

# FUTURE

Tomorrow starts today



**FUTUREX | Eclipse™**

## DYNAMIC GLASS TECHNOLOGY

[www.faglass.com](http://www.faglass.com)

FUTURE | GLASS





# ECLIPSE™

## Revolutionary ElectroPolarized Dynamic Glass Technology for Glare & Heat Control

**FutureX** Eclipse™ represents the next generation of electronically controlled switchable glass, delivering unmatched performance in light transmission control and solar heat gain management. With ultra-fast  $\leq 1$  second switching speed and stepless dimming capability, Eclipse™ sets new standards for intelligent building facades and dynamic environmental control.

Transform your building's energy performance while maximizing occupant comfort and wellbeing.

.



## Revolutionary Smart Glass Technology

# Electronically Controlled Switchable Dynamic Facade & Skylight Glass System for Occupant Wellbeing & Intelligent Building Performance

- Stepless Dimming Control
- Superior Energy Performance

**≤1**

Second  
Switching Speed

**12**

Weeks  
Production Time

**91%**

Solar Heat  
Blocking

**6m x 1.5m**

Maximum Unit Size  
Instant Performance

## **Instant** Performance

Eclipse™ glazing achieves instantaneous switching at the blink of an eye so occupants always enjoy the wellbeing of a comfortable environment inside.

# Applications

We Provide Turnkey Solutions with Complete Accountability on Warranty



**Hospitals**



**Religious Institutions**



**Educational Institutes**



**Residence**



**Showrooms**



**Airports**



**Hotels**



**Stadiums**

# Superior Performance Benefits

## Ultra-Fast Switching Performance

- Industry-leading response time  $\leq 1$  second (compared to minutes for competing systems)
- Stepless dimming capability for precise light control
- Dynamic range from ~1% to ~60% visible light transmission
- Instant adaptation to changing environmental conditions

## Exceptional Energy Efficiency

- Reduces overall building energy consumption by up to 25%
- Lowers peak cooling demand by up to 35%
- Blocks up to 91% of solar heat gain in Eclipse mode
- Eliminates need for mechanical shading systems
- Significant HVAC load reduction throughout building lifecycle

## Optimal Daylighting & Comfort

- Maximizes natural daylight while controlling glare
- Maintains unobstructed views of the outdoors
- Eliminates need for blinds, shades, or curtains
- Enhanced occupant productivity and wellbeing
- Superior visual comfort across all lighting conditions

## Architectural Design Freedom

- Maximum unit sizes up to 6m x 1.5m
- Multi-sided polygons, radials, triangles, rectangles
- Clean, uncompromised building aesthetics
- Future-proof facade solutions
- Flexible integration with all building types

# Why FutureX Eclipse™

Revolutionary smart glass technology that transforms buildings into intelligent, energy-efficient environments



## Controls Glare

Significantly reduces glare without impacting your view. Glass panels intelligently control light transmission by varying tint levels to ensure your eyes aren't irritated by bright sunshine. View computer screens without squinting or uncomfortable adjustments.



## Reduces Heating

Smart tinting technology keeps heat out while maintaining great views. Solar Heat Gain Coefficient (SHGC) adjusts with corresponding tinting levels, ensuring ambient temperature stays neutral and occupants remain comfortable.



## Health & Comfort

Daylight is a powerful design element enhancing visual and psychological experience. Creates well-daylighted spaces avoiding glare & solar heat gain. Improves work efficiency, learning speed, and retail sales.



## Utilizes Natural Light

Maximizes natural light - the best form of illumination. Natural light changes the ambience and provides real interior views. Science proves working in natural light is better for human eyes and health



## Productivity Economics

Smart windows have the potential to generate \$352 billion in increased productivity in the US alone, equivalent to 1.7% of total GDP. Eclipse™'s instant response technology maximizes these cognitive and economic benefits through optimal daylight management.



## Cognitive Performance & Circadian Health

Research by University of Illinois and SUNY Upstate Medical University shows workers with smart windows sleep 37 minutes longer and score 42% higher on cognitive tests. Eclipse™ optimizes natural light exposure to support healthy circadian rhythms, enhancing memory, attention, and decision-making abilities while reducing stress and depression.



## Saves electricity

Provides excellent energy efficiency resulting in significant air conditioning cost savings. Allows natural light in, reducing interior lighting requirements. Eliminates need for mechanical shading systems.



## How **FutureX Eclipse™** Works

FutureX Eclipse™ utilizes advanced Eclipse® electropolarized switching layer technology integrated within premium insulating glass units. Our revolutionary system operates through controlled electrical fields that instantly align specialized molecules, providing immediate changes in glass opacity and thermal properties.

### **Eclipse Mode (Tinted State):**

- Visible Light Transmission: ~1%
- Solar Heat Gain Coefficient: ~0.09 to 0.15
- Maximum solar heat rejection and glare control
- Optimal for high-sun conditions and cooling demand reduction

### **Sun Mode (Tinted State):**

- Visible Light Transmission: ~46% to 60%
- Solar Heat Gain Coefficient: ~0.30 to 0.46
- Maximum daylight penetration with thermal efficiency
- Ideal for overcast conditions and winter heating assistance

# Proven Energy Performance

## Measurable Building Benefits:

- 20-25% reduction in overall energy consumption
- Up to 35% decrease in peak cooling loads
- 91% solar heat blocking capability in tinted state
- Eliminates 100% of mechanical shading requirements
- Reduces HVAC equipment sizing by up to 25%

**Real-World Performance:** Independent energy studies demonstrate that buildings with FutureX Eclipse™ achieve superior performance compared to traditional glazing systems with mechanical shades, delivering both immediate energy savings and long-term operational cost reductions.

# Sustainability & Environmental Impact

## Green Building Support:

- ▶ LEED certification contribution across multiple credit categories
- ▶ WELL Building Standard support for occupant health
- ▶ BREEAM and other international green building standards
- ▶ Net-zero energy building enablement
- ▶ Carbon footprint reduction through energy efficiency

## Environmental Benefits:

- ▶ Reduced operational carbon emissions
- ▶ Lower embodied carbon vs. glazing + mechanical shading
- ▶ Elimination of blind/shade manufacturing and replacement
- ▶ Extended building lifecycle through adaptive performance
- ▶ Support for renewable energy system sizing optimization



## Why Choose **FutureX Eclipse™** Over Competition?

### **Performance Advantages:**

- ▶ **10x faster switching** than leading competitors ( $\leq 1$  second vs. 10+ minutes)
- ▶ **Superior energy savings** with up to 35% peak load reduction
- ▶ **Larger unit sizes** available (6m x 1.5m vs. competitors' limitations)
- ▶ **Enhanced durability** with 10-year switching functionality warranty

### **Technology Leadership:**

- ▶ Advanced Eclipse® electropolarized switching layer technology
- ▶ Precision manufacturing with 100% optical inspection
- ▶ Future-ready smart building integration capabilities
- ▶ Proven performance in diverse climate conditions

### **Total Value Proposition:**

- ▶ Lower total cost of ownership vs. glazing + shading systems
- ▶ Immediate energy savings with rapid payback periods
- ▶ Enhanced building marketability and tenant satisfaction
- ▶ Future-proof technology investment protection

# FUTURE | GLAZING



# FutureX Eclipse™

## Glazing Options

### ElectroPolarized Polymer Technology

A thin layer of ElectroPolarized Polymer layer crystals is laminated between 2 glass panels. When voltage is passed, the liquid crystals change orientation and regulate the amount of light and heat passing through.



### Lowers TCO (Total Cost of Ownership)

A hallmark feature of **Eclipse™** is its ability to adjust tinting levels eliminates the need for expensive mechanical shading systems.

There is no need to install an independent system of blinds, have a team of people to clean them or allocate resources for fixing and repairing the blinds over time due to wear and tear.



### Multipurpose Functionality

**Eclipse™** is available with various types of controls, shapes, sizes and a wide range of tints that can either respond automatically to the ambient light & environment or be manually adjusted with a dimmer switch. Every **Eclipse™** pane is connected to a control unit via a cable. A modern interface in the operating device enables automatic and stepless control using light sensors, with a PC or via a bus system in the building technology.

# Technical Specifications

## Performance Characteristics:

**Switching Speed:** ≤1 second (industry-leading response time)

**Control Range:** ~1% to ~60% visible light transmission

**Operating Voltage:** 5 volts DC or less (ultra-low energy consumption)

**Maximum Size:** 6m x 1.5m

**U-value:** 1.2 W/m<sup>2</sup>K (EN 673)

**Impact Resistance:** Class 1(B)1 (EN 12600)

**Service Life:** Comparable to traditional glazing systems

## Glass Configuration Options:

*Standard Skylight Configuration (44.04mm total thickness):*

**Outboard:** 6mm Low E Heat Strengthened + 1.52mm interlayer + 6mm Advanced Solar Control Double Silver High Performance

**Cavity:** 16mm Warm Edge Spacer with 90% Argon fill

**Inboard:** 6mm Low Iron + Eclipse® Switching Layer + 6mm Low Iron (laminated structure)

*Standard Curtainwall Configuration (36.52mm total thickness):*

**Outboard:** 6mm Advanced Solar Control Double Silver High Performance

**Cavity:** 16mm Warm Edge Spacer with 90% Argon fill

**Inboard:** 6mm Low Iron + Eclipse® Switching Layer + 6mm Low Iron (laminated structure)



# Building Occupant Wellbeing

## Enhanced Productivity

- Improved cognitive function through optimized daylighting
- Reduced eye strain from dynamic glare control
- Better sleep patterns from circadian rhythm support
- Lower stress levels with maintained outdoor connections
- Increased workplace satisfaction and retention

## Health & Wellness Benefits:

- Continuous access to natural daylight
  - Unobstructed views promote biophilic design benefits
  - Reduced sick leave and absenteeism
  - Enhanced mood and mental wellbeing
  - Support for WELL Building Standard certification
  - Technical Specifications
- 

# Advanced Control Systems

## Intelligent Automation:

- Predictive algorithms based on weather data and sun position
- Real-time environmental sensors and feedback
- Automated daylight harvesting optimization
- Integration with building management systems (EN 15232)

## Flexible Control Options:

- Fully automated operation based on environmental conditions
- Manual override controls via intuitive wall panels
- Mobile device applications for remote management
- Zone-based control for different building areas
- Individual glass unit control capability

## Smart Building Integration:

- BACnet and major BMS platform compatibility
- Integration with HVAC and lighting systems
- Energy monitoring and reporting capabilities
- IoT connectivity for advanced building analytics

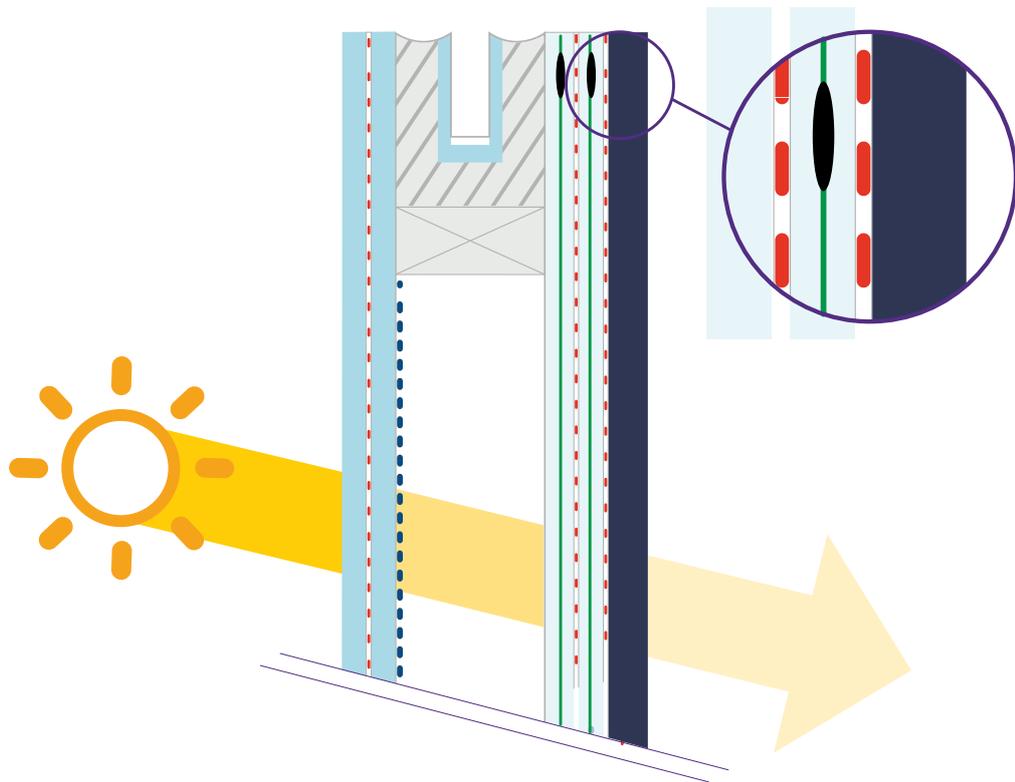
# FUTURE | GLAZING



# FutureX Eclipse™

## ElectroPolarized Polimer Technology

Typical Insulated glass



- |   |  |   |                          |
|---|--|---|--------------------------|
|  | Cover sheet 4-10mm heat strengthened inner glass |  | Outer Laminated Glass    |
|  | PVB interlayer                                   |  | Toggle fixing (optional) |
|  | Eclipse™ ElectroPolarized Layer                  |  | Glue line                |
|  | Cavity gas or air filled                         |  | Low-E coating            |

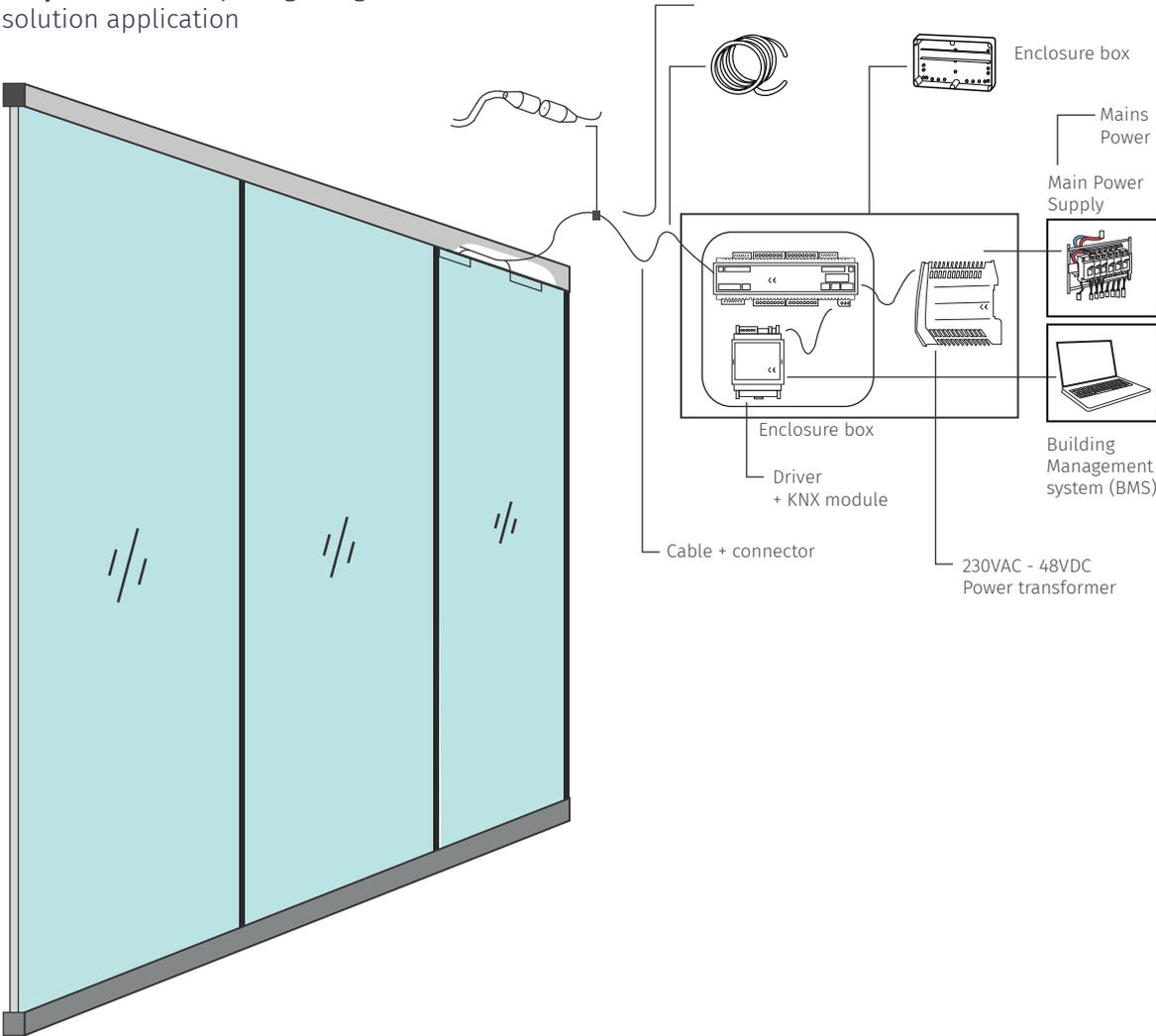
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# Eclipse™ In A Series Connection

The system is designed such that all the electrical connectors, cables and non active areas on edge of the glass are hidden in the frame. Glasses are connected in series connection and then to a driver module which is powered through a transformer. Input is provided manually through a dimmer switch /Casambi device or automatically via a Building management system (BMS). System can be designed to control each panel individually or in groups.

**Eclipse™** in a butt joint glazing solution application



FUTURE | GLAZING





## FutureX Eclipse™ Vs Leading Smart Glass Solutions

Feature	FutureX Eclipse™	Competition (Electrochromic Glass)
Switching Speed	≤1 second	10-20 minutes
Max. Size	6m x 1.5m	3m x 1.5m
Warranty	10-year switching	5-year switching
Shapes	Irregular shapes Possible	Limited to 5 sided shapes with no acute angle shapes
Curves	Possible	Not Possible

# Who We Are

Future Architectural Glass, LLC (Future Glass) is a joint venture between a multinational and diversified Singapore corporation and a leading Indian glass conglomerate. The company has established itself as UAE's premium glass processor having the entire gamut of European machinery and systems to process any type of interior and exterior glass.

Since 1976, the group has been serving the needs of architectural glass market by providing latest products suiting the dynamic needs of architects/consultant. We started operations as a glass trading and distribution firm and ever since have expanded our products and services to include safety glass manufacturing and providing specialty glass solutions.

In the last four decades, we have diversified into several products lines encompassing exciting exteriors glazing products, comfortable interior

glazing, specialty design applications and high performance green building product solutions.

Our specialized products development unit, is dedicated to understand the changing needs of the architectural glass market and introduce innovative glass and glazing solutions for enhanced comfort, safety and performance. Spread over more than 30 countries worldwide, our strong client base is an indicator of our global reach and the trust we share with our customers.

Our ever-expanding presence with offices in UAE, India and Singapore helps us serve the varied needs of client promptly and efficiently. With multiple manufacturing bases in UAE and India, we are able to optimize resources and utilize the location advantage to the benefits of our global clientele.



# Key Indicators



5

Million panels delivered worldwide

2

Manufacturing base – UAE and India

3

Regional headquarters – UAE, India, Singapore

4+

Decades Group's experience in Glass

35+

Countries exports worldwide

1000

Employees group strength

500,000

Sq.ft. area of Factory space

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# FUTURE



## Other Creation Products:

### VIVIDVIEW

Mesh in-filled glass

### SOLERA

Imagery in laminated glass

### SPECTROVIEW

Colour laminated glass

### VISIONCONTROL

Expressions In Glass

### SWITCHVIEW

Smart privacy glass

### DIGIVIEW

Digitally Painted glass

### TIMBERVIEW

Wood embedded in glass

### SOLARVIEW

Photovoltaic glass

### ONYXVIEW

Onyx laminated glass

### CHROMVIEW

Laminated units with interlayers

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