



# Solskin

The smart climate-adaptive building skin





### Experience Solskin

Elevate your building with a living, breathing system that harnesses clean energy, enhances aesthetics, and sets a new standard for sustainable design.



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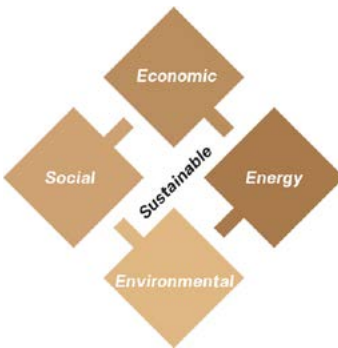
# The Holistic Approach

At ZSR, we believe in smart, beautiful, and sustainable architecture.

Solskin is an intelligent, moving solar facade that can cut building energy use by up to 80% while improving thermal and visual comfort inside. Unlike traditional solar panels, Solskin adapts its smart actuators and AI control system track the sun and provide shading exactly when needed – producing clean energy while keeping buildings cool.

With its lightweight, modular design, Solskin fits perfectly into both new and existing buildings, adding a modern and dynamic look.

Solskin turns facades into living, energy-efficient systems – shaping the buildings of tomorrow.



## Comprehensive Benefits

- Energy Efficiency:** Enables clean energy production while maximizing building energy efficiency.
- Social Impact:** Enhances building aesthetics and occupant comfort, creating a strong identity centered on innovation and sustainability.
- Environmental Responsibility:** Reduces CO<sub>2</sub> emissions and supports sustainable retrofitting efforts.
- Economic Value:** Optimizes net present value (NPV) and lowers the levelized cost of energy (LCOE), ensuring long-term value.

# VISION

Our Mission  
Revolutionizing the built environment through innovative technologies that enhance climate resilience and comfort, reshape modern buildings aesthetics and deliver exceptional user experiences.



Clean, modern, smart and user-centric.





HOSPITAL



SCHOOL

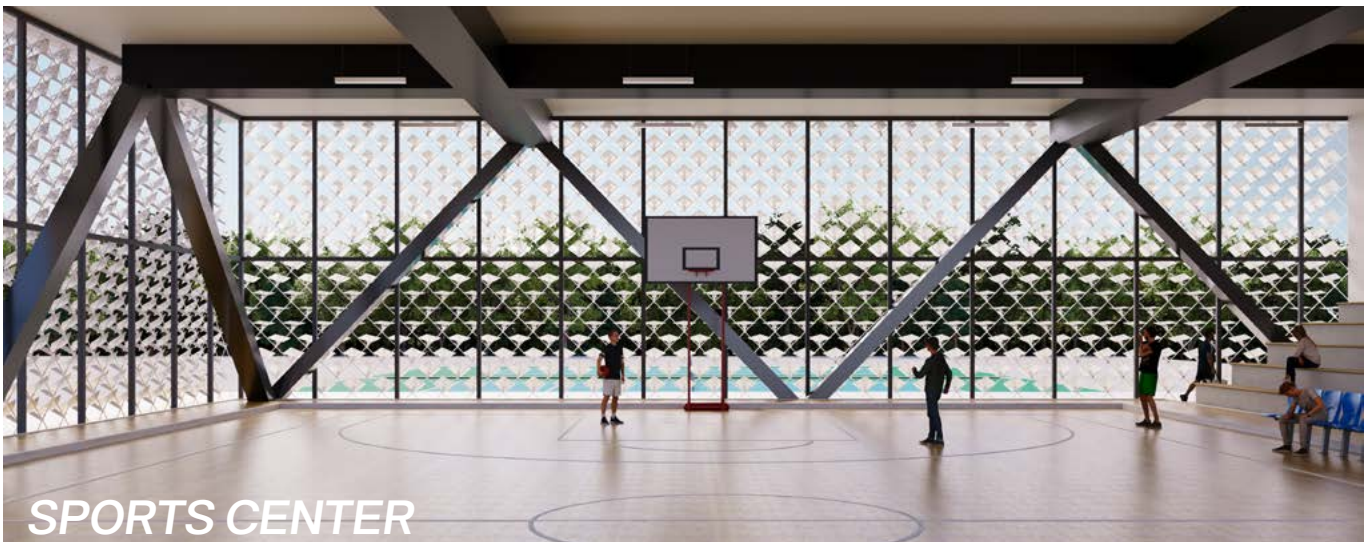


WELLNESS CENTER

INSPIRATIONS



LIBRARY



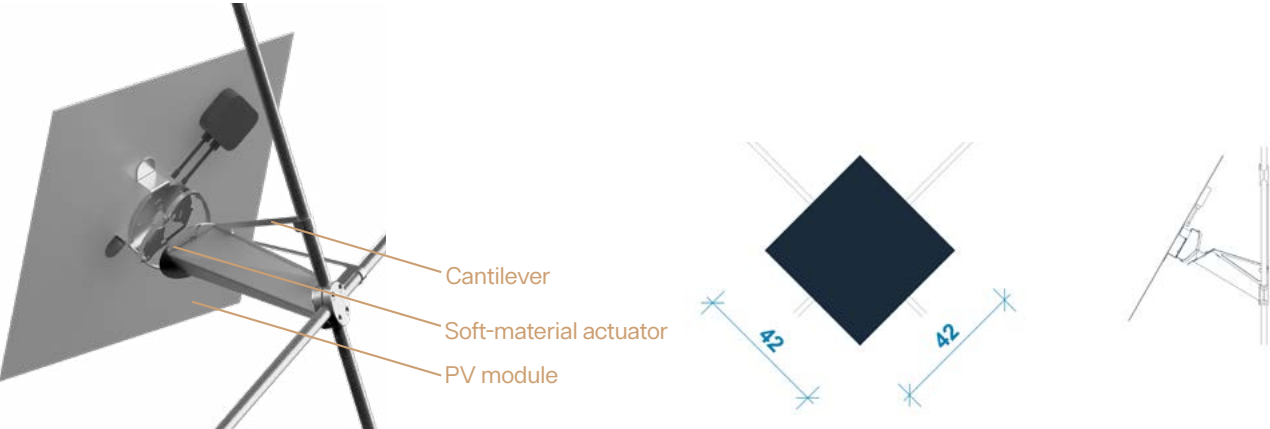
SPORTS CENTER



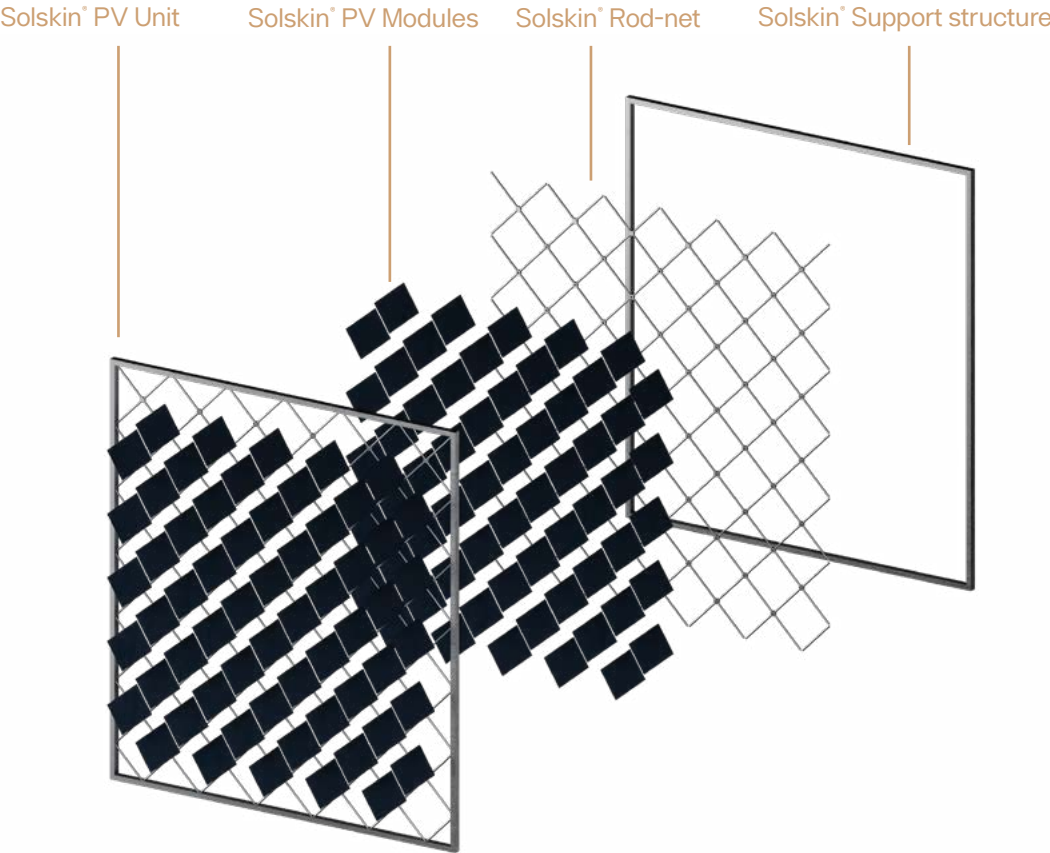
MUSEUM



# Innovation for the Future

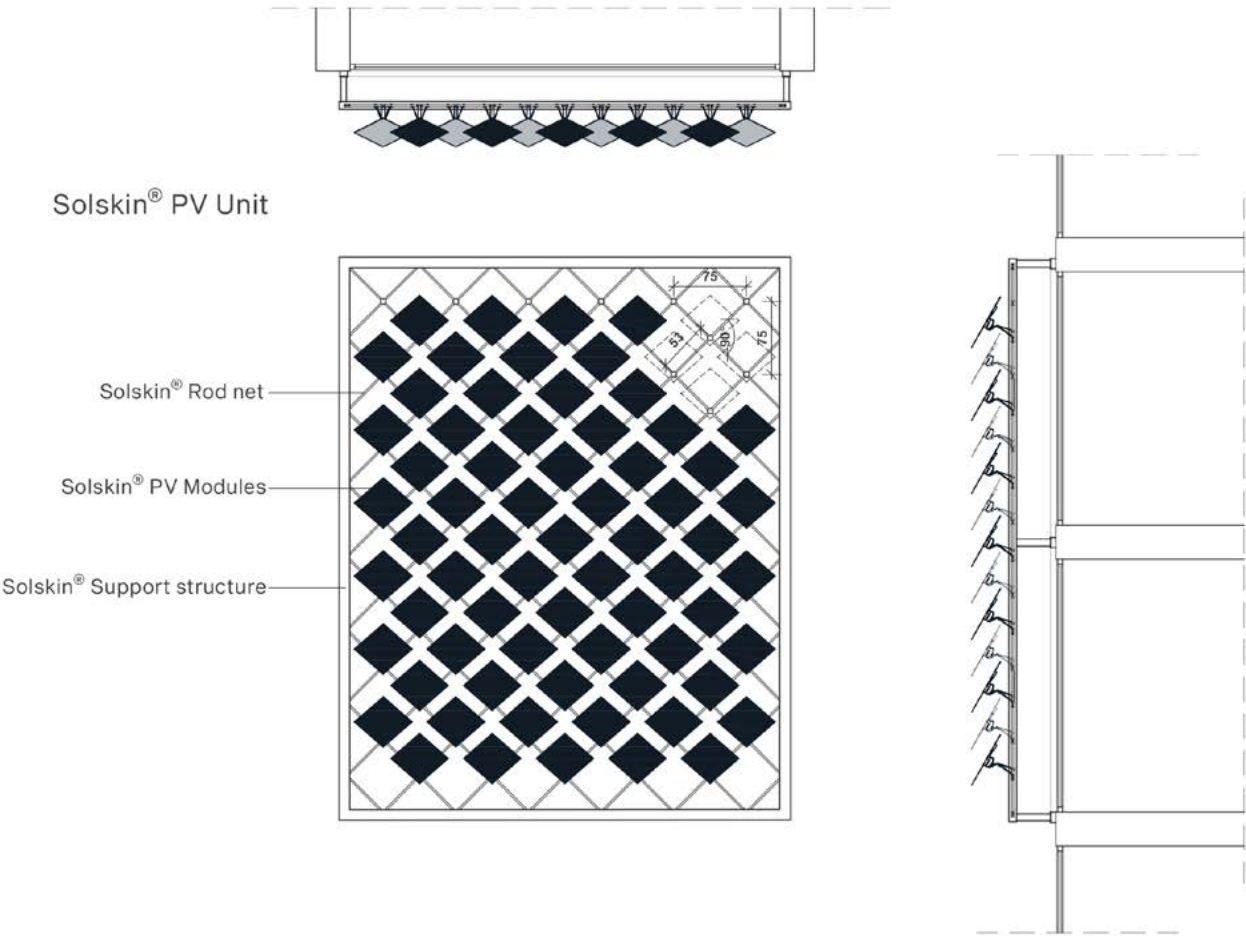


# System Structure



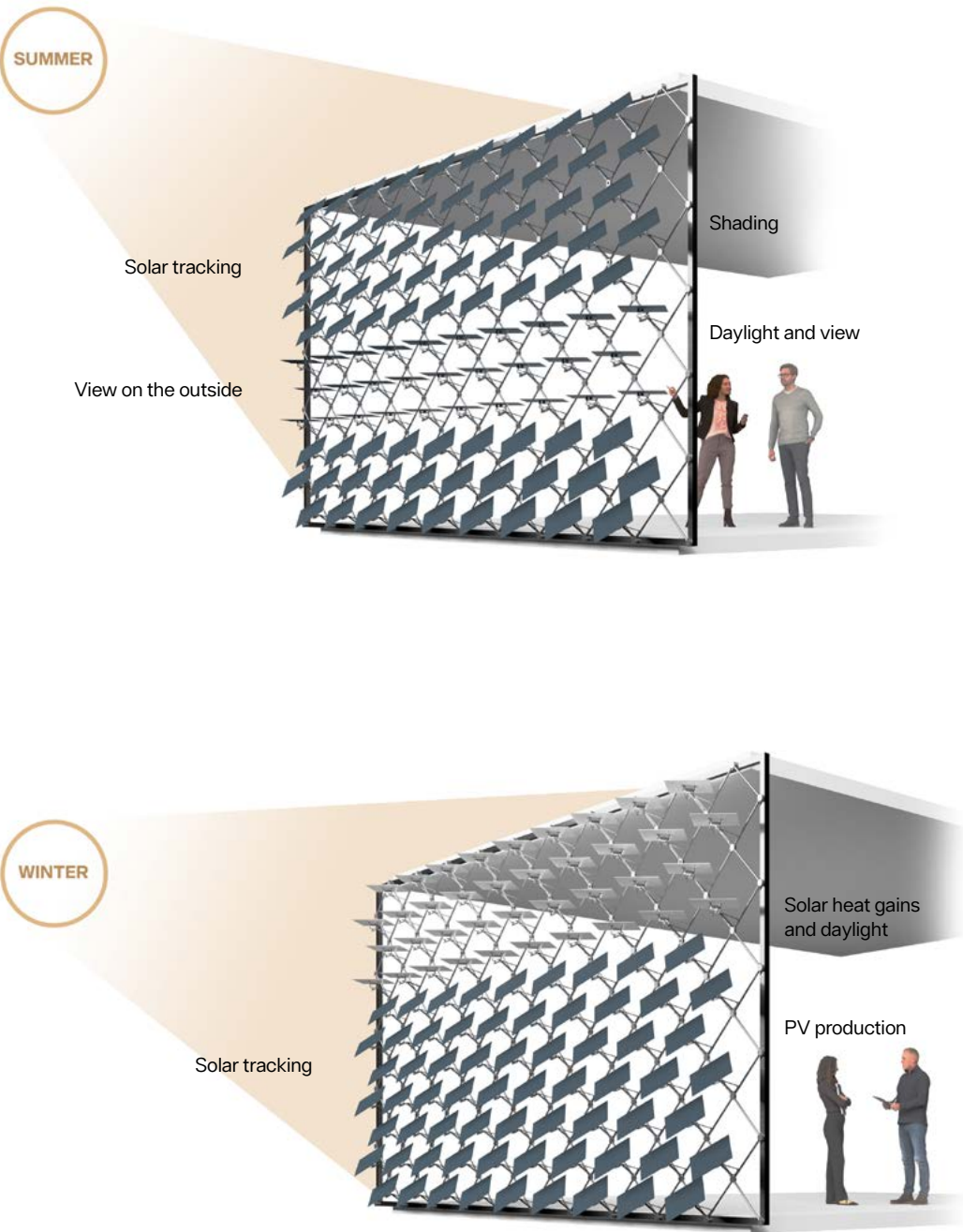
# Technology behind Solskin

- ◆ **Soft Robotic Actuation** – Inspired by nature, Solskin’s actuators function like muscles, stiffening under force without breaking, absorbing wind loads like tree branches, ensuring durability and noiseless operation.
- ◆ **AI Smart Control** – Enhances energy efficiency and user comfort by optimally regulating room climate, natural lighting, and harnessing solar energy for balanced use.
- ◆ **Unmatched Durability** – Built with a stainless steel rod net structure, Solskin withstands extreme wind loads, resists corrosion and UV exposure, and ensures long-term operational excellence.
- ◆ **Effortless Serviceability** – Modular design enables easy replacement of components, extending the system’s lifecycle and reducing maintenance costs.





By dynamically adapting energy production and shading to climate conditions and user needs, Solskin transforms building facades to create energy-efficient and comfortable spaces.



## Durability and Excellence

**Built to Last** – Engineered in Switzerland with certified durability and premium materials, Solskin is a secure, future-proof investment for sustainable buildings.

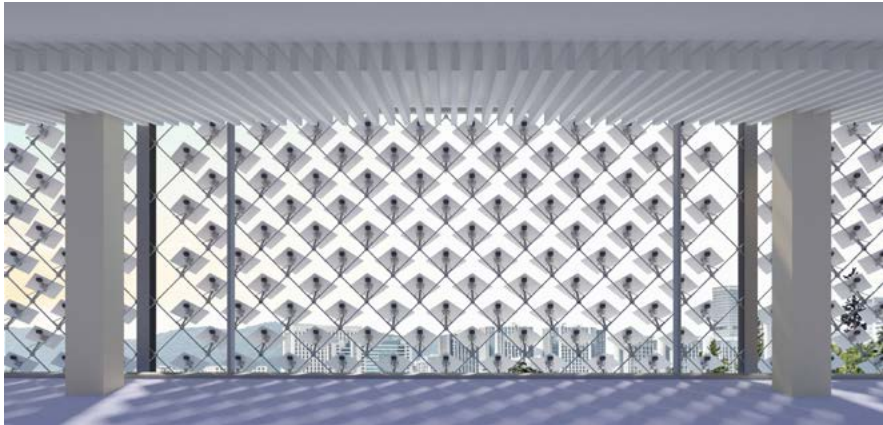
- ♦ **Advanced Material Stress Tests** – Components undergo rigorous testing to ensure resilience under extreme conditions and repeated use.
- ♦ **Extreme Weather Resistance** – Continuously tested against high winds, UV exposure, hail, and fire safety standards for long-term reliability.
- ♦ **Rigorous Actuator Testing** – Actuators are subjected to extensive durability trials, ensuring optimal performance in varied conditions.



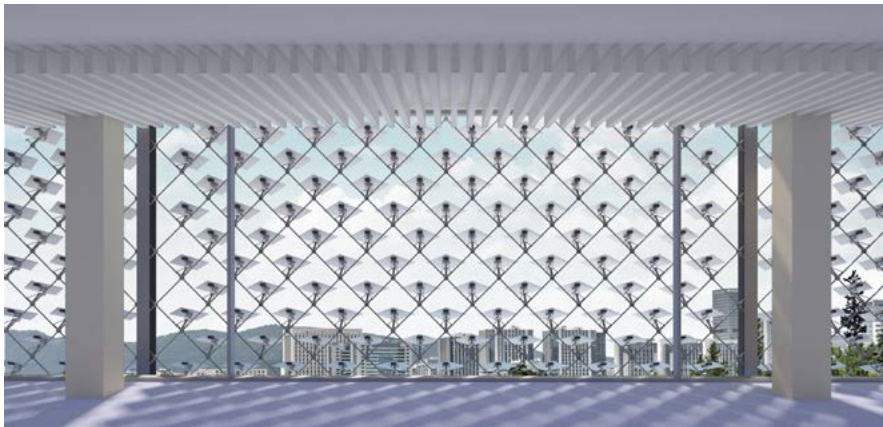


Dynamic Solskin in Action: Capturing energy at every angle

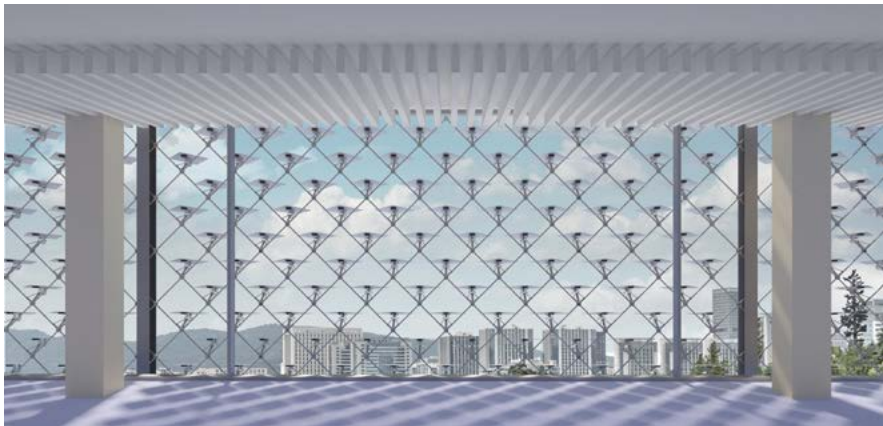
Closed PV panels



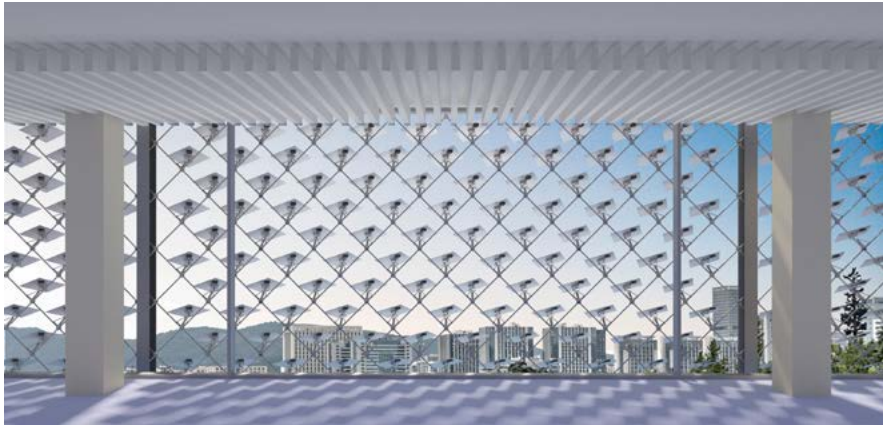
Semi-opened PV panels



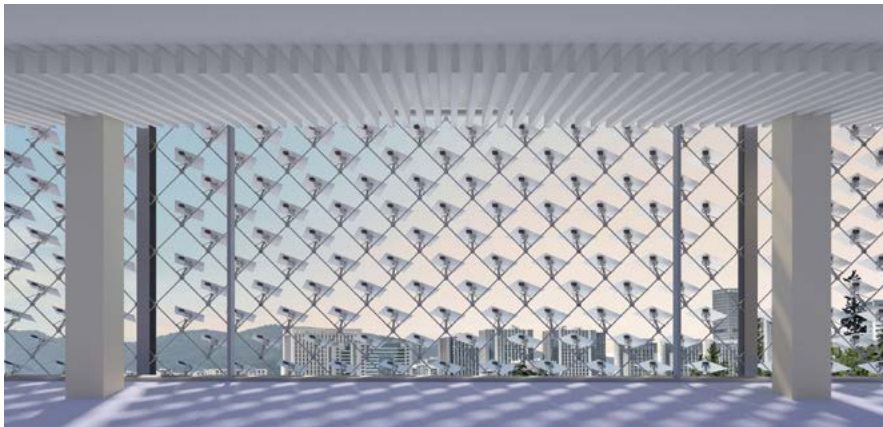
Opened PV panels



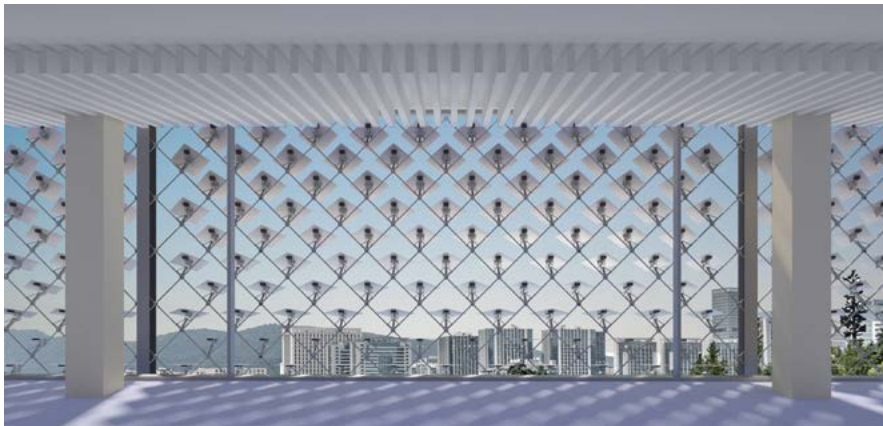
East oriented PV panels



West oriented PV panels



Gradient opened PV panels





# Climate-neutral with Solskin



1

**Discovery - You Like It**

You, as a building owner, architect, or planner, are interested in Solskin and contact us.

2

**Feasibility - We Plan It Together**

We analyze your building or renovation and suggest Solskin integration options. Together with architects and planners, we finalize the details and manage approvals.

3

**Installation - We Mount It**

Our partners install Solskin and integrate it into your building automation system.

4

**Operation - You Enjoy the Benefits**

Solskin is fully functional, enhancing comfort and efficiency.


5

**Support - We're Always Here for You**


We provide updates, monitor performance, and offer maintenance when needed.

# Applications on the System


## Solskin Facade and Building Envelope System




**Windows and glass facades**  
HiLo, Empa, Switzerland



**Opaque facade**  
HiLo, Empa, Switzerland




**Skylight**




**Balcony railing/ Balustrade**  
1st prize, Winterthur, Switzerland


## Solskin Pergolas




**Eave**



**Pergola**



**Solskin Tree**



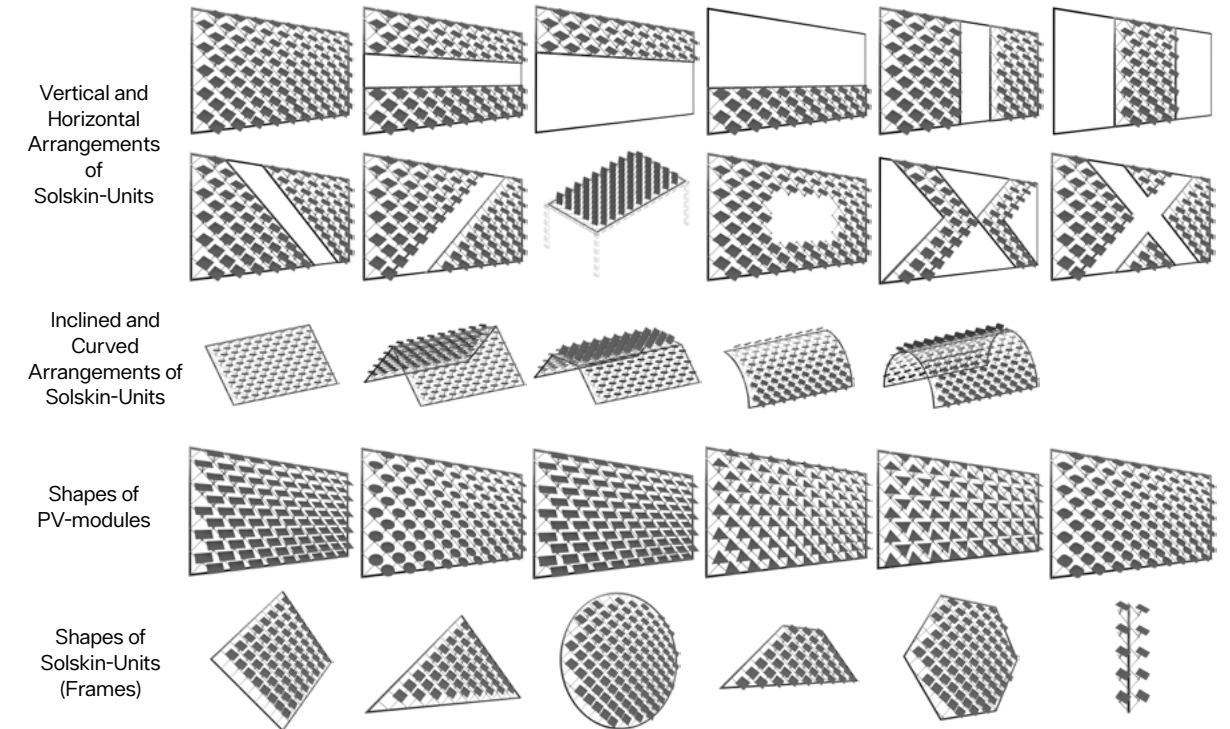
**Solskin Tree**



## Solskin Designs

### 1. Seamless Integration & Flexibility

Adapts to any building geometry with modular elements that can be placed horizontally, vertically, or diagonally.

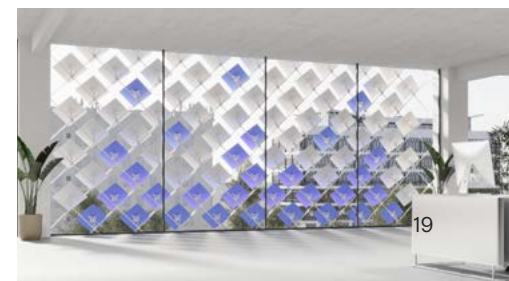
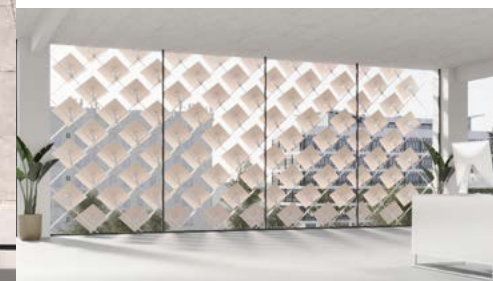


### 2. Dynamic Colours & Light Play

Customizable colours and directional reflections create ever-changing visual depth and movement.

#### The Living Interior

Solskin enhances your interior with customizable colours and dynamic light reflections. The interplay of light and shadow creates a vibrant, ever-changing ambiance, adding depth and elegance to your space.



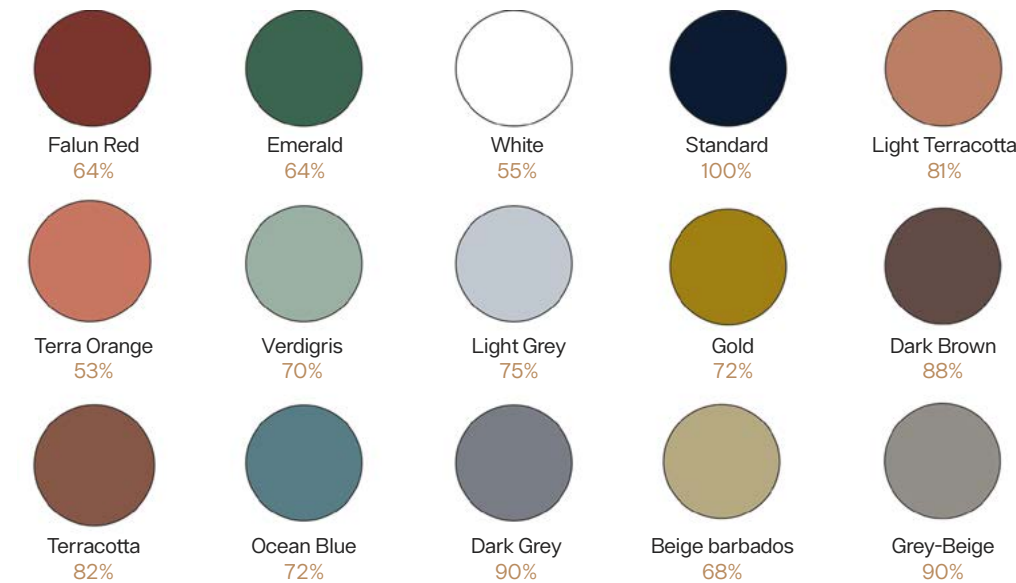
# DESIGN



The Dynamic Exterior

Solskin transforms building exteriors with refined elegance and dynamic aesthetics, enhancing form, depth, and sophistication.

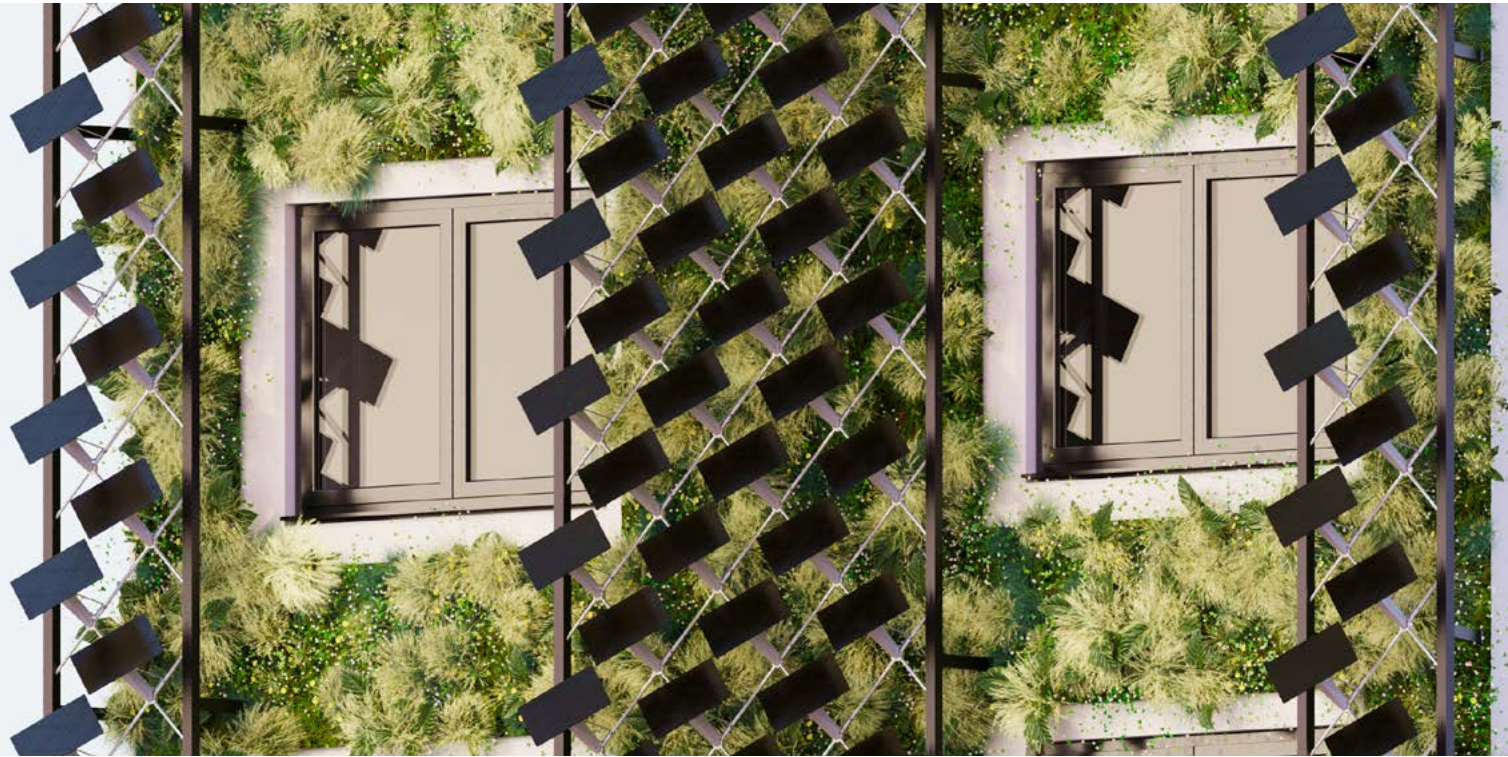
Solskin offers unparalleled design flexibility, allowing clients to choose the **colour of the PV panels** to match their architectural vision. Whether you prefer subtle tones that blend seamlessly with the building or bold colours that make a statement, our technology ensures both aesthetic freedom and high energy efficiency.



The efficiency is dependent on the type of cells used.

3. Greenery & Natural Harmony

Integrates vegetation seamlessly into the facade, blending architecture with nature for a living, sustainable design.



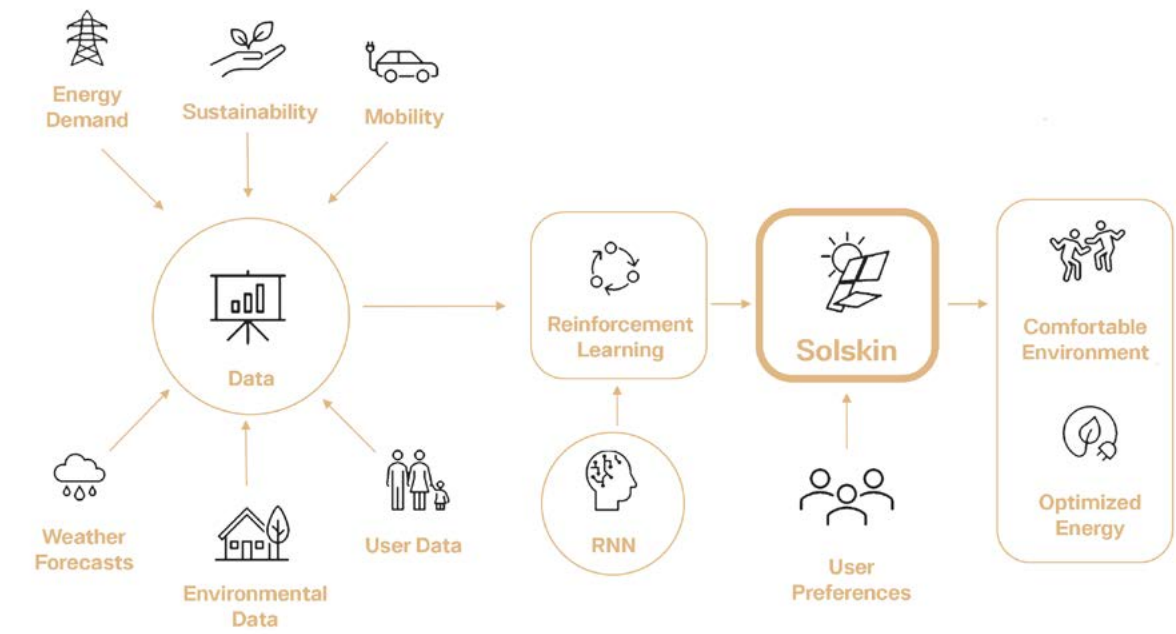


# User Aspect: Comfort and wellbeing






Solskin seamlessly balances shading, daylight, comfort, privacy, and aesthetics, enhancing both spatial experience and energy efficiency.

- ◆ **Personalized AI-Driven Comfort** – Learns from user preferences and weather patterns to optimize climate and lighting dynamically.
- ◆ **A Space that Evolves with You** – Continuously adapts to climate change, shifting usage, and new occupants, ensuring long-term flexibility.
- ◆ **Seamless Control & Monitoring** – The Solskin Cloud provides real-time insights, performance tracking, and manual system adjustments for full user control.

By combining intelligent learning, adaptive comfort, and sustainability, Solskin transforms buildings into future-ready, energy-efficient spaces for living, working, and beyond.



# Benefits

- **Optimize energy smartly**
  - ◆ Reduce overheating and HVAC costs.
  - ◆ Save up to 80% energy with PV production and smart adaptive shading.
- **Enhance Occupant Comfort**
  - ◆ Serve users to improve living and working conditions with Powerful AI algorithms.
- **Elevate your building's identity**
  - ◆ Sleek, innovative facades.
  - ◆ Custom designs aligned with your vision.
- **Meet sustainability goals**
  - ◆ Reduce building carbon footprint (construction and operations).
  - ◆ Comply with green building standards (e.g., Minergie, SNBS, DGNB, LEED).
- **Future-proof your investment**
  - ◆ Benefit from technology that evolves with changing climates, environments, and your specific needs.
  - ◆ Enjoy long-lasting performance with minimal maintenance, saving time and resources.

## Features

- ◆ Green solar energy production on-site
- ◆ Dynamic Solar Shading
- ◆ User-centered AI-comfort & Intelligent climate adaptation
- ◆ Architectural elegance
- ◆ Modular & customisable structure for a wide range of applications
- ◆ Seamless Integration & Reliable Support
- ◆ Proven Durability & Weather Resistance
- ◆ High quality materials & Low maintenance



# PROJECTS



# KELLER DIAMANT

Winterthur, Switzerland

Investor: **KELLER Druckmesstechnik AG**

Architect: **Strut Architekten**

Project Name: **KELLER Diamant**

Project Type: **New construction**

Time plan: **In Realization**

Product Type: **Solskin Comfort**

Integration: **Facade**

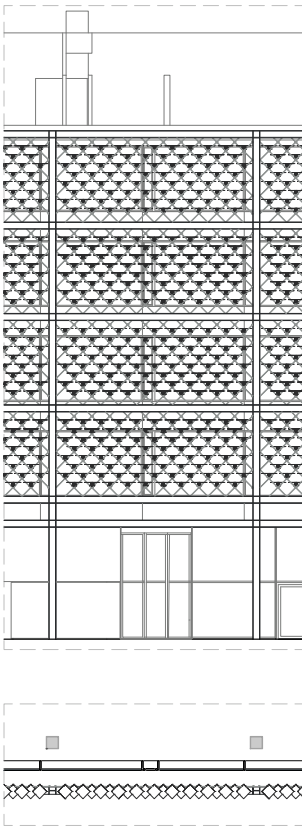
Modul Type: **Monocrystalline (black)**

SOLSKIN  
SURFACE  
**1300**  
m<sup>2</sup>

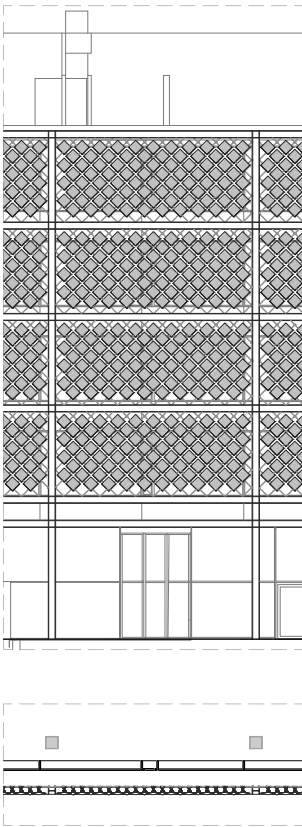
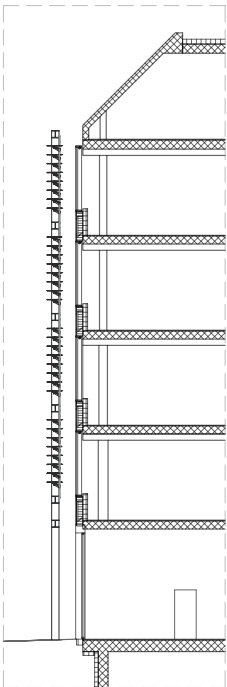
NUMBER  
OF MODULES  
**3488**

ENERGY  
SAVINGS  
**140**  
MWh per year

EMISSION  
SAVINGS  
**16**  
tCO<sub>2</sub> per year



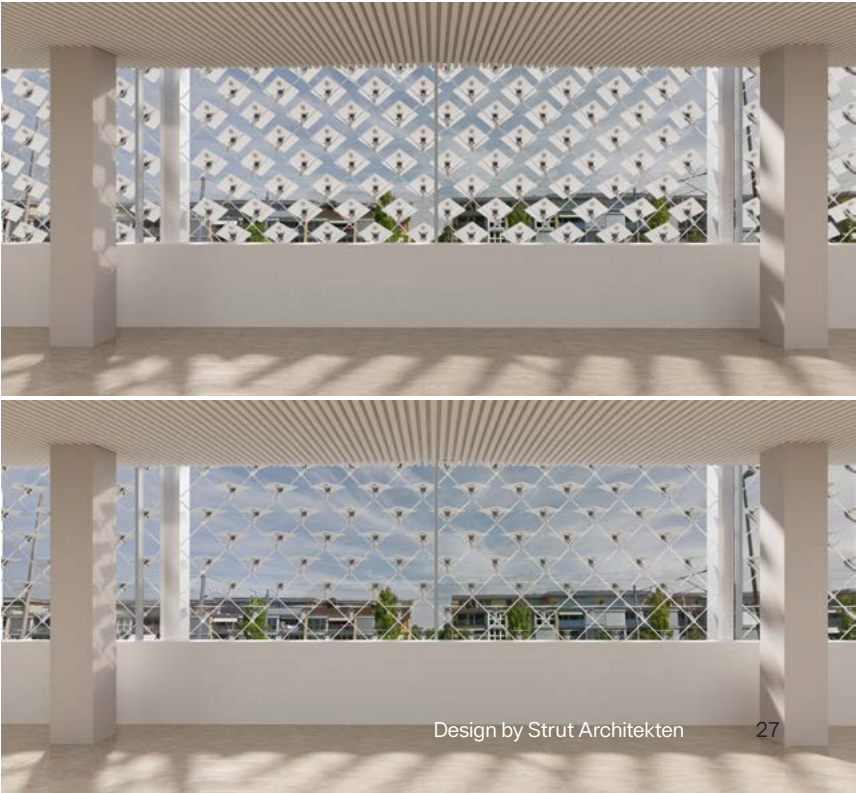
KELLER Diamant - Open Panels



KELLER Diamant - Closed Panels

The company KELLER Druckmesstechnik AG is an innovative sensory company from Winterthur. The company invented an integrated silicon measuring cell to measure pressure in the most precise manner.

The KELLER Diamant represents the largest application of Solskin so far; designed to cover 1,300 square meters. Mounted on the advanced manufacturing facility of KELLER Druckmesstechnik AG, the system reflects the company's commitment to technology, innovation, and employee well-being.





# SWISS SOLAR CHALET IN THE ALPS

Illtios, Alps, Switzerland

Investor: **Greber Family**  
Architect: **ZSR**  
Project Name: **Intelligent Alpine Chalet**  
Project Type: **Refurbishment/ Renovation**  
Time Plan: **In operation since November 2024**

Product Type: **Solskin Comfort**  
Integration: **Smart Facade**  
Modul Type: **Monocrystalline**

SOLSKIN SURFACE

**28.5**

m<sup>2</sup>

NUMBER OF MODULES

**89**

ENERGY SAVINGS

**1.8**

MWh per year

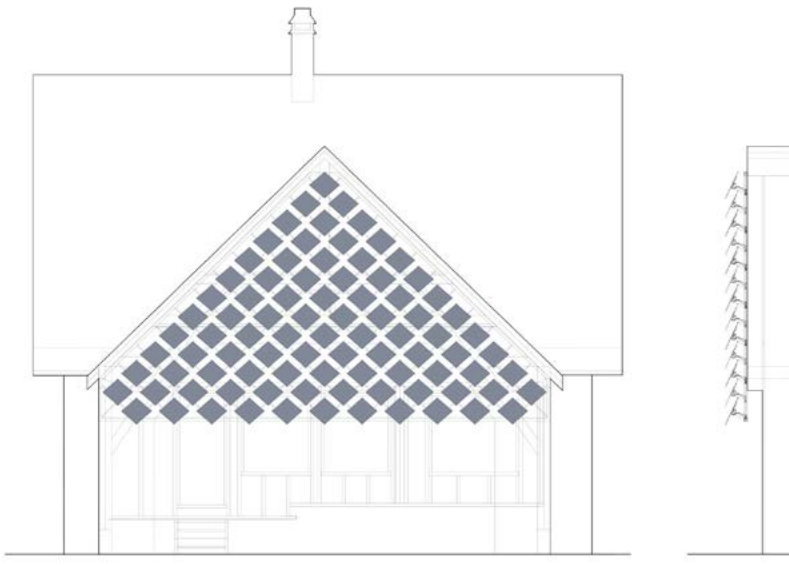
EMISSION SAVINGS

**0.28**

tCO<sub>2</sub> per year



The project focuses on the revitalization of an old alpine chalet to improve its energy efficiency while preserving the charm of the historic architecture. By renovating the facade, the design harmonizes with the original geometry of the building, allowing for better exposure to natural light and a more functional layout for the collection of solar energy. The project has been awarded the Platinum Winner in the Sustainable and Eco-Friendly Residential category at the Houzee Awards 2025.





# ZERO CARBON BUILDING SYSTEMS LABORATORY

Zurich, Switzerland

Investor: **ZSR supported by NCCR Digital Fabrication & Swiss**

**Climate Foundation**

Architect: **ZSR supported by Chair of Architecture and Building**

**Systems**

Project Name: **Zero Carbon Building Systems Laboratory at ETH**

**Zurich**

Project Type: **New construction**

Time plan: **In operation since June 2024**

Product Type: **Solskin Comfort**

Integration: **Facade**

Modul Type: **Monocrystalline (Black)**

SOLSKIN  
SURFACE

25

m<sup>2</sup>

NUMBER  
OF MODULES

60

ENERGY  
SAVINGS

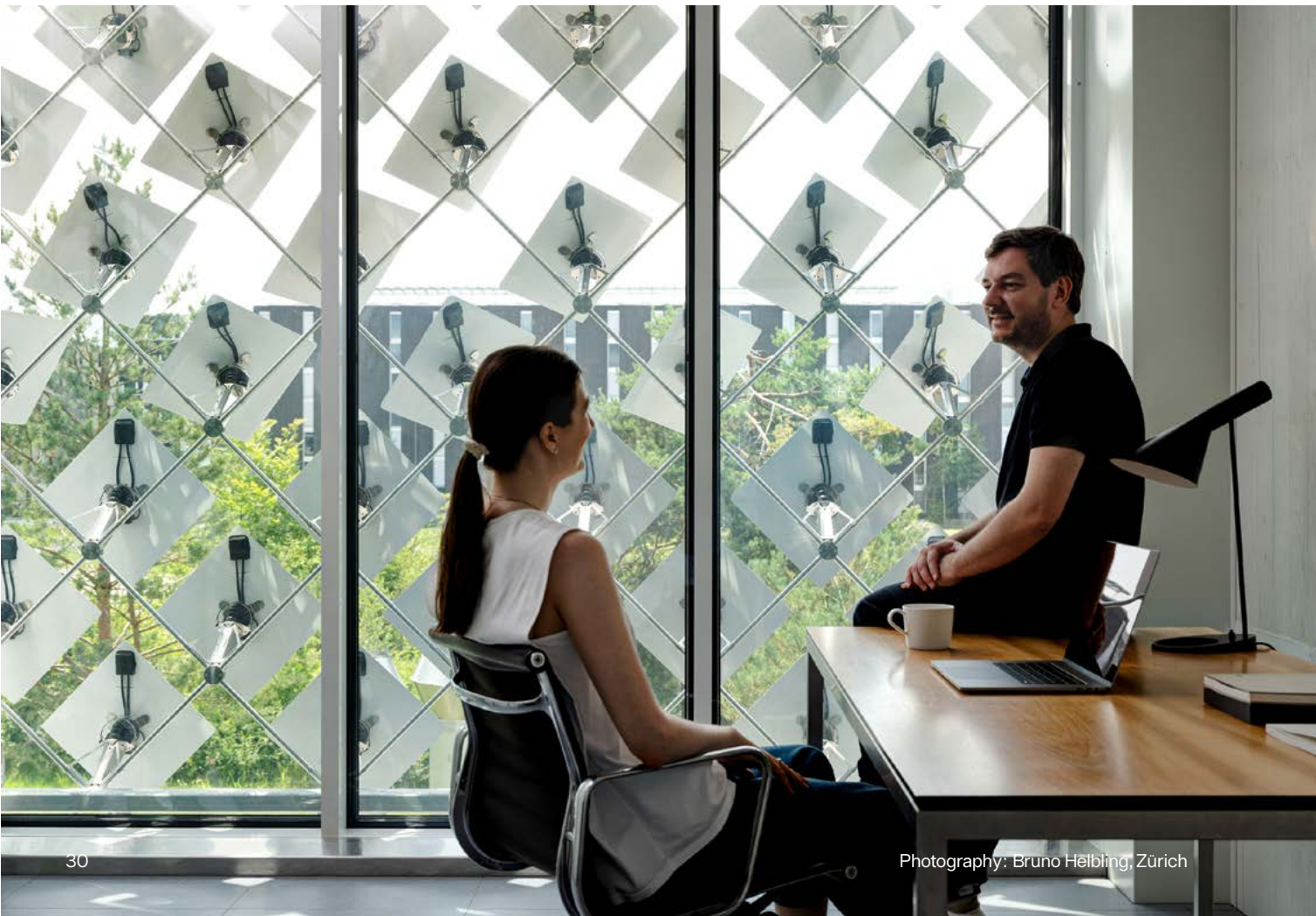
1.7

MWh per year

EMISSION  
SAVINGS

0.2

tCO<sub>2</sub> per year



Photography: Bruno Helbling, Zürich



Solskin's latest product installation at ETH Zurich's Zero Carbon Building Systems (ZCBS) Lab highlights its transition from a prototype to a fully industrialized solution, demonstrating its market readiness. It is allowing us to evaluate and verify lab results on energy efficiency, performance and user interaction in real-world conditions.

Photography: Bruno Helbling, Zürich



# HILO, NEST BUILDING

Empa Campus, Dübendorf, Switzerland

Investor: **Empa**  
Architect: **ROK Architekten**  
Project Name: **HiLo Unit at Nest**  
Project Type: **New Construction**  
Time plan: **In operation since October 2021**

Product Type: **ETH - Solskin Prototype**  
Integration: **Smart Facade**  
Modul Type: **CIGS thin-film**

The NEST is an incubation and demonstration facility for “Next Evolution in Sustainable Building Technologies”.

SOLSKIN SURFACE  
**9**  
m<sup>2</sup>

NUMBER OF MODULES  
**30**

ENERGY SAVINGS  
**1**  
MWh per year

EMISSION SAVINGS  
**0.2**  
tCO<sub>2</sub> per year

SOLSKIN SURFACE  
**13.1**  
m<sup>2</sup>

NUMBER OF MODULES  
**42**

ENERGY SAVINGS  
**0.69**  
MWh per year

EMISSION SAVINGS  
**0.11**  
tCO<sub>2</sub> per year

The project centers on integrating photovoltaic (PV) systems into the facade to modernize the building while achieving a balance between energy production and architectural aesthetics. By renovating the facade, the design aligns with the building’s original geometry, facilitating a more functional layout for solar energy collection.

# SOLAREEDGE HOME – A CLIMATE-ADAPTIVE RENOVATION

Regensdorf, Switzerland

Investor: **Family Schenkel**  
Architect: **Zurich Soft Robotics GmbH**  
Project Name: **Building Renovation of Single Family House**  
Project Type: **Renovation**  
Time Plan: **In operation since April 2025**

Product Type: **Solskin Comfort**  
Integration Type: **Facade**  
Module Type: **Monocrystalline**





# CAMPO PROJECT

Winterthur, Switzerland

SOLSKIN  
SURFACE  
1250  
m<sup>2</sup>

Investor: **Stiftung für Kunst, Kultur und Geschichte (SKKG) and Terresta**

Architect: **Studio Burkhardt / Lucas Michael Architektur**

Project Name: **New Building & Refurbishment**

Time Plan: Planning, Design and Realization in 2023-2028

Location: Winterthur (Oberwinterthur)

Product Type: **Solskin Energy, Solskin Lite**

Integration: **Balustrade**

Modul Type: **Monocrystalline**

The Campo area project, located at Eulachpark in Oberwinterthur, is a pioneering development by SKKG and Terresta Immobilien- und Verwaltungs AG. Designed as a hub for work, life, and culture, it incorporates a diverse mix of offices, workshops, businesses, and residential spaces, all while serving as a key meeting point for the neighborhood.



Design: © ARGE Studio Burkhardt und Lucas Michael Architektur, Zürich mit EDER Landschaftsarchitekten, Opfikon  
Visualisation: © maars architektur visualisierungen

# Team



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## Awards

Spin-off | **ETH zürich**



reddot winner 2024

 Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra  
Swiss Confederation  
Innosuisse – Swiss Innovation Agency







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