MITREX PRESS RELEASES AROUND THE WORLD

MITREX LAUNCHES OPERATIONS OF NEW FACTORY IN CANADA
Marking World’s Largest Building With Its Patented BIPV System

Mitrex, GTA-based solar technology manufacturer of building-integrated photovoltaic technology (BIPV), has officially launched operations of its new production factory in Toronto, Ontario.

Mitrex Launches Solar Roof Technology to Transform Homes Into Self-Sufficient Power Systems
Canadian solar PV company Mitrex has launched its patented solar roofing technology—made in Canada’s Greater Toronto region—with building integrated photovoltaics.

Mitrex Introduces Solar Glass
Mitrex is a strong proponent of integrating solar energy generation into every structure touched by the sun—from windows to bus stop shelters, to skylights, to curtainwalls, and railings.

Mitrex Solar Glass has transformed a traditional, single-purpose building material into an energy-producing, sustainable, revenue-generating, multi-purpose product.

Mitrex Introduces Solar-Integrated Products to Transform Buildings Into Self-Sufficient Power Systems
Mitrex’s technology offers architects, developers and buildings owners a cost-efficient energy solution.

Enhancing Sustainability with Mitrex Solar Panels
Mitrex Solar Panels generate green and sustainable energy.
These solar panels are made using high quality, high performing monocrystalline silicon solar cells that can be installed anywhere the sun touches.

RADICAL INNOVATION:
A New Business Model for the Construction Industry
The construction industry is relatively slow-moving for new product development and innovation compared to other sectors such as information technology or telecommunications.
Over the next several years, solar power is primed to move beyond those more familiar installations and become a more prevalent part of the urban fabric in Toronto and beyond, as innovations introduce architecturally unobtrusive applications for solar power generation. The biggest advance in bringing this sustainable source of green energy into the urban fold is specialized Building-Integrated Photovoltaic (BIPV) construction materials from Mitrex. Designed to invisibly incorporate photovoltaic cells into building facades, these materials have the potential to turn new and existing towers into vertical green power plants.

Every panel of BIPV cladding has a patterned layer made of tempered glass that covers the solar cells. It appears opaque, but this layer is engineered to allow the maximum amount of sunlight through to the solar cells without disturbing the aesthetics of the design. The patterned tempered glass and the solar cells are mounted onto an aluminum honeycomb backplate. Due to their lightweight nature, the panels can be easily and quickly installed during the construction of the building envelope.

Regarding performance, this BIPV cladding also offers advantages over traditional materials like precast concrete and aluminum composite material (ACM), two big players in the cladding game. It features the lightweight properties of ACM cladding, while providing the durability and strength associated with precast concrete.

Another BIPV product that invisibly incorporates power generation into buildings is Mitrex’s SolaRail technology. Many Greater Toronto Area high-rises rely on creative balconies to define their exteriors. On buildings where balconies are prominently exposed to sunlight, SolaRail can use that sunlight to make electricity for the building. It is comprised of two panes of tempered glass that sandwich a layer of thin-film solar cells. The glass transparency, as well as the colour tint, are customizable. This customization extends to metal handrails and posts, with numerous designs to choose from.

While one might expect power-generating building materials to be inherently costly, these new materials can actually be cheaper than traditional options. When weighed against the cost of getting cladding and solar panels separately, BIPV’s combined properties make prices comparable to traditional building envelope materials. In addition, the long-term electricity savings and green government subsidies associated with a building that generates its own power have a huge economic benefit to building owners. Not to mention the clear marketability of buildings that boast LEED (Leadership in Energy and Environmental Design) certification, which BIPV can help them attain.

With no real negative impacts to up-front costs, performance, or architectural design, technologies such as Mitrex BIPV can have a major impact in the City of Toronto. This includes meeting the ambitious target set out in the TransformTO initiative to meet net-zero emissions target by 2050. Moves towards high-density and sustainable development are already being witnessed, and innovative technology is set to play a growing role in our push towards making cities greener for future generations.

January 26, 2021
by Jack Landau
Mitrex, a GTA-based solar technology manufacturer, is introducing a patented solution that can transform a building’s exterior into a vertical, self-sufficient power system. As part of the company’s commitment to a net-zero carbon future, the immediate focus is on pioneering renewable energy solutions for the construction industry.

The company’s patented building-integrated photovoltaic technology (BIPV) - via solar cladding and glass railing - extends a building’s energy-generating potential from rooftops down to vertical walls. It can be easily installed on new developments, as well as retro-fitted on existing developments. What’s most important is that Mitrex’s products are not only cost-effective, but aesthetically pleasing for building owners and developers.

“Our mission is to be the catalyst that accelerates the adoption of sustainable, energy-generating, human-made structures,” says CEO Danial Hadizadeh. “With residential, commercial and industrial buildings accounting for 40 per cent of annual greenhouse gas emissions globally, it’s clear that developers and buildings owners can play an integral role in cutting emissions by investing in BIPV technology.”

The Mitrex solar cladding materials can retain the same aesthetic as its non-energy-producing counterparts, and can mimic various construction materials such as concrete, timber, or stucco. This allows building owners, architects, and developers to embrace and profit from solar energy without compromising beauty.

Renewable energy, especially solar energy, is not a new concept. However, adoption has historically been hampered by poor aesthetics, high price tags and slow production. With the continuous increase in the earth’s temperature, proactive solutions - like the use of BIPV technology - are crucial. Various power grids across North America have been compromised in the face of extreme weather due to outdated technology. Sustainable, solar-based microgrids have the power to mitigate weather-related power outages, saving cities millions of dollars on power restoration.

“Extreme power outages from weather events can ultimately be avoided if microgrid solutions are implemented,” says Hadizadeh. “In the most recent widespread outage in Texas, 3.4 million homes and businesses were without power for a dangerously long period. Self-sufficient systems not only save hundreds of millions of dollars, but also can prevent or limit the effects of climate change on communities.”

Mitrex’s solar cladding and SolarRail™ are only the beginning. With over 50 projects in the works, the company’s extensive investment into R&D promises a plethora of integrated solar products in the near future, including windows, side paneling and more.

Other key benefits of Mitrex’s solar solutions include:

- Same cost, and in some cases cheaper, than traditional materials while lowering future energy costs.
- Seamless solar cell integration results in limitless design and colour options, allowing the technology to blend in with any building’s design.
- Potential to claim tax credits and take advantage of government incentives.
- Strong environmental impact: 13 million kWh of green energy can be produced from one building in 30 years.
- Contributes to LEED points and reduces building emissions since single-function materials become multi-functional.
- Excellent wind resistance, high safety standards, bird-friendly.
- Year-round fabrication and installation capability supported by an exceptional warranty.

Mitrex’s technology offers architects, developers and buildings owners a cost-efficient energy solution.
Climate change remains a foremost concern in global politics, economics, and scientific research, particularly as it pertains to the architecture and construction industries. This heightened culpability for the field of architecture stems from the fact that the construction industry contributes to 40% of global emissions, and the demand in the building sector is only projected to increase by 70% by 2050. Renewable energy is part of a 21st-century sustainability paradigm that responds to climate change and environmental degradation, strengthening the momentum for global energy transformation. Renewable energy production strategies are necessary to mitigate future energy security issues as traditional sources of fuel become increasingly scarce, and an indispensable part of designing for sustainability in architecture.

To address growing global concerns around climate change and renewable energy, the solar company Mitrex has created innovative systems that can be adapted and integrated critically and creatively in order to address new and age-old challenges related to issues of sustainability. Historically, solar energy harvesting has been expensive, relatively inefficient, and hampered by poor design. Existing building-integrated photovoltaics (BIPV) have proven to be less practical and economically unfeasible for large-scale adoption due to design limitations and poor aesthetics. New tools and technologies, both for building design and construction, have come to assist architects in the creation of buildings that generate their own energy and are self-sustaining. Mitrex solar systems can be integrated within a building envelope in order to generate power while simultaneously enhancing the spatial, aesthetic, and functional qualities of a project of architecture. They replace conventional building materials for the whole or part of the building envelope including facades, skylights, roof areas, and other external building elements, while often costing the same as the materials they would replace. From this perspective, renewable energy systems can be integrated as functional, aesthetic, and cost-effective elements within buildings.

For example, the company has designed lightweight solar cladding that can be customized to any construction and design needs, conform to desired angles and panel size, and mimic any material in the world, including natural finishes such as marble and wood, as well as man-made materials like cement and porcelain. These aesthetic options are complemented by a range of different colors, patterns, and textures accomplished through the use of a customizable facing. Furthermore, these solar cladding modules are frameless and produced in a range of shapes and sizes with near-seamless edges that provide further adaptability for architects.

This immense design flexibility contrasts the stringent restrictions of traditional solar panels, which are limited in size and shapes and not well suited to design integration. Mitrex Solar Glass was also created with design in mind, replacing regular glass without compromising on performance and functionality. This element can be integrated into windows, bus stop shelters, skylights, curtainwalls, and railings (to name a few) by maximizing energy production on otherwise unused surfaces. SolaRail, for example, is a BIPV glass railing product with options for transparency levels, and metal handrails and posts that function as an aesthetic and effective means of generating...
Dezeen

MITREX’S SOLAR PRODUCTS ALLOW BUILDINGS TO PRODUCE ENERGY "WITHOUT COMPROMISING BEAUTY"

In particular, in dense urban areas where space is limited, Solar Glass offers an economical and architecturally sound opportunity to incorporate renewable energy into slender high-rises. These products use advanced, transparent or opaque solar technology, which allows for full customization of tints, transparency, and size while maximizing the amount of energy produced. In addition, Solar Glass has seamlessly integrated circuitry and connection points for all electrical components to ensure a smooth appearance, thus not interfering with structural aesthetics.

However, these products are not only designed for large companies and expensive high-rises. Mitrex’s Solar Roof is designed to look essentially indistinguishable from traditional roofing materials such as asphalt and slate shingles, while simultaneously generating clean energy. The product allows single-family homeowners a means of reducing their carbon footprint and grid reliance. Lower-density homes with solar roofs are not a new phenomenon; however, recent technological advances give builders and architects the option of adopting green initiatives without compromising a home’s design. Solar Roof systems come in a range of UV-stable, fade-resistant colors and patterns in keeping with design needs. Helpfully, no specialized installation is required, and once installed, their elements require no maintenance because they are treated with an anti-soiling coating that reduces the accumulation of dust and dirt on surfaces.

These technologies hold the potential to produce a tangible effect on energy use and sustainability efforts wherever they are implemented. The widespread adoption of building integrated solar modules has the potential to not only reduce the carbon footprint of a city, but also to address the growing demand and insufficient supply of energy. To get a better idea, a typical 30-story building with Mitrex integrated solar technology produces approximately 13 million kWh of energy, offsetting 9,500 metric tons of CO2 over 30 years. The impact of large-scale adoption could be historic.

Solar product and technology manufacturer Mitrex has unveiled a range of solar-integrated products for high-rise and residential buildings that "TRANSFORM A BUILDING’S SHELL INTO A SELF-SUFFICIENT POWER SYSTEM," according to the brand.

Mitrex’s solar product range is equipped with the brand’s building-integrated photovoltaic technology (BIPV) made up of photovoltaic cells and is part of their commitment to a net-zero carbon future. The range includes solar windows, cladding and railings for high-rise buildings and solar roof and siding for residential applications.

According to the brand, "HISTORICALLY, SOLAR ENERGY HARVESTING HAS BEEN EXPENSIVE, RELATIVELY INEFFICIENT AND HAMPERED BY POOR DESIGN."

However, with a focus on increased efficiency and new technological advances, Mitrex hopes to increase the levels of adoption. Specifically, by offering aesthetic solar products that extend energy generation down to the vertical walls.

"OUR MISSION IS TO BE THE CATALYST THAT ACCELERATES THE ADOPTION OF SUSTAINABLE, ENERGY-GENERATING, HUMAN-MADE STRUCTURES," said CEO Danial Hadizadeh.

"With residential, commercial and industrial buildings accounting for 40 per cent of annual greenhouse gas emissions globally, it’s clear that developers and building owners can play an integral role in curbing emissions by investing in BIPV technology.”

The brand’s solar windows are designed to generate energy while ensuring the same functionality and appearance as traditional glass-based products.

"FROM WINDOW WALLS TO BUS STOPs, TO SKYLIGHTs, TO CURTAINWALLs, MITREX AIMS TO INCORPORATE PHOTOvOLTAICS INTO EVERY GLASS APPLICATION," explained the brand.

"Mitrex’s BIPV solutions are surprisingly economical when considering the cost of typical windows since these products allow for a return on investment.”

The company’s solar roof modules are made for residential buildings and enable users to generate renewable energy at home without altering their rooftop’s appearance.

The modules are made with Mitrex’s customizable facing—matte and frameless to blend into an existing rooftop and allow for electricity generation.

Mitrex’s solar cladding is lightweight and can be customized for any desired angle and panel size to extend a building’s energy-generating potential. The product can be matched with an existing building’s cladding to replicate the existing pattern, texture and surface of traditional materials, including brick, wood, porcelain granite or customized graphics.

"THE MITREX SOLAR GLASSING MATERIALS CAN RETAIN THE SAME AESTHETIC AS ITS NON-ENERGY-PRODUCING COUNTERPARTS AND CAN MIMIC VARIOUS CONSTRUCTION MATERIALS SUCH AS CONCRETE, TIMBER, OR STUCCO,” said the brand.

Mitrex also believes that solar options may be adopted more widely as power grids in North America are failing more regularly when faced with extreme weather conditions. According to the brand, microgrids can prevent weather-related power issues, saving millions on restoration costs.

"EXTREME POWER OUTAGES FROM WEATHER EVENTS CAN ULTIMATELY BE AVOIDED IF MICROGRID SOLUTIONS ARE IMPLEMENTED,” said Hadizadeh.

"In the most recent widespread outage in Texas, 3.4 million homes and businesses were without power for a long period."

"Self-sufficient systems not only save hundreds of millions of dollars but also can prevent or limit the effects of climate change on communities.”

June 2, 2021

Mitrex Solar Windows

July 1, 2021
by Dezeen Staff
At a growing number of condos, solar and geothermal energy runs everything from garbage chutes to elevators.

A bird’s-eye photo of the newly occupied Beech House Condos in Toronto’s Upper Beaches reveals an unexpected feature. Invisible from street level at Kingston Road and Beech Avenue, the patio awnings cascading down the six-storey building’s south-facing side are topped with solar panels that displace 1.2 tons of greenhouse gas emissions per year by generating about 90,000 kWh of electricity.

The net-metered solar photovoltaic system developed by Toronto-based Alectric will power communal building features such as elevators, a smart garden irrigation system, a self-sorting garbage chute, and interior and exterior LED lighting when the sun is shining.

According to Alectric CEO Alan Morrissey, keeping up with residential demand is one of the most challenging aspects of the business. “We have seven or eight projects on the go with excavators digging the foundations as we speak,” Morrissey says.

Across the GTA, a growing number of condo buildings are being powered, heated and cooled using solar and geothermal technologies that draw on energy generated by the sun and earth, respectively. According to Nicholas Gall, director of distributed energy resources at the Canadian Renewable Energy Association, recent interest in solar-powered condioniments has been “tremendous,” being driven, he says, “by people who are interested in reducing their carbon footprint. One of the things you’re increasingly seeing is integrating solar with onsite electric vehicle (EV) charging, which is going to become a standard amenity in the coming years.”

Alectric has already partnered with Toronto’s ChargeLab to deliver EV charging infrastructure to property developers. “A commitment to a sustainable lifestyle is a way for developers to differentiate themselves,” Gall adds.

At Tridel Corp.’s Aqualina at Bayside project, roof-mounted solar panels provide all the electricity needed for a penthouse suite dubbed the Net Zero Energy Dwelling (NetZED). Designed to showcase the sustainable technologies that led to Aqualina earning LEED platinum certification, NetZED’s excess solar-generated energy is traded with the rest of the building to offset the suite’s energy needs after sundown. (While solar energy can be stored in some cases, here the system lacks sufficient battery storage.)

Interest in solar-powered...
condos could grow even more quickly if proposed amendments to Ontario’s net metering regulations are passed. These would give condo developers and residents more options to generate renewable power for local use, with excess power being returned to the grid in exchange for credits. These credits would then be shared among participating accounts, with the community drawing power from the grid when there is insufficient local generation.

Geothermal heating and cooling, for its part, appears to have gained even more momentum than solar power, with the Ontario Geothermal Association estimating that the percentage of condos employing this type of heating has more than doubled to five per cent over the past five years. Nova Ridge Development’s Manderley Condos is slated to join the club when it opens to residents in 2023. The Scarborough property’s Subterra Renewables geoexchange system will drill more than 70 metres under the 12-storey building’s foundations to draw heat and cooling from the ground. This will achieve energy savings of as much as 80 per cent, says Subterra CEO Lucie Andlauer. As at Beech House and Aqualina, a green roof will help control indoor temperatures by deflecting excess heat.

“The city is really encouraging a higher standard of sustainability, and with a project of this size we could entertain that kind of investment,” says Howard Cohen, a principal with project co-developer Context Development.

With the Toronto Green Standard on track to require new buildings to have close to zero carbon emissions by 2030, many developers are working to get ahead of the curve," Gall says, adding that plummeting prices for solar panels are allowing infrastructure costs to be offset by lower energy and maintenance bills much more quickly than in the past. According to the Heating Refrigeration and Air Conditioning Institute of Canada, this can happen in as little as three to five years for large buildings.

"So too have many condo dwellers — at least if AMLI Residential’s 2020 Sustainable Living Index is anything to go by. It surveyed more than 4,800 of the developer’s U.S. apartment residents, and found that 83 per cent believed living in a green community is beneficial to their health, with 59 per cent willing to pay more to live in a green or sustainable community.

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Urban Toronto

Solar Cladding Delivers Seamless Integration and Design Freedom

Awe-inspiring buildings shape the user experience. They make visitors feel a certain way when they approach or spend time inside.

Sometimes, it’s difficult to pinpoint what exactly makes an iconic building so striking and unforgettable. Perhaps it’s how the facade and interior interact and how balconies define the exterior. Maybe it’s how the cladding colours contrast with the windows, creating a monolithic appearance. Creating an awe-inspiring building requires an architectural vision to come to life during construction with the right construction materials.

When architects wish to incorporate solar energy into a project, significant design challenges can arise when using certain materials. Adding sustainable energy features into a new building or deep retrofit can significantly impact its appearance, constrain designs, or be prohibitively expensive. Solar panels and wiring can substantially shift the aesthetic perception of a project and the user’s experience.

Mitrex BIPV Options

By contrast, Mitrex solar cladding and railings deliver design flexibility by combining utility, vast aesthetic options, and sustainability. These multi-purpose building products seamlessly integrate solar cells into the building envelope, creating a turnkey solution for self-sufficient buildings. Thus, Mitrex helps harness design freedom and the architectural vision for zero-carbon emission projects.

Solar cells conform to the building design, and there is no perceivable difference between solar energy into both new construction and retrofit projects.

Utilizing solar in the envelope also creates a revenue stream and lowers operating expenses, making it a cost-saving upgrade. Mitrex solar cladding products are designed to last decades, thus benefiting the bottom line for years to come.

There are unlimited colour and pattern options, this BIPV cladding is customizable for greater design freedom. The facing options include replicating natural finishes, such as marble and wood or human-made materials like cement and porcelain.

Mitrex BIPV cladding provides advantages over two big players in the cladding industry, precast concrete and aluminum composite material (ACM). This option is lightweight like ACM cladding yet has the durability and strength of precast concrete. Mitrex cladding systems are customizable and feature exceptional warranties without a perceivable difference between energy-generating surfaces. Even the wiring is invisibly incorporated behind the scenes.

The final product balances functionality and zero-carbon emissions energy in a turnkey solution. Because the cladding is lightweight, it is quick and easy to install without a crane or heavy installation equipment during the building envelope construction. The Mitrex BIPV system includes all the necessary solar system equipment for a seamless design and installation process.

The Mitrex SolaRail™ system transforms sunny balconies into mini power plants to maximize energy production. Developers and architects can select the glass transparency, colour tint, and choose from numerous metal handrail and post designs. With endless options, Mitrex products help harness the design vision.

Toronto certainly has its share of awe-inspiring buildings. As the city grows up, it is gaining significant recognition across the globe for its eclectic architectural styles. Toronto is getting taller and will soon have more buildings over 500 metres than Chicago. Combining BIPV products into the building envelope will help Toronto incorporate top-notch designs into zero-carbon emissions projects for cost-effective solutions.

Get Connected

Learn about solar power technology in honour of Earth Day

Renewable energy and finding ways to harness it is more important than ever as we find ourselves falling deeper into a climate crisis.

In honour of Earth Day this week, we learned about a Canadian company that’s bringing solar power technology to homes. Danial Hadizadeh, CEO of Mitrex, joins Mike and John to discuss this promising new technology and how it makes it possible to harness renewable energy for residential homes.

March 23, 2021

By Urban Toronto Sponsor
MITREX PRODUCTS

Mitrex's Pioneer Product: Solar Facade

Mitrex BIPV uses the power of the sun to produce clean, sustainable energy. Our systems can be integrated into any building design while meeting all aesthetic needs. The products are backed by an aluminum honeycomb sandwiched between layers of solid aluminum sheets, making it both lightweight and durable.

- An energy-efficient solution to new and existing facades
- Transform single-purpose building materials into multi-purpose cladding
- Provide thermal resistance and exterior noise control
- Lightweight, durable and highly resistant to moisture, staining and weathering
- Code compliant, fire resistant and safety-tested
- Economical through our revenue-sharing business model
- Produced in an automated state-of-the-art manufacturing facility

ADAPTABLE PANEL SIZES
Mitrex offers Solar Cladding panels in virtually any size. Our standard panel sizes range from 2.35 ft by 4.66 ft. When larger panels are needed, we also offer customized panels that can be a maximum of 6.5 ft by 12 ft.

COMPLETE DESIGN FLEXIBILITY
Mitrex offers architects the control and flexibility to design structures sustainably without compromising aesthetics.

- Customizable pattern, texture and colour options to satisfy any architectural needs
- Reflective, semi-reflective or matte module depending on aesthetic requirements
- Design flexibility, including size of panels, curves and corners

Interlocking Channel System

Solar Columns
Solar Facade
Wiring
Interlocking Channel
Framing Support

Customizable Sizes

Standard Sizes

22.5% Cell Efficiency

This type of solar technology is the highest performing, most scalable option on the market. The monocrystalline solar cell is encapsulated by a front layer.

- Engineered to allow light to penetrate and reach the photovoltaic layer
- Colour coated to maintain design flexibility
- Anti-reflective and anti-soiling coating to enhance efficiency and lower maintenance

22.5% Cell Efficiency

Engineered to allow light to penetrate and reach the photovoltaic layer.

Colour coated to maintain design flexibility.

Anti-reflective and anti-soiling coating to enhance efficiency and lower maintenance.

Reflective, semi-reflective or matte module depending on aesthetic requirements.

Design flexibility, including size of panels, curves and corners.

Mitrex BIPV uses the power of the sun to produce clean, sustainable energy.
Mitrex Expands the Aesthetic Possibilities of Solar Cladding

Unparalleled architectural versatility meets carbon-free power generation with innovative Building-Integrated Photovoltaics.

“It’s just an eyesore.” Speaking to the New York Times, New Jersey resident Eric Olsen summed up a view of solar energy shared by millions across North America. “I just hate them.” Indeed, dark grids of solar panels are seldom a welcome sight — and for good reason. However, a technological and aesthetic revolution in photovoltaic generation means that the myriad benefits of solar energy can now be seamlessly integrated into the urban landscape. Enter Mitrex.

Thanks to Mitrex’s innovative Building-Integrated Photovoltaic (BIPV) system, solar cells are embedded beneath a layer of tempered glass that’s engineered to allow any tone, pattern or design to be introduced into the facade without compromising the efficiency of the embedded solar cells. From the shingles of a residential roof to the glazed cladding — or balcony railings — of a high-rise tower, Mitrex BIPV offers invisible power generation.

Installed atop a rigid aluminum honeycomb base, Mitrex BIPV combines the strength and durability of concrete with lightweight, versatile efficiency. While the installations lend themselves to a wide range of applications, the system is particularly well suited to high-rise projects, where Mitrex BIPV can provide both the design and cost of traditional cladding materials.

Mitrex solar cladding and roof installations can be customized to any construction and aesthetic need, conform to desired angle and panel size, and mimic any material readily available. The systems can achieve the look of any surface material, pattern, texture or image desired, including granite, porcelain, brick, wood — even custom graphics. In balcony railing installations, Mitrex BIPV can also be fully transparent, maintaining the openness and natural light of outdoor spaces.

Traditional solar panels are typically restricted to standardized panel formats, limiting architectural freedom. By contrast, Mitrex’s durable cladding is available in a wide variety of sizes, curves and corners to satisfy any design needs. For new construction and deep retrofits alike, it facilitates a reinvention of the building envelope.

The versatility is possible thanks to an innovative surface treatment that serves as the top cladding layer: a highly customizable ceramic facing conceals the colour of the solar cells without compromising visual appearance. Fade-resistant, self-cleaning and largely maintenance-free, the durable solution ensures efficient, affordable — and carbon-free — power generation.

It all adds up to a major boon for sustainability. While solar energy has long been relegated to the fringes of the built environment (think concealed roofs and massive solar farms), Mitrex BIPV elegantly weaves solar power into the urban fabric. Aesthetic vision and sustainability go hand in hand when renewable, affordable and efficient energy generation is all in the design.

Installation in the Edmonton Convention Centre, Canada’s largest, with a capacity of 169 kW.

The company also worked on a five-storey residence at Red Deer College that’s covered with solar glass cladding on three sides — 545 panels in all.

BIPV’s CAN SIMPLIFY INSTALLATION AND POTENTIALLY SAVE COSTS

PV Technical Services, based in St. George-Brant County, Ont., has been installing traditional solar panels for more than a decade. Co-founder Katherine Zhou said customers started asking why they had to hire one contractor to re-roof their home first and another to install the racks and panels on top — especially since the rooftop penetration required for the panel installation voided the roof warranty.

So the company developed its own solar shingle in 2016. Now, for a cost that Zhou estimates is similar to a metal roof installation, her company can put in solar shingles that both protect the roof from the elements and generate power. “That saves a lot of headaches,” she said.

THEY CAN POTENTIALLY LAST LONGER THAN TRADITIONAL BUILDING MATERIALS.

Andreas Athienitis, a researcher at Concordia University in Montreal who studies BIPV, said that while asphalt shingles typically last about 15 years, solar panels can last 30 years, with only a small decrease in efficiency. (Many solar shingle systems, such as the one from PV Technical Services, are “smart” and allow you to monitor and replace individual shingles, if necessary)

THEY CAN POTENTIALLY GENERATE HEAT AS WELL AS ELECTRICITY

At the Varennes Library, outdoor air pulled into the ventilation system is preheated by the solar panels before entering the building (which also has a geothermal heating system), said Athienitis. That also cools the panels, which don’t generate as much power when they’re too hot.

A heat pump can potentially be added to increase the amount of space and water heating the panels can do, and the amount of energy per surface area that the system can provide overall.

THEY CAN REPLACE MATERIALS WITH A HIGHER CARBON FOOTPRINT.

Mitrex is a Toronto-based company that makes BIPV cladding and plans to make highway sound barriers. Those are two things that are often made of concrete, which has a higher carbon footprint than glass and silicon. BIPV panels

Canadian companies are starting to make transparent, coloured panels designed to protect the building.

When you walk through the sun-filled atrium of the Edmonton Convention Centre or glimpse the dramatic sloped roof of the Varennes Library in suburban Montreal, it’s not obvious these buildings are generating power. After all, neither has traditional solar panels tacked on the roof.

But the semi-transparent skylights of the atrium and the shingles on the sloped roof are more than just protection from the elements — they’re building-integrated photovoltaics (BIPV). That is, they’re made of solar panels.

It’s a solution touted by Elon Musk, CEO of Tesla, which started selling solar roof tiles in the U.S. in 2017. Since then, a range of made-in-Canada options for different parts of buildings have hit the market — and installations have sprung up across the country, showcasing what’s possible.

Here’s a closer look at how BIPV differs from traditional solar panels and why a lot more may be part of the buildings of the future.

WHAT ARE BUILDING-INTEGRATED PHOTOVOLTAICS?
“So we are taking the carbon [out of the] system just by installing it,” said company CEO Danial Hadizadeh. Over time, he added, the renewable energy generated by the BIPV panels will offset the emissions used to manufacture them in the first place.

BIPV makes a visual statement, said Yereniuk. “If you’ve walked through the Edmonton Convention Centre, you can see firsthand that it creates something stunning that you can’t get with any other standard glass.”

CAN THEY PRODUCE AS MUCH POWER AS TRADITIONAL SOLAR PANELS?

Their efficiency depends on the materials used and their transparency. Opaque panels can have an efficiency comparable to traditional solar panels made of the same material.

Transparent or semi-transparent panels are less efficient, since by definition a certain amount of the solar energy passes right through them without being absorbed. Hadizadeh said his company’s semi-transparent panels are about 50 to 75 per cent efficient compared to regular solar panels.

However, Canadian companies like PV Technical Services and Mitrex are starting to offer access to solar shingles and cladding, respectively, that are locally developed and manufactured.

Zhou said PV Technical Services already has several Canadian installations. Mitrex expects to open a new Toronto factory in July to scale up manufacturing cladding for its first customers, which is expected to be installed by the fall. Kuby Energy, which currently sells Tesla Powerwalls in Canada, plans to sell Tesla’s Solar Roof when it’s available in Canada, which is expected later this year.

Technical and regulatory challenges. BIPV products are regulated both as building materials and electrical materials, so they have to meet two sets of requirements. Hadizadeh said that requires a lot of testing and working with the government to write regulations for a new product.

Athienitis said to encourage adoption of these technologies, building codes need to be modified and governments need to provide the right incentives.

Meanwhile, most tradespeople aren’t familiar with it, and Athienitis said there needs to be more education.

Cost. Right now, it’s quite expensive up front; although the electricity generated over its lifetime should offset that eventually, said Yereniuk.

Hadizadeh said his goal over the next few years is to lower the cost of Mitrex’s products to the point that they can be offered at no up-front cost to customers — instead, they would pay for the electricity generated over the panels’ lifetime (similar to the way geothermal projects are often funded in condos).

“IT WILL DEFINITELY TAKE OFF AS MORE PEOPLE REALIZE IT’S A VIABLE TECHNOLOGY,” said Yereniuk. “The industry is changing very fast and technology is rapidly growing and advancing, and costs are rapidly coming down.”

June 2, 2021

By Emily Chung

Mitrex Facility, Toronto, Ontario
Mitrex Launches Solar Roof Technology to Transform Homes Into Self-Sufficient Power Systems

Mitrex’s Solar Roof BIPV technology provides homeowners a cost-efficient energy solution.

Mitrex, a Canadian manufacturing leader in solar technology, is bringing to market its roofing panels, developed to provide a cost-efficient energy solution for homes. The company’s patented building-integrated photovoltaic technology (BIPV) extends a building’s energy generating potential, allowing the potential for every sun-touched surface to generate electricity.

The visual appeal of Mitrex’s roofing panels serves as a stark contrast to traditional solar panels, further extending the company’s leadership within the renewable energy industry.

“Our solar roof solutions are ideal for homeowners looking to reduce their carbon footprint and make a positive impact on the environment,” says Mitrex CEO Danial Hadizadeh, “with our streamlined installation process, homeowners are now able to tap into solar technology to contribute to a net-zero carbon future without compromising the look of their home.”

Similar products in the market have developed solutions that are aesthetically pleasing, but the installation process involves a replacement of the entire rooftop instead of integrating into an existing surface. On the other hand, versatility was the main driver for Mitrex’s product development.

Mitrex invests heavily in research and development, and all of these applications are part of its mission to increase solar energy adoption around the world. Mitrex solar roof products are proudly made in Canada, in a custom-built factory based in the Greater Toronto Area. The company’s facility allows for reliable and consistent production of thousands of high-quality solar panels per month.

KEY SPECIFICATIONS OF MITREX SOLAR ROOF SOLUTIONS INCLUDE:

- Frameless panels that allow for more surface area coverage.
- Made with high-efficiency monocrystalline silicon solar cells for years of service.
- Treated with anti-soiling coating that makes them virtually maintenance-free.
- Lightweight, durable, weatherproof, featuring UV-stable and fade-resistant colours.
- Same installation methods as traditional rooftop panels so any qualified roofer can install them.
- A 25-year electricity generation warranty and a 30-year material warranty.

The Globe And Mail
GLOBE CLIMATE: CAN YOU BE A CAPITALIST AND SAVE THE WORLD AT THE SAME TIME?

My name is Danial Hadizadeh. I’m a 38-year old living in Toronto with my family. I have always been fascinated with creative inventions. My teen entrepreneurship voyage took flight when, inspired by Da Vinci, I started building devices that fly by flapping wings, known as ornithopters. From my early days in construction, I was inspired to find ways to make buildings more sustainable without sacrificing aesthetics. I started GCAT GROUP, a construction material company that led to other service companies including Artisana and Cladify, each working to optimize construction today. In December, 2020, after getting an MBA from Harvard Business School, I launched my current company, Mitrex, in Canada. We develop vertically integrated solar construction materials for high-rise residential and commercial buildings, hospitals and agricultural facilities. Our technology allows architects and developers to harness solar energy at the same cost as non-sustainable materials.

I envision a world where energy is generated by every surface facing the sun. As urban centres continue to grow, construction has a vital role in creating sustainable cities. Mitrex is finding ways to make this happen.

March 29, 2021
Mitrex is Breaking Barriers Between Aesthetics and Sustainability: Solar Roof

Mitrex Solar Roof technology allows homeowners to generate clean, green, renewable energy on unused surfaces without altering the aesthetic appearance of their roof.

- Designed to look like conventional roofing.
- Lightweight, durable, weatherproof, featuring UV-stable and fade-resistant colours.

Our Versatile Roof Products Offer:
- Customizable Facing:
  - Anti-reflective and anti-soiling coating to enhance efficiency.
  - Hidden frame and matte appearance.
  - Patterned coating to maintain design flexibility.
  - Pattern and colour options.

- Complete Design Flexibility
  - Mitrex Solar Roof modules can take on the appearance of the most popular roofing patterns, allowing a visual integration with non-solar sections of the roof. Our Solar Roof features a hidden frame that is matte in appearance, allowing it to further blend into the original roof design, and utilizes standard installation methods. We have various textures and colours available. Our products feature the appearance of asphalt and slate shingles while generating electricity for the house.

- Monocrystalline Solar Cell
  - Engineered to allow light to penetrate and reach the photovoltaic layer.
  - Patterned coating to maintain design flexibility.
  - Anti-reflective and anti-soiling coating to enhance efficiency.

- Cost-effective panels.
- Aesthetically pleasing.
- Pattern and colour options.
- Clean energy generation.

Mitrex Unique Solar Siding for Home Owners

With Mitrex BIPV, every surface the sun touches can generate energy.

- Designed to look like conventional siding, while generating green energy.
- Lightweight, durable, and highly resistant to moisture, staining and weathering.
- UV stable and fade-resistant colours.

Our Versatile Siding Products Offer:
- Pattern and colour options.
- Aesthetically pleasing.
- Clean energy generation.

Mitrex Solar Siding was created with design in mind. Siding comes in a popular design options and can be easily incorporated onto new or existing structures. Panels are easy to install, and ensure efficient, low maintenance energy generation.

- Mitrex guarantees that the Solar Siding will look the same in Year 25 as when it’s first installed.
- Mitrex Solar Siding can be integrated onto new and retrofitted infrastructure to allow for solar energy generation.

Mitrex Solar Siding flawlessly integrates with the exterior of a home, so homeowners never have to choose between sustainability or aesthetics again.

- Code compliant, easy to install and safety tested.
- Energy-generating while maintaining the aesthetic of the roof.
- Produced in a North American automated state-of-the-art manufacturing facility.

Our Complete Design Flexibility

Mitrex Solar Siding technology is the highest performing, most scalable option on the market. The monocrystalline solar cell is encapsulated by a front tempered glass layer.

- Produced in a North American automated state-of-the-art manufacturing facility.
- Code compliant, easy to install and safety tested.
- Mitrex guarantees that the Solar Siding will look the same in Year 25 as when it’s first installed.
- Mitrex Solar Siding can be integrated onto new and retrofitted infrastructure to allow for solar energy generation.

Our technology ensures your siding will remain beautiful while powering your home.
Urban Toronto

PHOTOVOLTAIC CLADDING AND ROOFING
OFFERING PATH TO NET-ZERO AMBITIONS

An ambitious nationwide goal to reach net-zero carbon emissions by 2050 will require a rethink of new and existing building stock to better equip Canada for a greener future. Buildings produce 13% of the country’s total annual greenhouse gas emissions, so innovative technologies that could turn buildings into clean power generators would go a long way to reducing reliance on electricity from the high-carbon grid, and even create a new source of revenue for building owners through the sale of excess power generation.

Earlier this year, UrbanToronto introduced one such emerging technology that has the potential to exponentially increase green energy generation in major urban centres like Toronto by incorporating building-integrated photovoltaics (BIPV) into the cladding of structures. Now, we’re returning for an in-depth look at these technologies, along with some of the challenges that have stood as hurdles in the way of mass adoption of solar energy prior to the development of BIPV.

Solar energy has traditionally taken the form of vast arrays of black angled panels; an image BIPV producer Mitrex is quickly changing with their solutions that integrate power generation into building cladding that can replicate a wide range of materials and finishes. This technology allows buildings to produce their own energy and supplement high carbon energy from the grid, without compromising the architectural integrity of the project.

Space has been a traditional limiting factor in bringing solar power generation to urban sites, with slimmer high-rise footprints and single-family homes often too constrained for traditional solar setups. This is compounded by traditional solar panels’ lack of aesthetics, resulting in most urban solar arrays being hidden away on the roofs of buildings amid mechanical equipment, typically limited to larger-footprint industrial buildings and the like.

Mitrex’s BIPV cladding and roofing solve these shortcomings by taking advantage of otherwise unused surfaces such as tower facades or single-family home roofs to generate electricity. This highly visible placement of power-generating surfaces is made possible by the product’s unlimited aesthetic customization options that can be matched to any architectural style, including natural finishes such as marble and wood, as well as man-made materials like cement and porcelain.

These aesthetic options are complemented by a range of different textures, accomplished through the use of textured glass facings. While textured facings can lower the efficiency of power generation versus solar glass, options including low iron, matte solar glass, pyramid solar glass, wood glass, rain glass, and latinate glass can provide textural variety that still offers green benefits. Along with varying finishes and textures, Mitrex’s BIPV cladding panels are produced in a range of sizes and shapes with near-seamless edges that provide further adaptability for architects. In contrast, traditional solar panels are typically limited to larger-footprint industrial centres like Toronto by incorporating building-integrated photovoltaics (BIPV) into the cladding of structures. Now, we’re returning for an in-depth look at these technologies, along with some of the challenges that have stood as hurdles in the way of mass adoption of solar energy prior to the development of BIPV.

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Similarly, products like Mitrex’s BIPV roofing seamlessly match traditional roofing styles, giving single-family homeowners a means of reducing their carbon footprint and grid reliance. Designed to replicate materials common to roofing such as asphalt and slate shingles in a range of UV-stable, fade-resistant colours and patterns, this solution offers an easy way for homeowners to see reduced emissions and other green features without standing out from surrounding homes of similar styles.

Lower-density homes with solar roofs are not a new phenomenon, though these recent advances give builders and owners the new option to be green-minded without compromising a home’s design. Even with all the built-in technology, these roof modules require no maintenance through anti-soiling coatings that reduce the accumulation of dust and dirt on the surfaces. These panels feature frameless modules, which maximize surface area for power generation and can be applied over existing rooftops. The traditional alternative for rooftop power generation has involved unadorned solar panels, which have better applications on hidden rooftops than the roofs of homes expected to contribute to the home’s exterior architecture.

These BIPV roofing and cladding panels are constructed using high-efficiency monocrystalline silicon solar cells with extended lifespans, mounted onto durable and lightweight aluminum honeycomb-structure backing.
Mitrex Introduces: Solar Glass

Mitrex is a strong proponent of integrating solar energy generation into every structure touched by the sun – from windows to bus stops, to skylights, to curtainwalls, and railings.

Mitrex Solar Glass has transformed a traditional, single-purpose building material into an energy-producing, sustainable, revenue-generating, multi-purpose product:

- Code compliant, easy to install, safe, and durable.
- Design flexibility, including glass transparency.
- Energy-generating while maintaining the functionality of the glass.
- Economical through our revenue-sharing business model.
- Produced in a North American automated state-of-the-art manufacturing facility.
- Clean Energy Generation
- Transparency Options
- Weather Resistant
- Invisible Electrical Connections
- High-Tech Manufacturing

Mitrex builds upon advanced solar technology by combining it with building materials, making solar integrated, multi-purpose products.

Transparent Solar Technology

Mitrex Solar Glass uses photovoltaic technology integrated into glass products to produce clean, sustainable energy.

- Tilles on advanced solar technology.
- Available in Insulated Glass Units (IGU) for secure and durable insulation.
- Comprised of two layers of heat-tempered glass for superior thermal performance.

Monocrystalline Solar Cell

This type of solar technology is the highest performing, most scalable option on the market.
Mitrex Transparent Solar Railing

Integrating solar energy into new and existing buildings is faster, simpler and more aesthetically pleasing than ever before.

Renewable, affordable, efficient and carbon-free. In the midst of a global climate crisis, the benefits of solar energy are more evident and more urgently necessary than ever. Yet, solar power remains an eyesore on the margins of urban environments, with the cumbersome black panels typically hidden from view and strategically consigned to rooftops or remote solar farms. No longer. Thanks to Mitrex, invisible photovoltaic cells can be seamlessly — and elegantly — integrated into the exterior envelopes of new and retrofitted buildings.

A global pioneer in Building-Integrated Photovoltaic (BIPV) construction materials, Toronto-based Mitrex offers a streamlined collection of versatile and customizable solar cladding and balcony railing systems.

A unique cladding solution, Mitrex BIPV systems combines the lightweight efficiency of an aluminum composite with the strength and durability of concrete. A solar cell is installed atop a structurally rigid aluminum honeycomb base, with a top layer of tempered glass. The tempered glass finish is engineered to allow any tone, pattern or design to be introduced into the facade without compromising the efficiency of the embedded solar cells.

The technically sophisticated system means that a wide range of designs — ranging from elegant monochrome hues to porcelain and marble patterns — can be incorporated, combining solar power generation with a distinctive aesthetic. By the same token, the flexible finish can be seamlessly integrated into a more traditional building envelope, making for an imperceptible difference between BIPV cells and adjacent curtain-wall or window-wall cladding. Either way, it’s a far cry from black solar panels on the roof.

It doesn’t end with the building envelope: Mitrex SolaRail technology also brings solar energy generation to the balcony. Comprised of two layers of tempered glass on either side of a high-efficiency solar cell, the advanced BIPV system makes for invisible solar generation that can be incorporated into any design. From the level of transparency to the tint of the balcony glass, the customization extends to metal handrails and posts, with a wealth of options available to suit any design.

The integration of bespoke cladding design and solar energy generation sets Mitrex apart from the competition. While solar companies typically focus on technology at the expense of aesthetics, traditional cladding manufacturers lack the technical expertise to integrate solar technology into the building envelope. Mitrex BIPV brings the two worlds together with multi-purpose innovation, combining cutting-edge solar technology with versatile, high-performance cladding.

Unlike most BIPVs, Mitrex cladding and SolaRail finishes are also available in custom sizes, giving designers greater freedom to create a unique design. Capable of producing some 25,000 square feet of solar cladding per day, Mitrex’s advanced, fully automated production facility allows bespoke finishes to be created on a rapid timeline. The company also offers full turnkey services, from design to installation, to maintenance, making for an even more streamlined process.

The customization and adaptability of Mitrex BIPV solutions also means that new
Mitrex Solar Panels generate green and sustainable energy.

These solar panels are made using high quality, high-performing monocrystalline silicon solar cells that can be installed anywhere the sun touches.

These Solar Panels are suitable for use on residential rooftops, commercial buildings, and floating panels. They can also be used for utility-scale installations of solar farms and over agricultural fields.

- Green Energy
- Easy installation
- High performing, durable and maintenance-free
- Reduces carbon emissions

Produced in a North American automated manufacturing facility.

25 Year product warranty.
Mitrex Turns Building Cladding Into Solar Energy Producer

Every building in Toronto could some day operate as it’s own powerplant if the founders of Mitrex, a solar-cladding business, get their way.

The company’s solar-integrated products are designed to provide a unique way for developers to create renewable energy while also cutting costs.

“MITREX IS ABOUT CHANGING THE WAY WE’re LOOKING AT SOLAR, GREEN ENERGIES AND RENEWABLES,” CEO Danial Hadizadeh, told SustainableBiz.

Cladding – the outside skin of a building – provides thermal insulation and weather resistance, and oftentimes is designed to improve the aesthetics of a building or tower.

The Toronto-based company created products that not only retain the same aesthetic as their non-energy producing counterparts, but also allow a typical 30-storey building to generate enough solar to power 48 homes for a year – the carbon equivalent of taking 61 cars off the road.

The company’s patented photovoltaic technology converts the exterior of a building into a vertical micro-power plant.

According to Mitrex, each square foot of its cells produce 22W of electricity, which becomes 15W if installed on a vertical angle. If there were 1,000 hours of sunlight in a year, then each square foot would produced 150,000 Wh or 15kWh.

“SUSTAINABLE GREEN ENERGY MICROGRID”

“IT’S ALL ABOUT CREATING A SUSTAINABLE GREEN ENERGY MICROGRID AT A SCALE THAT IT COULD BECOME ONE OF THE LARGEST ENERGY COMPANIES IN THE WORLD,” Hadizadeh said.

The company is working with 50 projects since launching in December 2015. This comes as no surprise to Hadizadeh, who is no stranger to the construction business. He’s also been the CEO of Cladify, a Toronto-based cladding solutions company, since 2005.

In 2016, he took his experience and expertise with cladding and began working on a solar product before launching Mitrex. Hadizadeh said he was inspired to head down the green energy path because he desperately wants to create change, and knew he could do so in an environmentally sound way.

“IT’S UP TO EVERY SINGLE ONE OF US TO DO OUR PART, YOU CANNOT JUST WAIT FOR OTHER COMPANIES, THE GOVERNMENT TO DO SOMETHING. I WANT TO LOOK BACK ON MY LIFE AND KNOW THAT I GAVE IT MY ALL TO PROVIDE A SOLUTION TO HELP THE PLANET,” he said.

While solar cladding has been around for 50 years, Hadizadeh said previous iterations had limitations based on size, aesthetics and the reliability of the energy source. With Mitrex, he believes all three problems have been solved.

“SOLAR CLADDING OF 2018 WAS THE LOOK IS VERY IMPORTANT TO ARCHITECTS, DEVELOPERS, OWNERS, AND EVERYONE INVOLVED IN THE BUILDING. SO, WE HAVE TO MAKE SURE OUR PRODUCTS ARE INDISCRIMINATIVE,” he said.

Popular cladding materials these days include precast concrete, stucco, aluminum and brick. These looks couldn’t be copied by traditional solar-cladding, he said, but can be replicated by Mitrex. Through research and development, Mitrex can adapt the product to almost any pattern or colour.

“WE ARE BUILDING PRODUCTS THAT HAVE BEEN IN THE MAKING SINCE 2005, SO THE COST OF MANUFACTURING, TRANSPORTATION, INSTALLATION, KEEPS THE COST LOW,” said Hadizadeh. “WE WANT TO BE ABLE TO TURN AROUND ONE HIGH-RISE BUILDING WITHIN TWO DAYS … EVERYTHING IS DONE THROUGH AI, WE WANT TO BE LIKE AMAZON WITH OUR TURNDOWN.”

TWO PAYMENT OPTIONS FOR BUILDERS, OWNERS

Mitrex also installs its own cladding. It also includes a 30-year warranty. Mitrex says at the end of 30 years the cladding should still be producing at least 85 per cent of the energy it produced when it was installed.

Building owners and developers have two options to pay for the technology. They can purchase just the cladding up front, and then purchase the solar energy from Mitrex. The second avenue is a direct purchase agreement to own, the entire product, including the solar energy which is produced.

Hadizadeh said the break-even period is seven to eight years, and estimated that over 30 years the profit margin could be in the 300 per cent range.

Mitrex also offers SolarRail, a glass balcony railing which produces solar energy. After a six-month period, the business-to-business side is a solar roof product.

For retail consumers the firm offers a solar siding which installs on the side of any home. Hadizadeh added his company is also working with a major Toronto window manufacturer to embed the technology into glass.

“Our goal is anything outside that the sun can shine on, let’s make it solar,” he said.

February 19, 2021
By Ahmar Khan

SUSTAINABLE BIZ CANADA

 Mitrex Solar Curtainwall

LIKE ELECTRIC CARS OF THE YEAR 2000. THEY ARE THERE, THEY EXIST, BUT THEY ARE NOT REALISTICALLY SOLVING ANY PROBLEM,” he said.

Hadizadeh says electric cars such as the EV’s created by General Motors were similar to the products of today but, weren’t attractive to the eye. When Tesla and others came along creating electric vehicles with more commercial appeal, people were more inclined to buy.

MITREX DESIGNED TO LOOK GOOD

He said the people purchasing his products are often architects and developers, both groups which tend to buy items fitting their particular aesthetics.

“WE CAN CAMOUFLAGE THE SOLAR CELLS INTO THE BUILDING WITHOUT COMPROMISING ON THE ENERGY, AND KEEPING THE SAME AESTHETIC OR ADVANCING IT,” he said.

One of the other hurdles facing solar cladding has been that it can require up to four months to prepare. Hadizadeh said Mitrex will soon be able to get the material ready in a matter of days, due to the integration of artificial intelligence into its warehouse and manufacturing systems.

Prospective clients can reserve production for Mitrex built-in solar cladding for upcoming and current projects on the company website. They are connected to the sales team who assess the desired outcomes for the project. Right now, people inquiring and connecting with Mitrex range from architects, engineers, developers and building owners that are interested in utilizing the cladding system.

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February 19, 2021
By Ahmar Khan
The Onside
EXPANDING HORIZONS IN SOLAR ENERGY: DANIAL HADIZADEH, MITREX

Mitrex is a Canadian manufacturing leader in solar technology. Offering solar cladding, windows, roofs, and panels, Mitrex is committed to providing an effective eco-friendly energy system that does not compromise aesthetics.

Their innovative building-integrated photovoltaic (BIPV) was designed to offer solar energy in a wider range of colours, textures and shapes.

After discovering the potential energy that was going to waste, CEO Danial Hadizadeh travelled and researched extensively to find how solar technology was being cultivated around the world. Mitrex is confident that they are providing Canadian architects and developers with the best design choices for their vision. Onside Media had the opportunity to speak with Danial to learn more about the origin of Mitrex, the journey to where it is today, and the logistics of their innovative BIPV.

HOW DID MITREX BEGIN AS AN ENGINEERING COMPANY? WHAT MADE YOU DECIDE TO PURGE AESTHETICALLY PLEASING SOLAR PANELS WHEN CHOOSING TO IMPROVE THE ENVIRONMENT?

Danial Hadizadeh: I can tell you the exact moment: I was standing in front of a high-rise building that we were supplying material to. It was summer, and I was leaning against the wall. I could feel the heat and how warm the building was. I actually measured the temperature of the building. It was 65 degrees in the building, and the temperature was 29. So the building was much warmer because of the direct sunlight. I began to think of the energy that was going to waste.

Why are we just warming the planet and putting these panels on the wall? While we can capture this energy, convert it into electricity, and use it? The journey started from there. I was hiring people, researching, reading books, bringing onboard investors, putting up my own investment. That was the moment I thought solar could be an option. I was taking into consideration who had done it before and what the costs were.

HOW DO YOU DECIDE WHICH COMPANIES TO WORK WITH? DO CLIENTS SEEK YOUR SERVICES TO COMPANIES?

Danial Hadizadeh: We have to introduce ourselves to architects and engineers so that they know we exist. If they do not know we are here, they wouldn’t know that this is an option. Once they know, they are excited and want us to be apart of their standard process. So yes, we do introduce ourselves to developers, but we also get a lot of requests globally.

From Singapore to Australia, Dubai, many different countries. We are doing our best to help as many clients as we can. Our goal in Mitrex is not to sell materials or to just make money, but it is to make a difference first. Then, we are sure the money will follow after.

WHAT IS THE TESTING PROCESS LIKE FOR YOUR ENGINEERS? HOW LONG DOES IT TAKE TO FIND AN ECO-FRIENDLY SOLUTION THAT WORKS?

Danial Hadizadeh: We started Mitrex basically as a prototype and testing only. We set up our internal lab, bought testing equipment, and hired professionals to test. The initial part was about three years to get to a working prototype. From there, we started the manufacturing part, which we did the testing with third-party companies. That brought us to 2019 when we started the plant and production line, and that was the beginning of the production line for Mitrex.

HOW LONG DID IT TAKE YOUR TEAM TO DEVELOP THE REVOLUTIONARY BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV)?

Danial Hadizadeh: The concept behind the building-integrated photovoltaic is not new. Other people have also thought of it, but there were obstacles. I went everywhere from Europe to Asia to the Middle East, to see what companies were involved and who is doing this the best. Is anyone close? No one wants to reinvent something. If it already exists, let’s just bring it to North America and introduce it.

I noticed the limitation and potential at the same time. The BIPV was limited in shapes, sizes, textures, and colours. It was also very expensive. From an architect’s perspective, it is inconvenient to work with only two or three colours and two sizes. You would have to change it and redo the whole thing. Those are the triangles of Mitrex. We should be able to produce in a high volume to lower the cost. We should also have all different sizes, colours, and textures. Those were the questions we had to answer and the criteria we had to meet.

WHICH OF YOUR PRODUCTS WAS THE MOST CHALLENGING TO CULTIVATE? WHICH WAS THE EASIEST?

Danial Hadizadeh: The first model, which was the cladding, took the longest. It was not necessarily the hardest, but it was the first one that we attempted. We were learning, and we were improving ourselves. We develop the newer products quicker now, but we are constantly raising the bar and are looking at products that are a lot more complex.

As far as solar panels and BIPV goes, we have mastered it. Now, we know what direction to go. One direction is to improve our existing products, and the other is looking into new product ideas. I want to have a building with the solar growing on top of it.
Mitrex Advocates For More Awareness This Earth Day Around Tackling Climate Change

While marking Earth Day, Mitrex, a Canadian manufacturing leader in solar technology, is emphasizing the need for more renewable energy infrastructure and innovations to tackle the overwhelming climate crisis.

Mitrex is using its patented building-integrated photovoltaic technology (BIPV) to realize its vision of a world where solar energy is generated by any surface touched by the sun, contributing to a net-zero carbon future.

“The devastating impacts climate change has had on the world economy, especially over the last few years, can no longer be ignored,” says Mitrex CEO Danial Hadizadeh. “The recent federal budget strengthens the Canadian climate plan with $17.8 billion in resources, including a transition towards more renewable energy sources, an opportunity for BIPV technology to be a leading solution. Our products can be used on homes, new buildings, and can be retrofitted for older buildings, ensuring all surfaces can create energy without harming the environment.”

With its easily-integrated solution, Mitrex can extend itself to be a worldwide leader in the fight against climate change, a long-ignored crisis that has only been overshadowed by the acute health crisis of COVID-19. As our primary focus shifts to the longer-term future, the deployment of renewable energy solutions will lead to the creation of new jobs domestically and overseas, which will ultimately expedite economic recovery.

Mitrex has more than 50 projects in the works throughout Canada and in additional countries. As it looks forward, the company continues to innovate new products that will help turn the sun into a major energy source. Its upcoming products include solar windows, side paneling and more, which will all contribute to the ongoing fight against the global climate crisis.

Mitrex has those looking to take steps to shrink their carbon footprint in mind with its product line - solar cladding, railing or rooftop panels. The products not only help cut down on utility costs and even produce a surplus of energy that can have financial benefits to building owners and homeowners alike, they also look great and integrate with a wide range of building styles and colours.

“The most important resource we have is our planet, and at Mitrex we have a singular focus of protecting it at any cost,” explains Hadizadeh. “Our goal is to be the catalyst that accelerates the adoption of sustainable energy-generating human-made structures.”

April 22, 2021

GOLD WINNER

MITREX IS THE PROUD WINNER OF:

ASA Welcomes New Member Mitrex

At the Architectural Solar Association, we believe that for architectural solar solutions to become commonplace, solar technology must be integrated with the building systems supply chain.

We also see a gap in the photovoltaic (PV) industry’s ability to accommodate customizable solutions that architects require. As it stands, architects either need to adapt their methods or PV manufacturers must innovate customizable, affordable solutions that can be easily integrated into the building envelope.

The good news is that over the last several years, there has been a steep decline in the costs of solar technology as the cladding industry develops more innovative fastening means. All while architects are still designing buildings based on customizable cladding methodology.

The convergence of advanced cladding innovations and cost-effective customizable PV solutions can be seen in the product offerings one of ASA’s newest members, Mitrex.
MITREX AN OVERVIEW

Mitrex is a sister company of Cladify, and is focused on integrating PV elements into its cladding solutions while maintaining an architect’s ability to customize cladding element dimensions and appearance. Mitrex is a prime example of a major building industry player that sees an opportunity in integrating solar into the built environment by breaking down the traditional barriers. With a vision of completely transforming modern infrastructure, Mitrex sees the potential in every aspect of the built environment for energy generation. From cladding to solar railings, this new company has ambitious goals for integrating its innovative solutions.

Mitrex was established in 2019 by Danial Hadizadeh, founder of Cladify, a global innovator in cladding systems and solutions. Having roots in the built environment enables the team to approach architectural solar from the perspective of the building industry. In light of its established cladding integration methods, integrating PV is an obvious next step.

Initially, Mitrex started out with two product offerings: solar cladding and solar railing. Both products are integrated directly in the building envelope and are customizable in terms of color, transparency, tint, and pattern.

Looking ahead, Mitrex is actively expanding into other building materials including solar windows, curtain walls, roofing, siding, and traditional framed solar modules. Mitrex also utilizes vertically unused spaces and offers full turnkey services from design, manufacturing, installation services, and financing to keep architectural solar cost-competitive.

MITREX SOLAR CLADDING

Mitrex solar cladding is a product unique to the North American market.

The company’s competitive advantage lies in its proprietary aluminum honeycomb back-sheet and customizable front-sheet. The aluminum back-sheet provides a unique structural backbone and it exhibits superior thermal performance by acting as a continuous heat-sink for the solar cells.

Due to its opaque nature, Mitrex typically integrates high-efficiency crystalline solar cells in its Solar Cladding. In addition, Mitrex’s front-sheet is fully customizable and can resemble stone, tile, wood, or virtually any appearance an architect desires, as seen in the images below.

MITREX SOLAR RAILING

In addition to its cladding product line, Mitrex offers a suite of solar railing components that can be custom configured to meet the architectural constraints of most projects. The Mitrex SolaRail™ utilizes amorphous thin-film or crystalline solar cell technology that can be tailored to a project’s transparency and sizing requirements.

The glass transparency, color, tint, and metal handrails and posts are all customizable. Mitrex has also developed a railing capture that seamlessly integrates PV system wiring, a key detail for the aesthetic demands of modern architecture.

The solar railing is also designed to integrate seamlessly into modern architecture, as demonstrated in the images below.

A NEW PATH FORWARD FOR PV INTEGRATION

Mitrex sees aesthetics as a major barrier to integrating solar into the built environment. By designing PV solutions that act as building materials, Mitrex is enabling architects to integrate solar without compromising design intent.

May 31, 2021
Mitrex, GTA-based solar technology manufacturer of building-integrated photovoltaic technology (BIPV), has officially launched operations of its new production factory in Toronto, Ontario.

Now fully operational, the new facility will be the largest building in the world to date incorporating Mitrex’s patented solar solution, including solar cladding, windows and railings. The facility, which will also act as the company’s head office, will allow Mitrex to localize its production in the Canadian market while ramping up product offerings into other markets including the United States of America.

The new manufacturing facility, comprised of a uniquely designed 3D outer wall of the company’s cladding technology, will span an area of over 100,000 square feet and will have a fully automated production line. This will allow for a more effective production system to produce Mitrex’s innovative solar offerings at competitive prices for clients within the North American market and beyond.

"AS THE CLIMATE CRISIS CONTINUES TO DEEPEN, WE NEED TO REFORM HOW WE INVEST IN INTEGRATED SOLAR TECHNOLOGY THAT IS COST-EFFECTIVE, MALLEABLE AND EFFICIENT," says Mitrex CEO Danial Hadizadeh.

"WITH THE OPENING OF THE NEW FACTORY, IT WILL ALLOW US TO CREATE CONSTRUCTION MATERIALS THAT MEET THE ARCHITECTURAL DEMANDS OF OUR CLIENTS WHILE CREATING A BLUEPRINT FOR FUTURE MITREX FACTORIES ACROSS THE WORLD."

The first-of-its-kind facility will help Mitrex cement itself as a major player in the North American and global markets, with its R&D efforts, manufacturing capabilities, and new supply chain capacity. This factory structure will then be used in future facilities throughout Canada, the US, and then the world.

"THE NEW FACTORY EQUIPPED WITH OUR ROBUST PRODUCTION LINE WILL ALLOW MITREX TO PRODUCE 25,000 SQUARE FEET OF SOLAR INTEGRATED PANELS SUCH AS SOLAR CLADDING AND SOLAR GLASS FOR WINDOWS AND RAILING PER DAY," says Hadizadeh. "WE FIRMLY BELIEVE THAT WE CAN TURN ANY SURFACE THE SUN TOUCHES INTO AN ENERGY SOURCE WITH OUR PRODUCTS WITHOUT COMPROMISING BEAUTY AND AESTHETICS. OUR MALLEABLE TECHNOLOGY IS THE FUTURE OF SOLAR INFRASTRUCTURE AND WILL BE CRITICAL IN SUPPORTING EFFORTS IN CURING CARBON EMISSIONS."

Providing a range of self-sufficient power systems for architects, developers and building owners Mitrex offers affordable variety through its solar cladding, railing, glass and roofs. The new factory will allow for 100 per cent of Mitrex products to be made in Canada.

ABOUT MITREX
Mitrex strives to be a world leader in the green building sector by researching, advancing, and manufacturing integrated solar technology. Mitrex provides full turnkey services, combining the creation and installation of the building envelope together with solar energy generating systems. Our mission is to be the catalyst that accelerates the adoption of sustainable, energy-generating, human-made structures. Our belief is that rapid, low-cost, sustainable manufacturing is economically viable, and is the road to a brighter future for humanity.

July 6, 2021

Mitrex Facility, Toronto, Ontario

Mitrex Facility, Toronto, Ontario

Mitrex Solar Cladding

Mitrex Solar Cladding
Radical innovation was employed to change an entire industry that was not moving fast enough to reverse climate change. True innovation founded in the need for improvement is challenging, and it requires dedication and commitment to see things through, no matter the cost.

Mitrex employs the same holistic mindset, dedication, and radical innovation methodologies to improve the construction materials market. Mitrex introduces truly affordable, building integrated photovoltaic (BIPV) cladding and glazing products that have dual functions—to clad the building, and generate clean, sustainable solar energy. And because these products are purpose-built, they are priced to compete favourably with traditional cladding and glazing products such as precast concrete and ACM panels, balcony railing glass, traditional windows, window walls, curtainwalls, and skylights, to name a few.

Existing solar cladding and glass products have not been widely adopted because they were not functionally integrated into the building envelope. They failed to gain significant market share because of high cost, relatively poor design and aesthetics, a lack of adaptability and flexibility, an inability to customize, long lead times, slow installation, and the fact that these were sold as components rather than complete, integrated solutions.

Mitrex’s approach is radically different. Using a holistic approach, it designed products that would be readily adopted for mainstream applications such as condo and apartment buildings, where the functionality of the building material is preserved while additionally offering energy generation. What makes these products extraordinary are not what they can do, but more importantly, how the business model enabled Mitrex to sell competitively priced turnkey solar solutions for the same price as traditional competitors selling cladding and glass by the square foot.

Mitrex's goal is to be the number one energy microgrid producer in the world by transforming buildings into self-contained power plants. More importantly, it aims to convert more and more sunlit surfaces into dual functioning products that would generate solar energy— from window walls to greenhouses to military applications.

June 21, 2021

Mitrex Solar Skylight

The construction industry is relatively slow-moving for new product development and innovation compared to other sectors such as information technology or telecommunications. Most innovations have been “incremental” in their approach—taking one product with a single function and making it slightly better.

Using this line of thinking, developing a product that could provide two or more functions would be very difficult to attain unless you changed the way you approached innovation.

Consider the automobile industry and the electric car. Car companies were stuck with incremental improvements of gasoline-powered cars when the world needed them to move to electric cars immediately. It took a new way of thinking to jolt the car industry into the future by introducing “viable” electric cars... that would pull the market share away from gasoline-powered vehicles.

price competitiveness with traditional competitors by entering into long-term agreements with the building owner to generate electricity for the building and share the revenue of its production. In this way, Mitrex generates enough revenue to cover its costs and generate the necessary profits for growth while significantly lowering the electricity costs for the building owner over the length of the 30-year agreement.

Considering the hyper-competitiveness of the construction material market, having a competitive price means that developers and building owners would be willing to entertain the idea of “Solar Cladding/Glass”, but it doesn’t mean they would necessarily buy.

Mitrex had to demonstrate that it offered much more than simply price competitiveness. It had to be a much better option than the traditional product choices, and also have the value engineering that would make Mitrex turnkey solutions the natural choice—beautiful aesthetics, design versatility and flexibility, dependability, rapid installation, and a production/delivery lead time of fewer than 3 weeks.

Mitrex is the PROUD WINNER OF:

URBAN TORONTO

Radical Innovation: A New Business Model for the Construction Industry

Innovation - Page. 24
Mitrex Solar Railing

The Future of Balconies With Mitrex Solar Railing

Mitrex Solar Railing™ technology extends solar energy generation to balconies, maximizing energy production on otherwise unused surfaces.

Mitrex solar railings consist of high efficiency solar cells sandwiched between a front layer of heat-tempered, laminated glass and a back layer of either glass or an aluminum honeycomb for a solid metal finish.

- Code compliant, easy to install, safe, and durable
- Design flexibility, including glass transparency, handrail, and base options
- Energy-generating while maintaining the functionality of the railing
- Economical through our revenue-sharing business model
- Produced in a North American automated state-of-the-art manufacturing facility

FLEXIBLE IN TRANSPARENCY & DESIGN
Mitrex solar railings can meet any design need and can be fully customized to ensure aesthetics are never compromised.

CUSTOMIZABLE POSTS & CAP COLOURS
- Customizable transparency and size of the railings
- Various handrail, base, and post options to meet any design
- Seamlessly integrated circuitry and connection points of all the electrical components

Solar Technology
Mitrex Solar Railing™ uses advanced solar technology integrated into railing systems to produce sustainable energy.

- Relies on advanced solar technology
- Comprised of heat-tempered, laminated glass to ensure maximum safety and efficiency
- Various installation methods can be used while seamlessly integrating circuitry

Solar Cells
Mitrex builds upon advanced solar technology by combining it with building materials, making solar integrated, multi-purpose products.

- Transparent Solar Technology
- Monocrystalline Solar Cell
- 22.5% Cell Efficiency

Transparent solar technology is for seamless integration of solar without the design drawbacks.

This type of solar technology is the highest performing, most scalable option on the market.
Could Building-Integrated Photovoltaics Solve "Energy Poverty" While Greening Cities?

In Toronto, mass power outages like the 2003 blackout and the 2013 ice storm have exposed our reliance on energy to maintain our ways of life. Electricity drives the developed world, but not all have reliable access. Despite an abundant supply of energy in many parts of the globe, “energy poverty” can be found not just in developing nations but also close to home. In fact, nearly 800 million people (roughly 9.6% of the global population) live without any access to electricity, though untapped renewable energy sources are offering solutions to energy poverty as well as benefiting developed urban centres.

Despite a United Nations-led effort towards universal energy access by 2030, targets are not being met, exacerbated by the COVID-19 crisis and changing priorities. With less than a decade to meet the UN’s goals, creative solutions will be necessary to close the gap. One solution we’ve covered in previous months is building-integrated photovoltaic (BIPV) technology, which incorporates solar cells into exterior building materials like cladding, windows, balcony railing glass, roofs, and siding. This technological advancement—and an unprecedented drop in cost—is combining to make renewable energy much more accessible.

Canadian manufacturer Mitrex is one company with products that make use of every imaginable building surface for power generation, replicating almost any building finish with a solar energy-producing match. This has tremendous applications in urban centres, in many cases reliant on a mix of fossil fuels and power generated far from its end users. This is the case with Toronto drawing hydroelectric power from Niagara Falls and nuclear power from Pickering and Darlington.

In addition to the company’s lofty pursuit of creating green cities by converting buildings into renewable energy collection, Mitrex is working towards the elimination of energy poverty and inequity. With the cost of energy-producing materials now on par with the natural finishes they replicate, Mitrex is campaigning for the mass adoption of this low-cost BIPV technology, aiming to give affordable access to electricity for all and make energy poverty obsolete.

Applications in developed urban centres like Toronto are limitless, home to the third-most skyscrapers on the continent and many more on the way with the most active cranes in all of North America. Much more than just buildings, BIPV materials could be used on every urban surface imaginable, from highway noise barriers to sidewalks.

Compounding the environmental and equity

Mitrex Facility, Toronto, Ontario
advantages offered by this technology, the economic benefits are just as promising for urban areas, having the potential to use surplus energy production for the grid as a revenue stream. Along with property owners, this could be especially beneficial for governments and municipalities that have suffered from the financial setbacks of COVID-19.

Recognizing this potential for expansion in a booming region and other nearby US markets, Mitrex opened a new factory in Toronto earlier this month. This over 100,000 ft² facility will allow Mitrex to locally manufacture solar cladding, windows, producing 25,000 ft² of solar integrated building materials per day. In addition to just producing BIPV, Mitrex offers property owners turnkey solutions for the manufacture and installation of solar energy-generating, and non-solar energy-generating portions of the building. For instance, a portion of an existing or new building could be upgraded for solar energy production very easily, with Mitrex producing and installing BIPV, and the rest of the structure’s facade can be manufactured and installed by Mitrex with regular building materials. This allows for simple adoption of solar generation, reducing our reliance on the high-carbon grid.

July 20, 2021
by Jack Landau

Mitrex Team
ECO-MINDED INSIDE AND OUT

Mitrex develops, produces, and installs solar-integrated products to displace traditional construction materials that do nothing to reverse climate change.

Mitrex aims to reduce the cost of clean green energy by offering solar as a service and, in the process, becoming the world’s largest energy microgrid.

However, this vision begins with the team. With a team of over 150 talented and dedicated employees from all over the world, Mitrex is on a mission to change the construction industry and help change the world for the better. This is not an easy undertaking, but with the help of a strong group, Mitrex believes this is possible.

DISCOVER OUR TEAMS

- Accounting & Administration
- Sales
- Project Management
- Design & CNC
- Production & Warehouse
- Installers
- Research & Development
- Engineering
- Business Development
- Visual Design & Marketing
- Human Resources

Mitrex Office, Toronto, Ontario