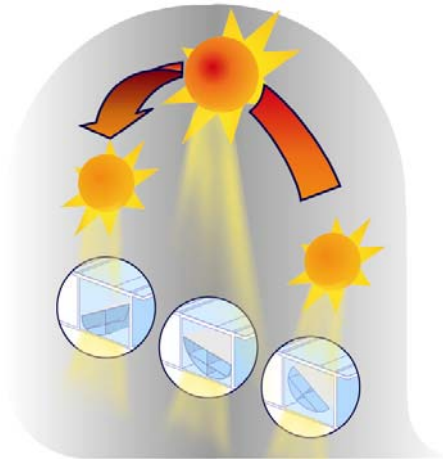


The patented ControlLite® design is comprised of a translucent 30mm (1.2 inch) thick polycarbonate glazing panel with built-in transparent revolving half-cylinders called Rota-blades. Each Rota-blade has an opaque, flat upper face, and the position of the Rota-blade in relation to the sun determines the amount of sunlight and solar heat gain transmitted through the panel.

The complete ControlLite® daylighting system consists of:

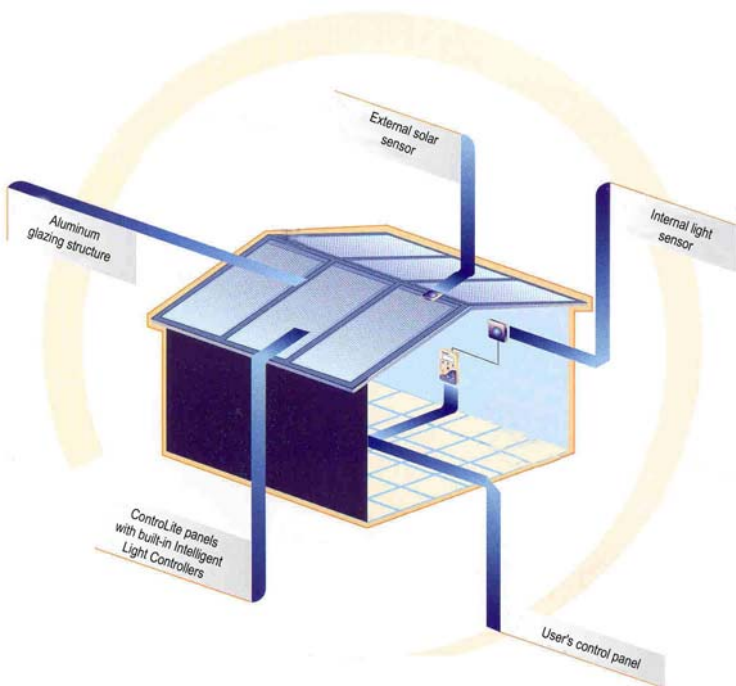
1. ControlLite® glazing panels (1.0 meter (3.28') wide by up to 12 meters (40') long).
2. A complete aluminum skylight/daylight structural system in sloped, ridge, vertical, or custom configurations.
3. Miscellaneous accessories include light sensors, micro-chip processor and user interface control panel.

Each glazing panel contains a built-in intelligent electronic micro-chip, an embedded program, and independent mechanisms designed to meet military specifications. This system enables the Rota-blades to respond to daylighting needs. An external sensor detects the direction of the sunlight outside and an internal sensor registers the level of light under the skylight. The intelligent glazing panel can then adjust its light transmission and shading coefficient properties to provide the appropriate level of light, heat gain and comfort inside the space.



CPI PIONEERS MANAGED DAYLIGHTING WITH THE CONTROLITE® SYSTEM

The ControlLite® daylighting system is available with both manual and automatic operation modes or as a manual system only. In manual mode, the user selects the glazing panel's light transmission property by setting the angle of the Rota-blades, and they stay at the selected position until the user chooses a different angle or switches to automatic mode. In automatic mode, the user selects the desired level of light for the space, and the ControlLite® system maintains that level by continuously adjusting the angle of the Rota-blades and the panel's light transmission properties according to the sun's position and daylight conditions.



The Perfect Balance between Light Transmission and Thermal Performance

ControLite® means no more compromising. You can now use a managed daylighting system to design for peak performance.

Finding the right daylighting solution for your application can be a challenge. In some climates your designs require maximum light in the winter, but that same system would raise solar heat gain to unacceptable levels in the summer. Similarly, some glass daylighting systems may transmit ideal light in the morning, while that same light becomes uncomfortably strong at noon.

ControLite® alleviates the conflict between design and climate control by delivering maximum light when you need it most, and reducing light and solar transmission when you need to minimize heat gain. Since ControLite® provides the power to control daylighting all day long and all year long, you can concentrate on the ideal design for the space rather than a compromised design that has been diluted to meet diverse climate control needs.

The self adjusting light transmission performance of this revolutionary ControLite system relieves you and your designs from the limitations imposed by fixed light transmission levels. ControLite systems strike a perfect balance between light transmission and thermal performance, allowing you to design a large glazed area and maximize natural light transmission without the burden of unmanaged heat gain.

Major Savings on Energy-Related Costs

ControLite® delivers tangible up-front savings on the capital cost of air conditioning equipment by intelligently reducing heat load during peak performance and the system continues saving on energy costs throughout the life of the building.

The trade-off between light transmission and heat gain is a constant battle in architectural designs. While you want to bring as much natural light as possible into your design, you face the difficulty of controlling heat gain during peak sunlight hours or hot summer months. Mitigating the excess solar heat gain generated by a traditional glass skylight requires large initial investments in air conditioning equipment, compounded by the perpetual expense of high energy consumption.

ControLite® enables you to design a more efficient HVAC system because it reduces heat gain during the limited periods that require peak performance, and consequently reduces air conditioning capacity requirements. Instead of purchasing an expensive high-capacity HVAC system to handle the one excessively hot month out of the year, or the one hour out of the day that requires maximum HVAC capacity, you can count on ControLite® to reduce the load.

ControLite® can provide a savings of \$10 per square foot over clear glass skylights on your initial HVAC investment. In addition, you can expect an annual savings of up to 80 cents per square foot due to reduced energy consumption during summer months compared to clear glass skylights. No matter what the application, this level of savings can have a significant impact. *(Figures based on ASHRAE 1997, chapters 27, 28, 29 and refer to marginal expense on AC equipment).*

Engineered to Maximize Comfort

For work, school, shopping or other public places, ControLite® helps make the environment more comfortable for the people who inhabit the space.

It is documented that even at low temperatures; the human body typically has a negative reaction to direct sunlight. Direct sun on the skin causes overheating of the body and a resulting general discomfort, even in an area with low temperatures. For example, under a traditional glass skylight, a person will feel discomfort from the direct sunlight even though the air conditioning has cooled the air properly. Excessive glare through glass skylights can also cause discomfort.

ControLite® maintains an atmosphere of comfort by minimizing the direct sunlight and glare during peak sunlight hours. In a sense, ControLite provides the same comfort offered by a shady tree, umbrella or canopy on a bright summer day, enabling a person to enjoy the vibrancy of natural light without the discomfort of direct sunlight.

While glass skylights sometimes use tinting or other processes to address these issues, the solutions typically offer fixed light transmission to meet average conditions. Glass daylighting does not fully safeguard people during peak sunlight hours, nor can it cannot deliver increased light transmission during low light periods. Despite continuous changes in conditions outside -- such as temperature, rain and clouds, time of day, seasons of the year -- ControLite® fosters a comforting, livable environment at all times.