

Mitrex Case Study

Chinook Hospital in Alberta

Mitrex eFacade (BIPV Facade)



Project Overview

The Chinook Hospital in Alberta project underwent a transformative retrofit to address its aging facade while improving sustainability and energy efficiency. Alberta Health Services, the hospital owner, worked closely with Reimagine Architects, who led the project from the design phase to implementation. The focus was on replacing a failing south-facing facade spanning approximately 7,000 square feet. Rather than simply swapping out the glass, the architects opted to incorporate Mitrex Building-Integrated Photovoltaics (BIPV) to turn the facade into a renewable energy source. This innovative solution not only met sustainability goals but also added long-term value by reducing maintenance and enhancing the building's aesthetic appeal. The resulting installation includes a 58 kW system, producing clean energy equivalent to the annual output of rooftop installations on 10 residential homes.

PRODUCT USE:
eFacade PRO Custom (BIPV Facade)

PROJECT LOCATION:
Alberta, Canada

ARCHITECT:
Reimagine Architects

OWNER / DEVELOPER:
Alberta Health Services

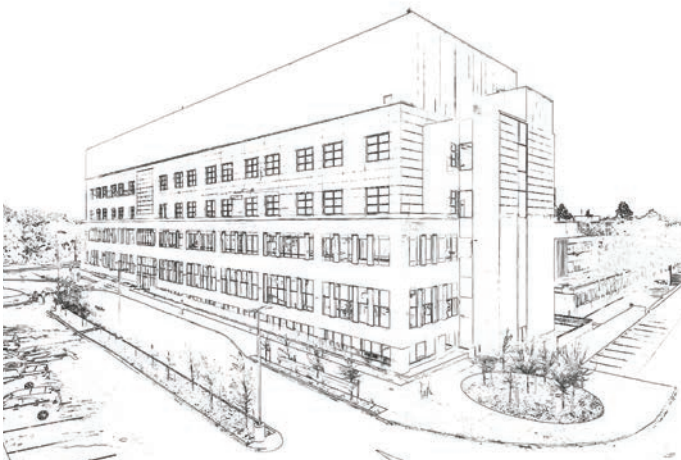
GENERAL CONTRACTOR:
Pronghorn Controls

BUILDING TYPE:
Hospital, Medical

PROJECT SIZE:
9,000 SQFT

POWER OUTCOME:
Facade Power: ⚡ 58kW

COMPLETION DATE:
2025



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Project Challenges

- **Aging Facade:** The existing facade was failing and required complete replacement. Conventional options like glass fiber reinforced concrete (GFRC) would have addressed structural concerns, which is what was originally intended for the facade. However, these materials didn't align with the Alberta Health Services and Reimagine Architects sustainability goals. →
- **Budget Constraints:** The solution had to be cost-competitive with traditional materials. When Alberta Health Services and Reimagine Architects pivoted to BIPV, the cost had to be aligned with the budget. This meant balancing the upfront costs of BIPV with long-term energy savings and maintenance advantages. The upfront costs, revenue from energy generation, and ROI were examined to determine if the BIPV facade was a good solution. →
- **Custom Aesthetics & Energy Generation:** Reimagine Architects had a specific color in mind to complement the hospital's overall design. They requested a unique shade that required Mitrex to engage in a custom development process. By working closely with the architects, Mitrex was able to not only meet the aesthetic vision but also maintain optimal solar efficiency. →
- **Implementation & Logistical Coordination:** As a retrofit project, the installation involved collaboration with multiple stakeholders, including installers and electrical contractors. Factors such as mechanical attachment, electrical integration, maintenance, and warranties had to be considered to ensure the installation would be within budget and the facade would be long-lasting. The bid-to-tender process culminated in awarding Pronghorn Controls the installation contract. →

Mitrex Project Solutions

- **BIPV Integration:** Mitrex provided a BIPV panel system to replace the GFRC that was originally intended for the facade redesign. The BIPV system featured custom colours, with a tailored system to the hospital's south facade. The panels combined energy generation with a striking color developed in collaboration with the Reimagine Architects. This allowed the Alberta Health Services to reach their sustainability goal, without compromising on the design or functionality of the facade.
- **Cost-Competitive Material:** The Mitrex solution was comparable in cost to traditional materials including GFRC, while offering an infinite ROI through energy production. The BIPV facade also reduces ongoing maintenance costs throughout the lifetime of the new facade and has a lifetime material and performance warranty.
- **Seamless Aesthetics:** The custom-colored BIPV panels provided a unified and appealing facade, as the colour was developed to match the rest of the facade colour. Working closely with Reimagine Architects, Mitrex was able to develop a custom colour which results in a striking visual impact that enhances the building's overall presence.
- **Seamless Retrofit Process:** As a supply-only project, Mitrex worked with Reimagine Architects and the awarded installer, Pronghorn Controls, to ensure a straightforward retrofit. By integrating the panels into a standard rainscreen system, the installation remained efficient and minimized disruptions.

Key Takeaway: Key Takeaway: The Chinook Hospital retrofit exemplifies how integrating Mitrex BIPV can transform an aging facade into an energy-generating asset. By providing custom-colored panels with limited maintenance and a lifetime warranty, the facade meets both aesthetic and performance criteria. Mitrex helped the hospital achieve its sustainability goals without compromising design or budget. The result is a visually cohesive and sustainable solution that sets a new benchmark for building retrofits.



Facade Design Process

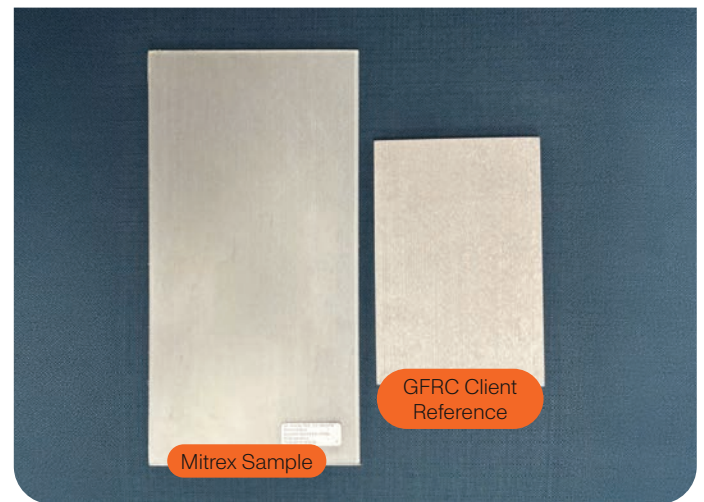


2. Incorporating BIPV

Knowing the sustainability goals of the owner, the architect for the project, Reimagine Architects, approached Mitrex to incorporate BIPV into the facade design. This opened up the possibility of combining energy generation with aesthetic improvements. Mitrex worked with Reimagine Architects, Alberta Health Services, and Pronghorn Controls to design a system that worked for the facade retrofit while offering energy generation and functional improvements.

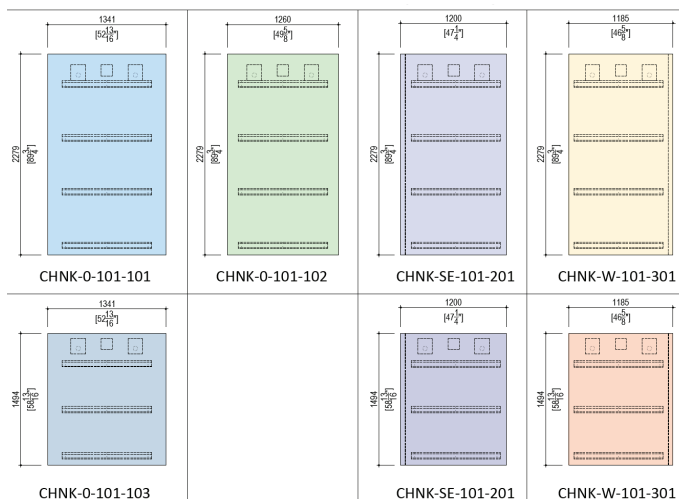
1. Original Design

Chinook Hospital in Alberta originally had a failing facade slated for replacement with Glass Fiber Reinforced Concrete (GFRC). This conventional approach would have addressed the structural issues with a lightweight, and design-flexible system. However, this material does not offer sustainability benefits, which was a goal for the building owner Alberta Health Services as well as lowering operational cost.



3. Optimizing the Facade

Mitrex conducted a thorough analysis to match the architect's design requirements. Reimagine Architects first asked to match to a GFRC sample of a light grey colour, and had a minimum power expectation of 12W/SQFT for the colour. Mitrex worked hard to maximize the power output while matching the colour. This effort resulted in an optimization of 25% of added power for the final colour selected. The sizes of the panels are custom large-format, with the largest spanning 47 × 90 in (1,184 × 2,280 mm). In addition, Mitrex did a full budgetary assessment, energy analysis and modelling, and sample color analyses to ensure both performance and cost-effectiveness.



Facade Design Process



4. Final Design

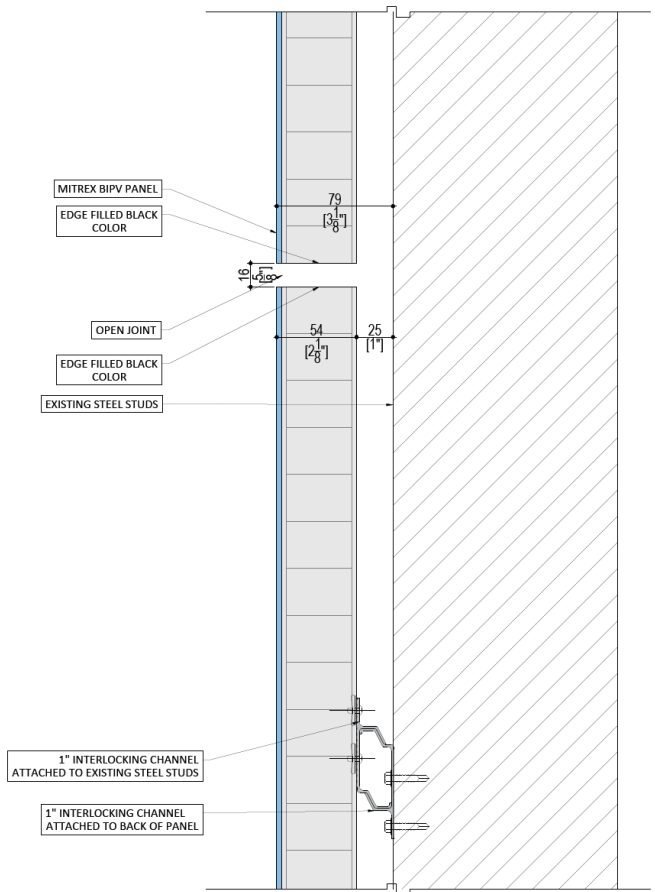
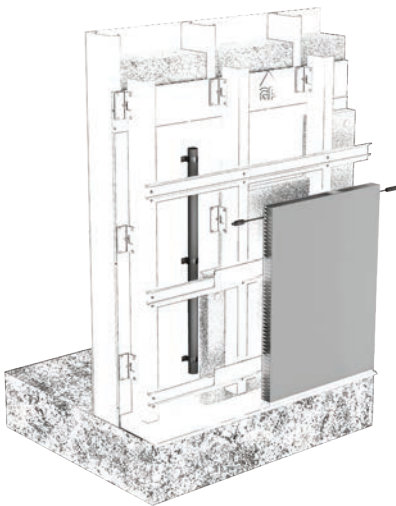
The final design focuses on incorporating BIPV into the south facade, which offers the highest available sunlight. This produced a system size of about 58kW, which would result in 60,000 kWh of energy per year. The panels not only harmonize with the building's design but also provide a reliable source of renewable energy.



Final Design

Architectural Details

The project utilized a standard rainscreen system, which provided both durability and ease of installation. The panels were manufactured to custom dimensions to accommodate the hospital's unique facade structure. The process allowed the team to coordinate closely with the electrical contractor to ensure seamless integration of the solar technology into the building envelope. The end result is a structurally sound, energy-generating facade that required no special structural modifications, demonstrating the adaptability of BIPV technology in retrofit applications.



• CladiShield System (Rainscreen System)



ROI & Cost Comparison

Energy Generation

● Orientation	System Size (kW)	Energy Estimation (kWh)
South	47	52,400
West	11	8,600
Total	58	61,000

ROI and Cost Comparison

- **Infinite ROI:** The integrated BIPV system continuously generates renewable energy, making the return on investment essentially infinite over the product's lifespan when compared to traditional materials.
- **Cost-Competitive:** When compared to traditional materials like GFRC, Mitrex panels offered a comparable upfront cost with the added benefit of long-term energy production and reduced maintenance costs.
- **Sustainability Savings:** By using Mitrex BIPV, the hospital not only avoided future facade maintenance costs but also offset energy consumption with renewable production, yielding significant financial and environmental benefits.
- **Long-Term Value:** Beyond initial savings, the project ensures long-term energy production, reducing operational costs and enhancing building performance.

Project Impact

The Chinook Hospital retrofit showcases how hospitals can achieve both sustainability and design goals through innovative materials.

The integration of Mitrex BIPV:

- **Supports Sustainability Goals:** By replacing GFRC with energy-generating panels, the hospital took significant steps toward meeting its action plans and sustainability targets.
- **Minimizes Maintenance:** With Mitrex's low-maintenance, lifetime warranty panels, the hospital will save on upkeep, reducing operational disruptions.
- **Enhances Social Impact:** The energy generated from the facade is equivalent to powering 10 residential homes, creating a clear environmental benefit while demonstrating leadership in healthcare sustainability.

This project serves as a model for other hospitals and institutions seeking to replace aging facades. The Chinook retrofit not only resolved a structural issue but also aligned with long-term environmental strategies, proving that retrofits can go beyond basic repairs to achieve greater value and sustainability.



Comparison: Project Energy Generation Per Location

● Orientation	System Size (kW)	Los Angeles, CA (kWh)	New York, NY (kWh)	Miami, FL (kWh)	Denver, CO (kWh)	Chicago, IL (kWh)	Houston, TX (kWh)
South	47	45,053	41,580	37,262	51,060	41,345	36,887
West	11	9,830	8,081	8,778	9,441	8,115	8,378
Total	58	54,883	49,661	46,041	60,501	49,461	45,265

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