



Airports & Transportation Infrastructure

Building-Integrated Photovoltaics
(BIPV) Brochure



Why Use BIPVs in Airport & Transportation Infrastructure?

Airports and transportation infrastructure require high-performance façades that support safety, resilience, sustainability, and long-term value. From glare control and acoustics to stringent fire and wind certifications, the building envelope must perform uninterruptedly under demanding operational conditions. Mitrex Building-Integrated Photovoltaics (BIPV) transform airport facades, curtainwall, canopies, and parking structures into maintenance-free, energy-generating architectural systems—without compromising safety or aviation standards.



Energy-Generating Facade

Airports consume massive amounts of electricity, making Mitrex BIPV's on-site clean energy generation a major strategic advantage while maintaining architectural integrity.



Sustainability, Operating Expenses & Lifecycle Value

Airport infrastructure values credible sustainability efforts, lowered operating expenses, and long-term value retention while meeting global certification frameworks.



Glare Control & Specifications

Airport architecture is supported in meeting strict optical performance requirements (less than 5% gloss at 85°) to ensure safe aircraft operations and protect air traffic control (ATC) sightlines with BIPV.



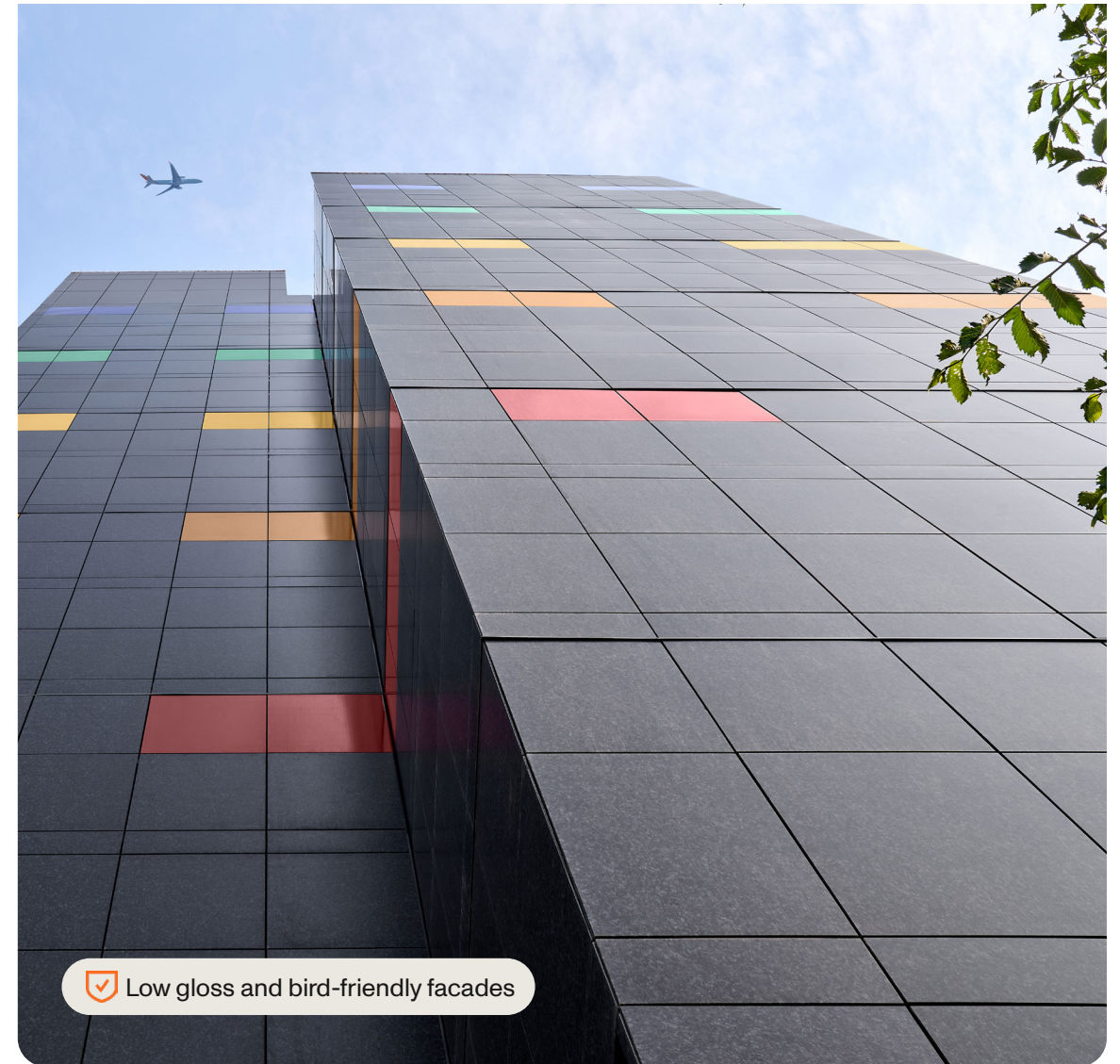
Design Assist, Custom Geometry & Landmark Architecture

Airports often function as architectural landmarks—requiring complex geometries, signature façades, and strict technical support, which is supported with Mitrex BIPV systems.



Fire, Safety & Extreme-Condition Certification

Mitrex BIPV systems meet rigorous solar, fire, and structural standards, ensuring long-term safety, durability, and reliable performance.



Why Use BIPVs in Airports & Transportation Infrastructure?



Energy-Generating Facade

Airports are among the most energy-intensive infrastructure assets, operating 24/7 with high electrical loads. Mitrex BIPV systems transform unused vertical and horizontal surfaces—terminal façades, curtainwall, control towers, parking facilities, bridges, walkways, and airside structures—into a continuous renewable-energy generator. On-site clean energy generation is a strategic opportunity for airport authorities seeking long-term operational savings and resiliency.

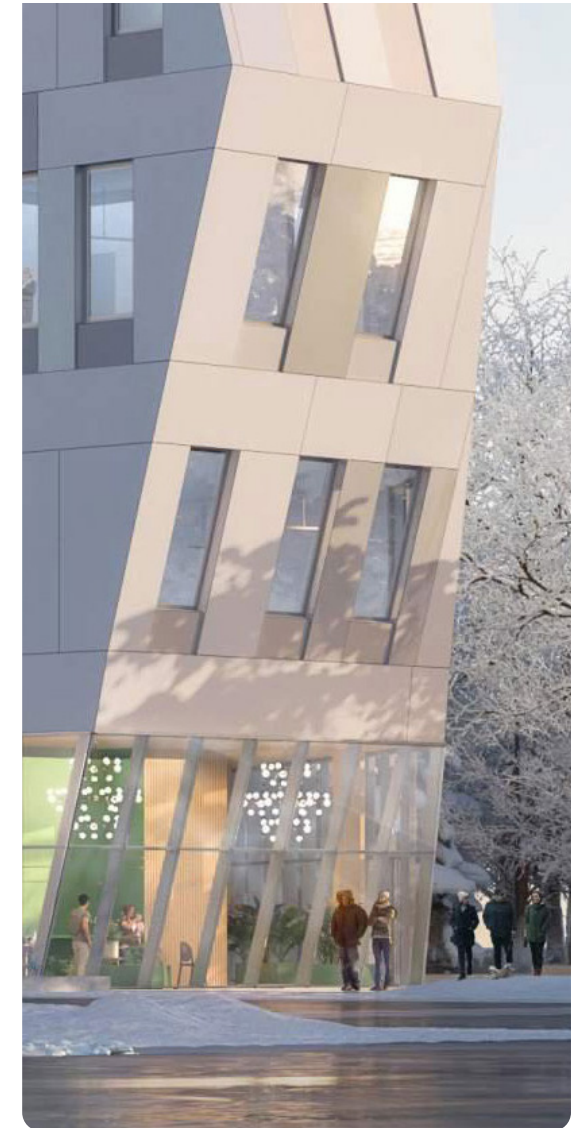
- BIPVs generate on-site renewable energy from façade-integrated solar systems, reducing electrical demand.
- Supports airport decarbonization strategies and net-zero commitments.
- Facade materials have low embodied carbon, supported by full Life Cycle Assessments and Environmental Product Declarations (EPDs).
- Supports LEED, BREEAM and institutional ESG frameworks.



Sustainability, Operating Expenses & Lifecycle Value

Mitrex BIPV supports sustainability goals by combining low-embodied-carbon materials with on-site renewable energy production, helping airports meet LEED, BREEAM, and ESG commitments. BIPV also offers strong lifecycle performance through energy payback, reduced operational expenses, and maintenance-free façade surfaces that lower cleaning and replacement costs over the asset's lifespan. ROI modelling incorporates solar yield, initial investment, and long-term operating savings—allowing airport authorities to plan with confidence. Overall, BIPV enables airports to lower carbon impact, meet certification targets, and maintain long-term asset resilience while improving total lifecycle value.

- Helps airports meet carbon-reduction and net-zero initiatives.
- 60–70 year asset durability to match major infrastructure lifecycle expectations.
- ROI modelling includes solar yield, payback, operational savings, and service life cost.
- Maintenance-free surfaces reduce cleaning requirements and equipment access costs.
- Lifetime product and performance warranty.
- Optional extended warranty, monitoring tools, and long-term service contracts ensure predictable financial planning.





Glare Control & Specifications

Airport architecture must meet strict optical and reflectivity requirements to ensure safe aircraft operations and unobstructed visibility for pilots and air traffic control (ATC). Mitrex BIPV surfaces are engineered with low-reflective and low-gloss finishes that significantly reduce glare and prevent interference with flight paths, taxiing zones, and ATC tower sightlines. Acoustic performance, bird-safe options, and controlled optical behavior further support the specialized environmental and safety demands of modern airports.

- Low-reflective and optically controlled BIPV surfaces prevent glare interference.
- FAA-compatible glare analysis data can be provided.
- Low reflectance: as low as 7% (ASTM E903)
- Low gloss: less than 5% at 85° (ASTM D523)
- Acoustic performance supports reduced noise transmission for terminal comfort.
- Bird-safe design options help reduce strike risk.



Design Assist, Custom Geometry & Landmark Architecture

Airports often serve as iconic gateways to a region, requiring visually distinctive façades and complex geometries that balance aesthetics with high technical performance. Mitrex provides full design-assist support, helping architects and airport authorities integrate BIPV into tilted surfaces, curved or faceted façades, shading fins, corners, and large-scale terminal features. Our team collaborates from early concept through final detailing to ensure structural compatibility, aviation-safe reflectivity levels, and seamless integration across curtainwall, cladding, canopies, and parking structures.

- Full design-assist services for conceptual development through construction.
- Expertise in tilted façades, angled geometries, corners, shading fins, and non-standard mounting solutions.
- Daylight-controlling solar glass for curtainwall and skylight applications.
- BIPV integration for terminals, connectors, transit hubs, control towers, and parking garages.



Fire, Safety, & Extreme-Condition Certifications

Safety, compliance, and performance are central to airport design. Mitrex BIPV systems are tested and certified to meet or exceed international standards for solar performance, fire safety, wind resistance, and environmental durability. These certifications ensure that educational facilities can achieve long-term safety and risk mitigation while adopting advanced sustainable technologies.

- Must meet solar certifications including UL 61730, UL 61215.
- Systems must meet/exceed fire-rating standards (NFPA 285, EN 13501 A2-s1,d0 fire classification, CAN/ULC).
- Systems must tolerate high wind loads, temperature swings, humidity, and sea-air salt corrosion such as ASTM E1996 for impact resistance, and ASTM E330 for wind load performance.



Inspirational Projects



ARCHITECT:
Diamond Schmitt Architects/MVRDV
DEVELOPER:
University of Toronto

● SAMIH Scarborough Academy of Medicine and Integrated Health

● Project Challenge

- The University of Toronto Scarborough required high renewable energy targets, prompting a shift from standard rooftop solar to integrated BIPV solutions.
- Reducing rooftop solar increased reliance on the vertical façade, demanding precise panel orientation and material selection for maximum output.
- The design evolved into a detailed mosaic of multiple panel sizes and colors, balancing aesthetics and energy performance.
- Integration of BIPV within union labor standards and a rainscreen system required coordination to ensure quality, efficiency, and compliance.

● Mitrex Solution

- Full BIPV integration replaced metal cladding, delivering 632 kW of solar capacity and meeting the 20% renewable energy target.
- Mitrex worked with MVRDV and Diamond Schmitt Architects to refine the facade's complex mosaic layout, ensuring cost-effective and efficient implementation.
- Customized darker shades improved solar output while maintaining the architect's aesthetic vision.
- Partnering with EllisDon, Mitrex ensured structural integrity, durability, and compliance with union standards through a high-quality rainscreen system.



ARCHITECT:
Silverstone
DEVELOPER:
Binghatti Developers, Mercedes-Benz

● Binghatti Mercedes-Benz Residences

● Project Challenge

- Create an iconic, electrified building aligned with Mercedes' EQS electric vehicle brand.
- Required fire-rated solar solutions (CAN/ULC S135, NFPA 285) compliant with high-rise regulations. All while maintaining the Mercedes branding and image in the building design.
- Integration of LED lighting into the EQS logo on the BIPV façade to match their branding.

● Mitrex Solution

- Mitrex worked with the architect, Mercedes marketing team, and GC to develop a BIPV-integrated cladding envelope system incorporating LED lighting and their brand colors.
- Dynamic light panel integration was engineered to allow even light diffusion through BIPV panels.
- Provided full support: initial design, connection details, local rep for installation.
- After initial design, we arranged factory tours, performance mock-ups, and fire testing to meet project requirements.
- We also modified our fire test reports to comply with product modifications for the project.

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- Learn More

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Mitrex and Cladify Projects

