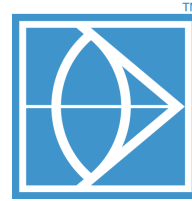




Exterior view of Greenstone Government of Canada building, Yellowknife, NWT

VISIONWALL®

project profile



Greenstone Government of Canada Building

VISIONWALL® has developed a Building Integrated Photovoltaic (BIPV) curtain wall system in partnership with Technology Early Action Measures (TEAM), a technology investment program established under the Government of Canada's Climate Change Action Plan. The first project to use Visionwall's BIPV curtain wall is the 7,000 square metre, four storey, Government of Canada office building in Yellowknife, NWT, Canada.

The VISIONWALL® BIPV system allows the integration of photovoltaic (PV) technology into the building envelope. Photovoltaic laminate (solar cells laminated between two glass panes) can be used as the exterior glass lite in the VISIONWALL® glass units or as spandrel glass. The system is fully unitized with the glass units being pre-glazed into curtain wall panels under controlled conditions in Visionwall's factory. The wires and other required electrical components of the BIPV system are hidden within the curtain wall framing. The electrical components are accessible from the interior of the building for maintenance.

The south elevation of the Yellowknife project has approximately 810 square metres of VISIONWALL® 4-Element energy efficient curtain wall. The curtain wall is segmented into four frame wide groups and spans four storeys in an atrium area of the building. Approximately 300 m² of the south curtain wall incorporate photovoltaic modules. The PV modules produce DC electric current and are interconnected into 16 independent groups to increase voltage. Power not used by the building is delivered to the electric utility grid system.

The PV modules have been positioned within the curtain wall layout to provide shading to the interior atrium space. This eliminated the need to provide shading devices that would have been otherwise necessary to reduce solar loading in the interior space.

The VISIONWALL® BIPV system is expected to deliver approximately 35,000 kilowatt hours of electric power annually, about 5% of the building's electrical demand.

The combination of the extremely high insulating values of the VISIONWALL® 4-Element curtain wall, together with the BIPV system make this one of the most energy efficient curtain walls in the world. This has contributed significantly to the project's design intent of being a highly sustainable, energy efficient, and occupant friendly structure.

Location

Yellowknife, Northwest Territory

Owner

Government of Canada

Architect

Manasc Isaac Architects Ltd.

General Contractor

PCL Constructors Northern Inc.

Installer

Diamond Glass Ltd. Buildings

LEED®

Gold

Product Information

Series 404 VISIONWALL®
4-Element exterior glazed,
capped curtain Wall

Exterior Lites

1/2" Clear Low-E Building
Integrated Photo Voltaic laminate

Film1

Biaxially suspended optically clear

Film2

Biaxially suspended double sided
Low-E optically clear

Interior Lites

1/4" Clear Low-E

Shading Coefficient (SC)

0.35

Sound Transmission Class (STC)

40

Overall System U-Value

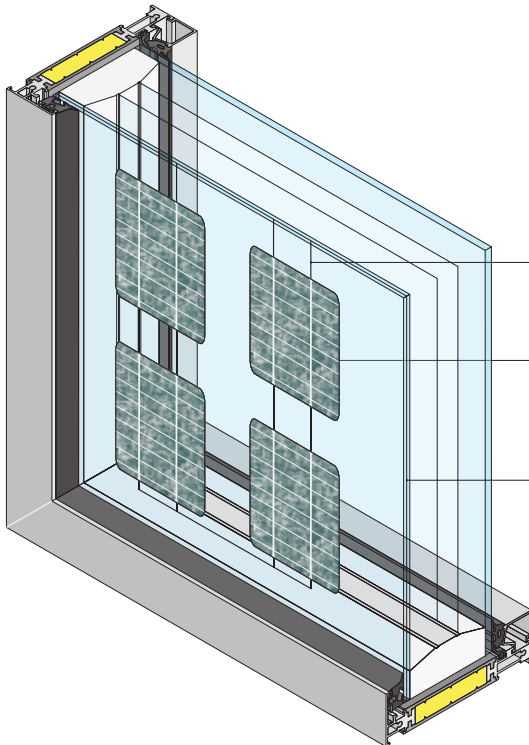
0.14 (Btu/hr/sf/°F), R=7.1



Interior view of south facing VISIONWALL® BIPV curtain wall system

BIPV and the VISIONWALL® glass unit advantage

Only 10-15% of solar energy is converted into electrical energy by the PV cells. The excess solar energy increases the temperature of the PV cells which results in a chronic problem for conventional insulating glass (IG) units that integrate PV cells. The extra heat causes an expansion of the entrapped air within the IG unit which causes the edge seal to fail prematurely. VISIONWALL® glass units are manufactured with a patented pressure equalization system that prevents this problem.



BIPV and VISIONWALL®

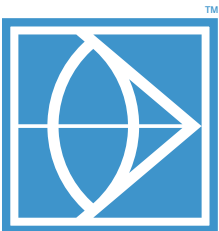
Curtain wall systems provide a natural opportunity for large areas of PV coverage. There are significant cost efficiencies by incorporating PV modules within a curtain wall system compared to constructing a separate structure to hold a PV array. The deregulation of power generation in many jurisdictions allow the electricity generated by PV modules, if not used by the building, to be resold to the electric utility grid system.

Good building design should first gain the significant benefits of incorporating an energy efficient VISIONWALL® high performance curtain wall. Only then should consideration be given to BIPV. With the generous grants offered in many jurisdictions and as energy costs continue to increase, more building designers and owners will recognize that a VISIONWALL® BIPV curtain wall system can make sense for their buildings.

Electrical connections

Photovoltaic Cell

Photovoltaic Cells are laminated between two panes of glass



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Your Visionwall contact is :

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