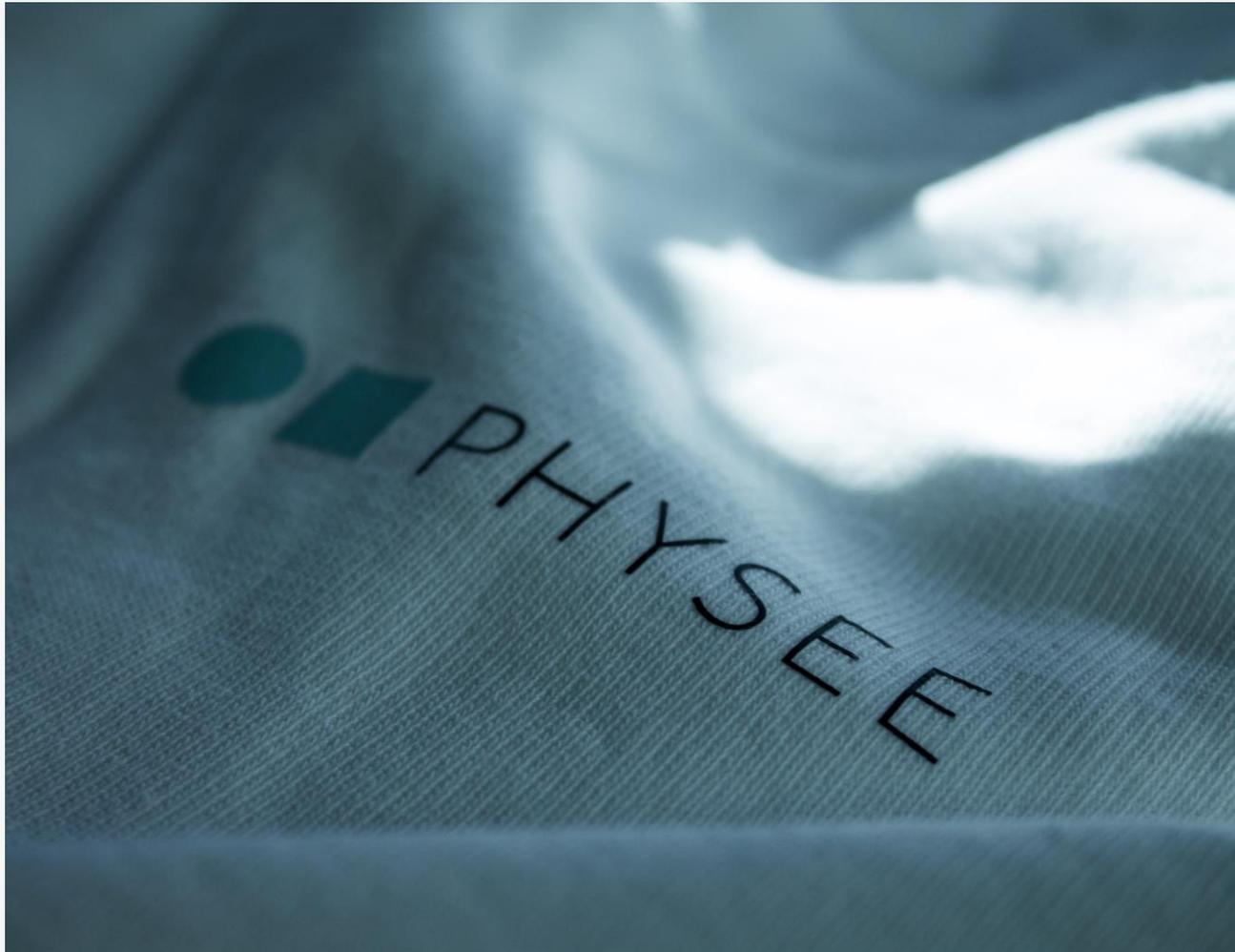




# PHYSEE introduction

Making buildings energy neutral and human centered  
with  
dynamic / power generating windows



# Changing the perspective

We're on a mission to create a future with energy neutral buildings.



40 PHYSEEbility Checks



26 awards

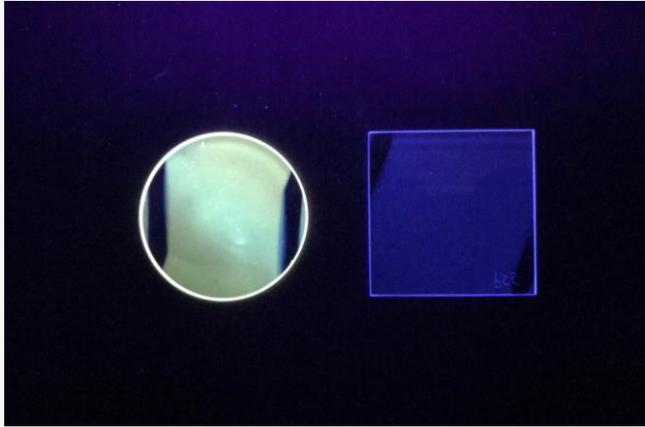


6945 m2 SmartSkin



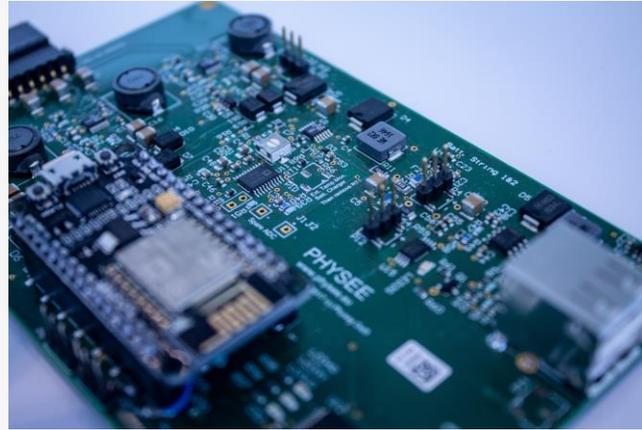
34 employees

# Innovating through research & development



## Research

We are currently developing products that will work on the principle of luminescent solar concentrators, which will use the whole window surface for solar collection. The inorganic material uses no toxic heavy elements, so there are no environmental implications



## Development

Designing, engineering and prototyping: We connect the functionality of solar cells and data sensors with the grid for increased energy savings. We are constantly finding new ways of producing higher amounts of power with limited PV space, while optimizing the energy flows in and around building facades.



## Production

Using our very own production facilities allows us to scale up assembly processes, certify products and integrate these into the production lines of glass manufacturers. Our production engineers can engineer to specific customer demands and governmental requirements

# Mass production: the art of scaling up



## 3cm of PowerWindow

In 2015 the first proof of concept straight out of the labs was born. This fueled more curiosity, ambition and vision for the PHYSEEnairs working towards tomorrow's real estate sector.

## 7,000sqm of SmartSkin

In 2019 facades of Power- and SmartWindows will provide the residents of BOLD Tower, Binck Kade and the employees Kells, Dura Vermeer and Pharos with healthier buildings, alongside reduced utility bills and higher standards of well-being.



# Stronger together

Our collaborations, partnerships, funding and recognition allow our impact to continuously grow and add new dimensions. The growing community of sustainable disrupters are providing us with platforms and a greater voice..



# An energy neutral tomorrow starts today

We are transforming building facades into smart, sustainable and comfortable eco-systems.

90%

Of our time is spent in buildings, with 5x worse air quality than outdoors.

40%

Of the global energy demand comes from buildings.

100%

Of new buildings in Europe must be nearly zero-energy by 2021.



# SmartSkin

The facade of your building brought to life



A living, sensing membrane.

Your facade can be compared to the skin of your body. The outer membrane: It observes, reacts and optimizes facade functionality for your health.



Take advantage of the only surface in contact with both the internal and external environment.

Using the sun's power and localized climate data, our windows transform your glass facade into a SmartSkin.

# SmartSkin Products



## POWER

PowerWindow generates sustainable energy using otherwise reflected sunlight.



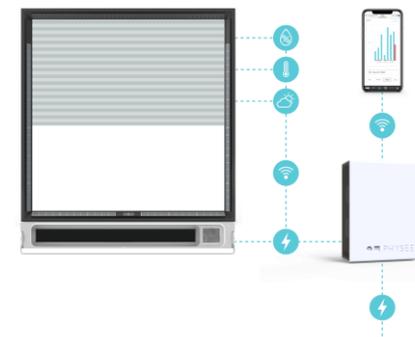
## SMART

SmartWindow gathers data and optimizes climate control for each room locally.



## EESY

Your Energy Efficient System storing and communicating data.



## SKIN

All the add-ons that convert your building facade into an intelligent eco-system.

# SmartSkin does More than Connect

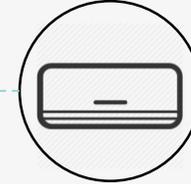
## Shading

You've just tackled daylight harvesting complaints. Automated sun blinds react to with our data, powered by clean energy. That will result in an estimated 4% productivity boost and happier employees.



## Ventilation

Your air just increased its quality from being 5 times worse than that of the outside, with even more CO2. Headaches and drowsiness are already yesterday's problem.



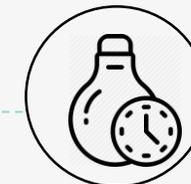
## Climate Control

Your SmartWindow now knows your ideal room temperature. One less function to worry about, and your utility bills are down 15% for cooling or 13% for heating. Way more comfort, way smaller carbon footprint.



## Lighting

Your lighting can now adapt to the time of day, your activities and also mood. Through intelligent reactions, your lighting expenses are now reduced by 40%. It's time to forget about over-lighting and hindered productivity.





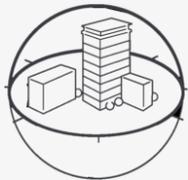
# Seamless Facade Integration

Sustainability should not compromise. With SmartSkin, there is only added value.

- ✓ Plug & play system for quick and efficient installation
- ✓ No alteration on guarantees, windows are fully certified
- ✓ Working with many window manufacturers, facade contractors and e-installers
- ✓ No alteration on transparency, g-value or design
- ✓ Closely guiding the entire supply chain throughout the construction process

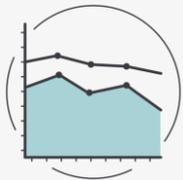
# PHYSEEbility Check

Unlock your building's potential with our 3D engineering tool



## Drawing & Mapping

We use drawings and 3D modelling to conduct a complete solar study



## Data Analysis

Overviews are drawn on amounts of energy generated and saved as well as comfort.



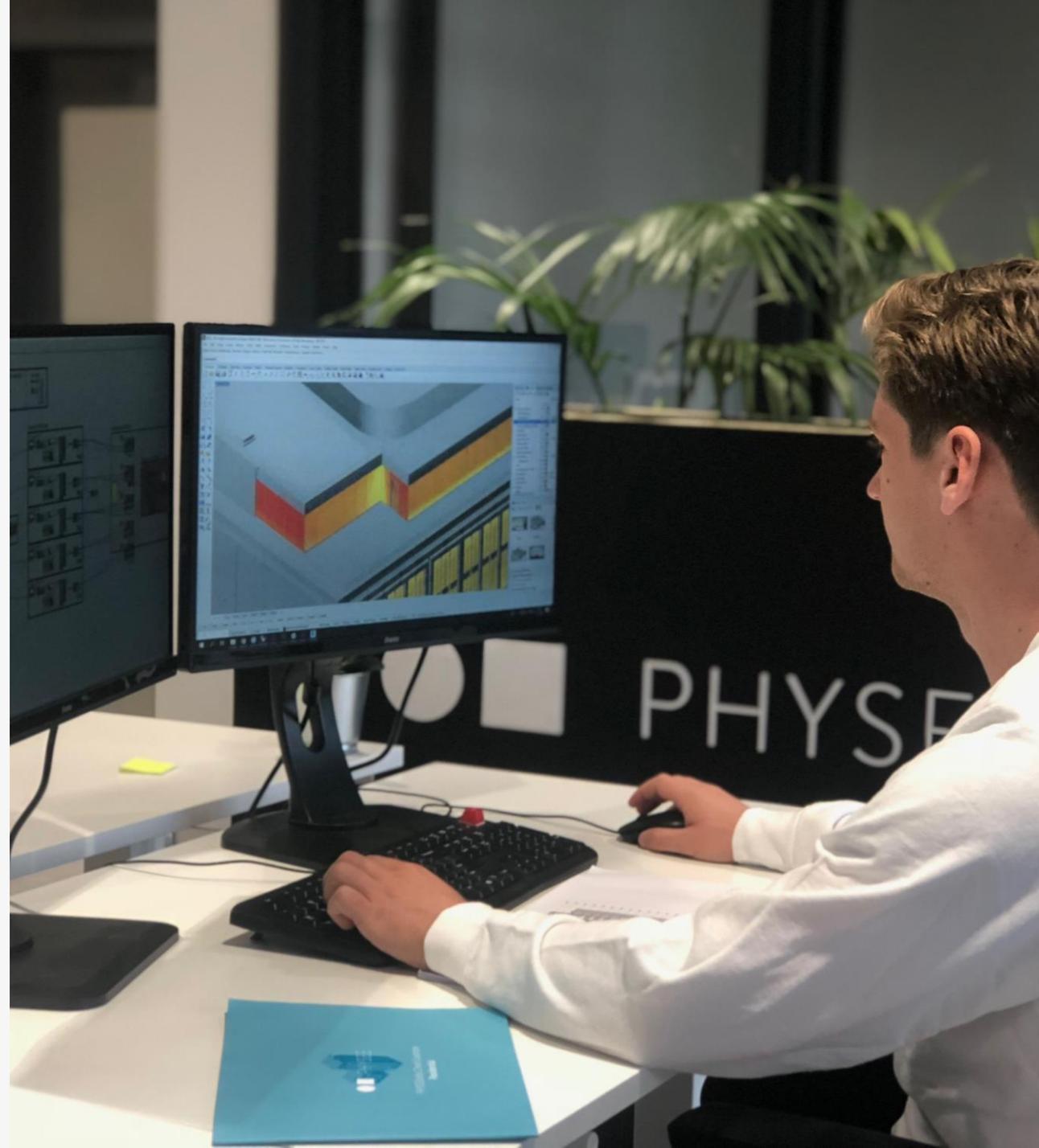
## Facade Analysis

Each room and window is analyzed for environmental conditions



## Final Report

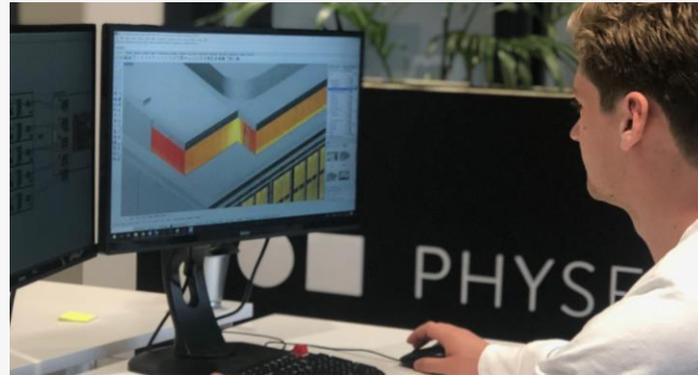
A complete report containing clear and reliable advice for your building.



# Integral project management & engineering



Project inventarisation



PHYSEEbility Check



Pre-Engineering



Execution



Commissioning



Delivery

# Dutch Postcodeloterij

The most sustainable building of NL, in Amsterdam.



100 m2  
PowerWindow



Up to 5% more  
energy savings



Commercial  
redevelopment

200

NIJH DOLLAR LOTTERIJEN

# BOLD Tower

EPC -0.12

The art of scaling up in Amsterdam, NL.



1,800 m2  
PowerWindow



Sustainable energy  
for 94 apartments



Residential  
new build



# Binck Kade

EPC 0.2

Our first SmartWindow project in The Hague, NL.



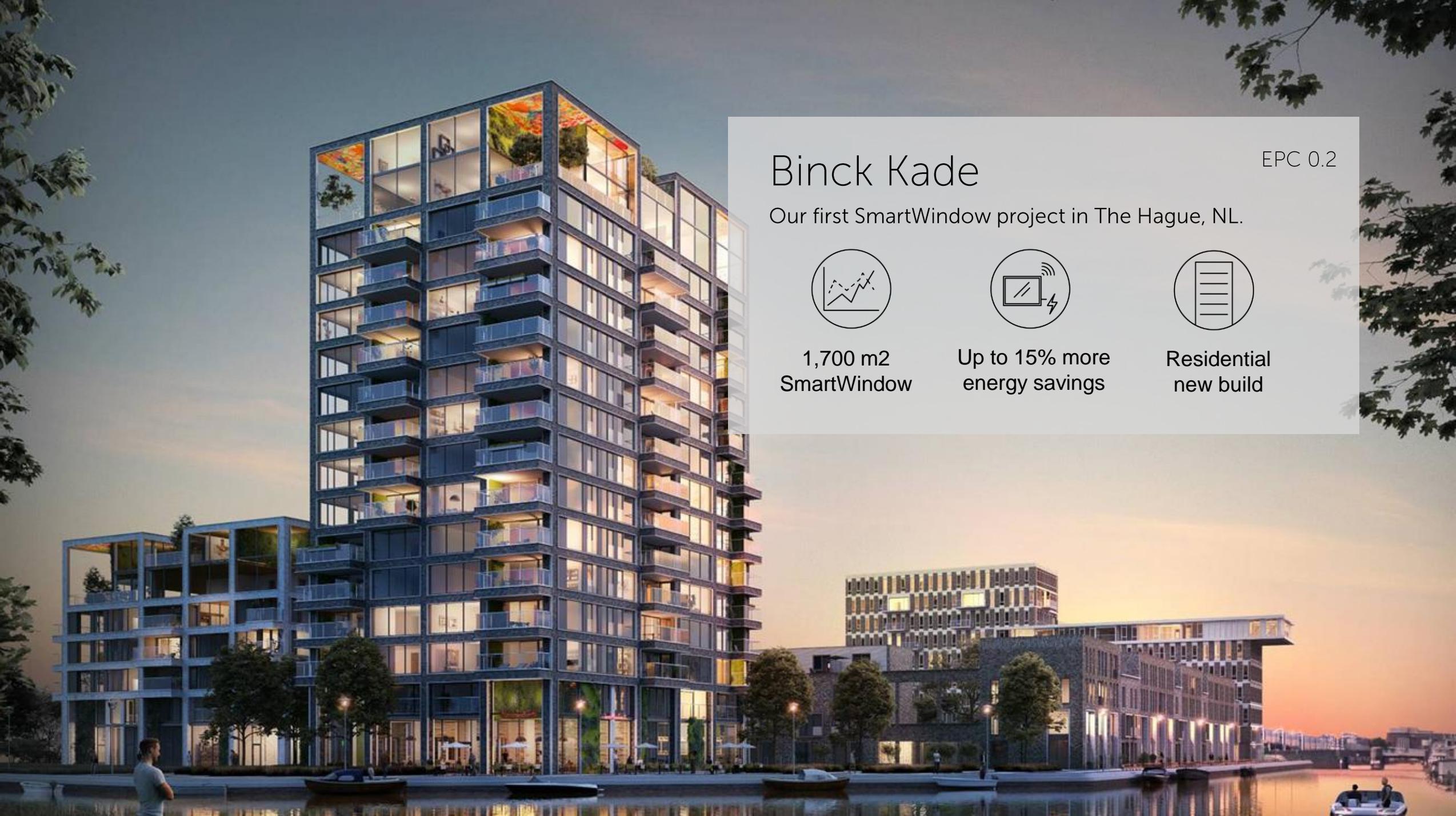
1,700 m<sup>2</sup>  
SmartWindow



Up to 15% more  
energy savings



Residential  
new build





# Pharos

The healthiest working community in Europe, Hoofddorp, NL.



1,100 m<sup>2</sup>  
SmartWindow



Up to 15% more  
energy savings

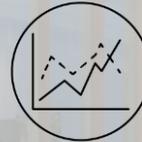


Commercial  
redevelopment



# Kells

Our first international project in Dublin, Ireland.



1,100 m2  
SmartWindow



Up to 15% more  
energy savings



Commercial  
redevelopment



# Pipeline: 2019-2021

## 3

**Countries** of sold PHYSEEbility Checks and planned projects: The Netherlands, Germany and The United Kingdom.



## 14k+

**Square meters** of planned SmartSkin installations. Each project has a different variation of SmartSkin connections which fits the building needs.



## 4

**Types of building projects** including renovation, new build, monumental restoration and area development.



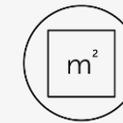


# Benchmark: residential

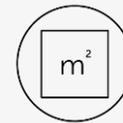
Binck Kade project, The Hague, NL



Project:  
Residential  
newbuilt



15.000 m<sup>2</sup> floor  
surface



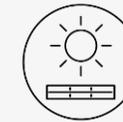
4.000 m<sup>2</sup>  
facade surface



Glass ratio  
80%



EPC impact: -  
0.1, achieved  
EPC score of  
0.15



Achieved BENG 1  
ambition: >24,5  
kWh/m<sup>2</sup>/year



15% energy savings,  
resulting in meeting  
NZEB demand



Decreased other  
CAPEX with EUR  
600.000,-

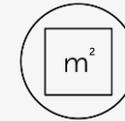


# Benchmark: Commercial

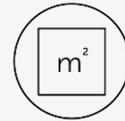
Pharos project, Hoofddorp, NL



Project: Office renovation



12.000 m<sup>2</sup> floor surface



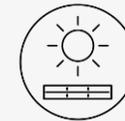
2500 m<sup>2</sup> facade surface



Glass ratio 70%



More daylight, less glare: decreased sick leave



97.000 CO<sub>2</sub> kg saved annually



Decreased other CAPEX with EUR 250.000,-



ROI 3 years

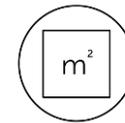


# Dura Vermeer Innovation Center

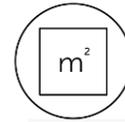
Where SmartSkin makes the difference!



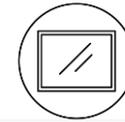
Project: Commercial  
new building



6.868 m<sup>2</sup> floor  
surface



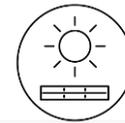
7.120 m<sup>2</sup> facade  
surface



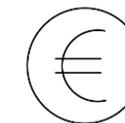
Glass ratio  
30%



More than 10%  
energy savings +  
heat gain in winter



58 m<sup>2</sup> reduction  
in PV panels on  
roof



Intelligent, effective  
sun shading at  
standard window  
covering cost level



20% increase of  
daylight, resulting in  
higher comfort

# It's time to make use of your glass facades



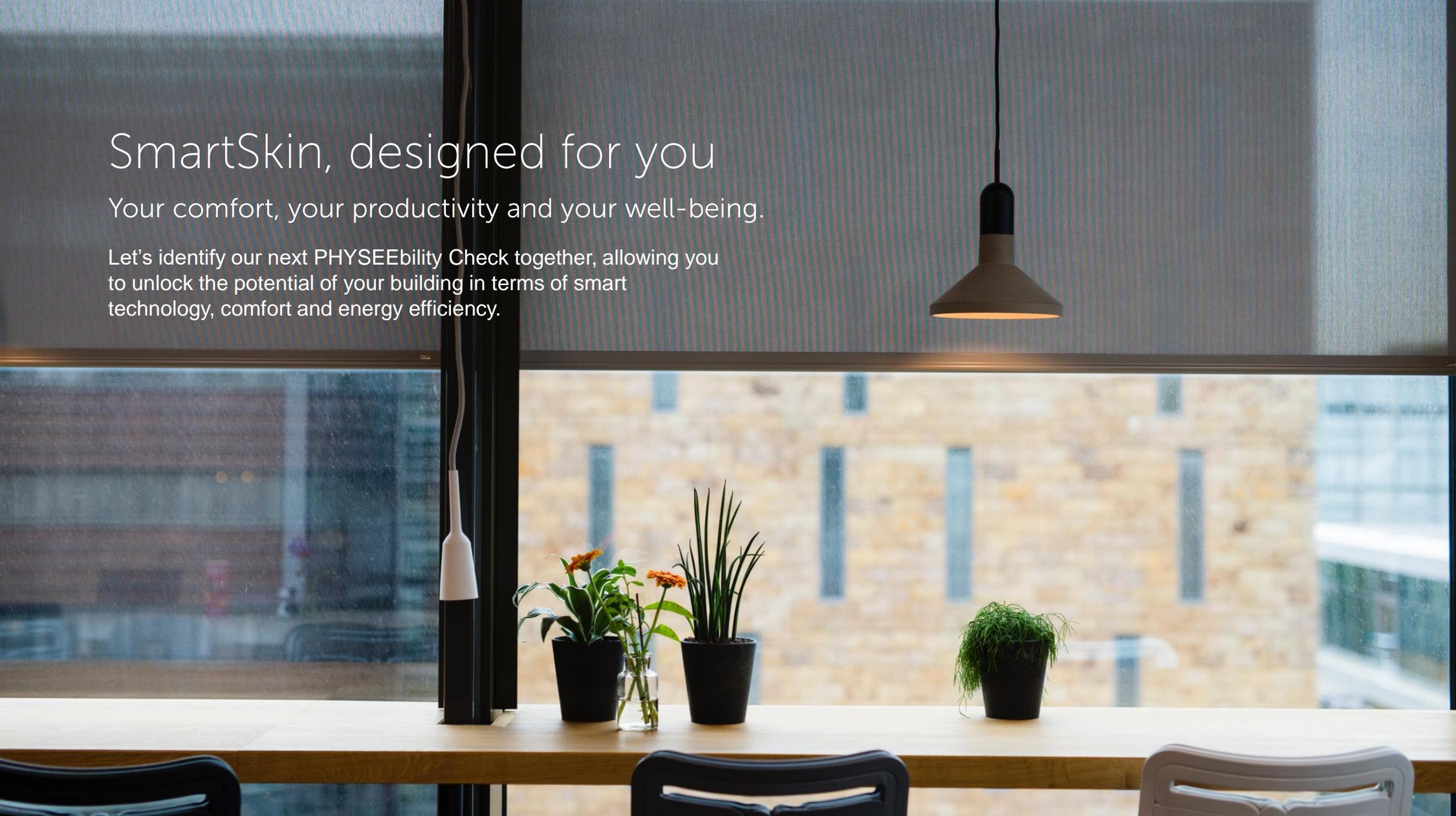
Tomorrow's buildings need to be smart, sustainable and healthy environments for our societies to grow.



# SmartSkin, designed for you

Your comfort, your productivity and your well-being.

Let's identify our next PHYSEAbility Check together, allowing you to unlock the potential of your building in terms of smart technology, comfort and energy efficiency.





# CHANGING THE PERSPECTIVE