



NEBESYS

Transparent Roofs

Invisible Technology for Visible Light

NEBESYS™ is the world's first transparent roof system that appears like traditional roofing from the outside, while from the inside, it feels like a window to the sky.

It's designed for the most sensitive architectural contexts—where daylight and distinctive character must coexist. This includes:

- Historical buildings
- Protected city centers
- Ambitious roof extensions
- High-quality new build projects

NEBESYS



Preserving Tradition

Visually integrates completely into classic roofscapes.

Enabling Light

Optimal daylight yield without visible technical interventions.

Project-Specific Planning

Structure, insulation, glazing, and roofing as an integrated overall concept.

First installation in 2011 | Patented | Compatible with beaver tail tiles, interlocking tiles, slate,
and more | 30+ projects realized since 2022 (as of 2025)

NEBESYS™ is a patented roof system that combines the appearance of classic roofing materials with transparent technology. It brings natural light into the attic space—without visible interventions on the roof surface.

Unlike traditional roof windows, NEBESYS™ is fully integrated into the roofing. From the outside, it looks like a normal beaver tail or interlocking tile roof, while inside, it creates light, views, and comfort rarely expected from classic roofs.

Every system is planned on a project-specific basis, adapted to the geometry, character of the building, and usage requirements.

Traditional roof windows often look like foreign objects
They break the roof structure and lead to design disruptions.

NEBESYS™ offers an aesthetically discreet solution here
It's a transparent element that integrates into the surface like a tile, but with the functional properties of a skylight.

NEBESYS™ is a part of the roof—not its rupture



References

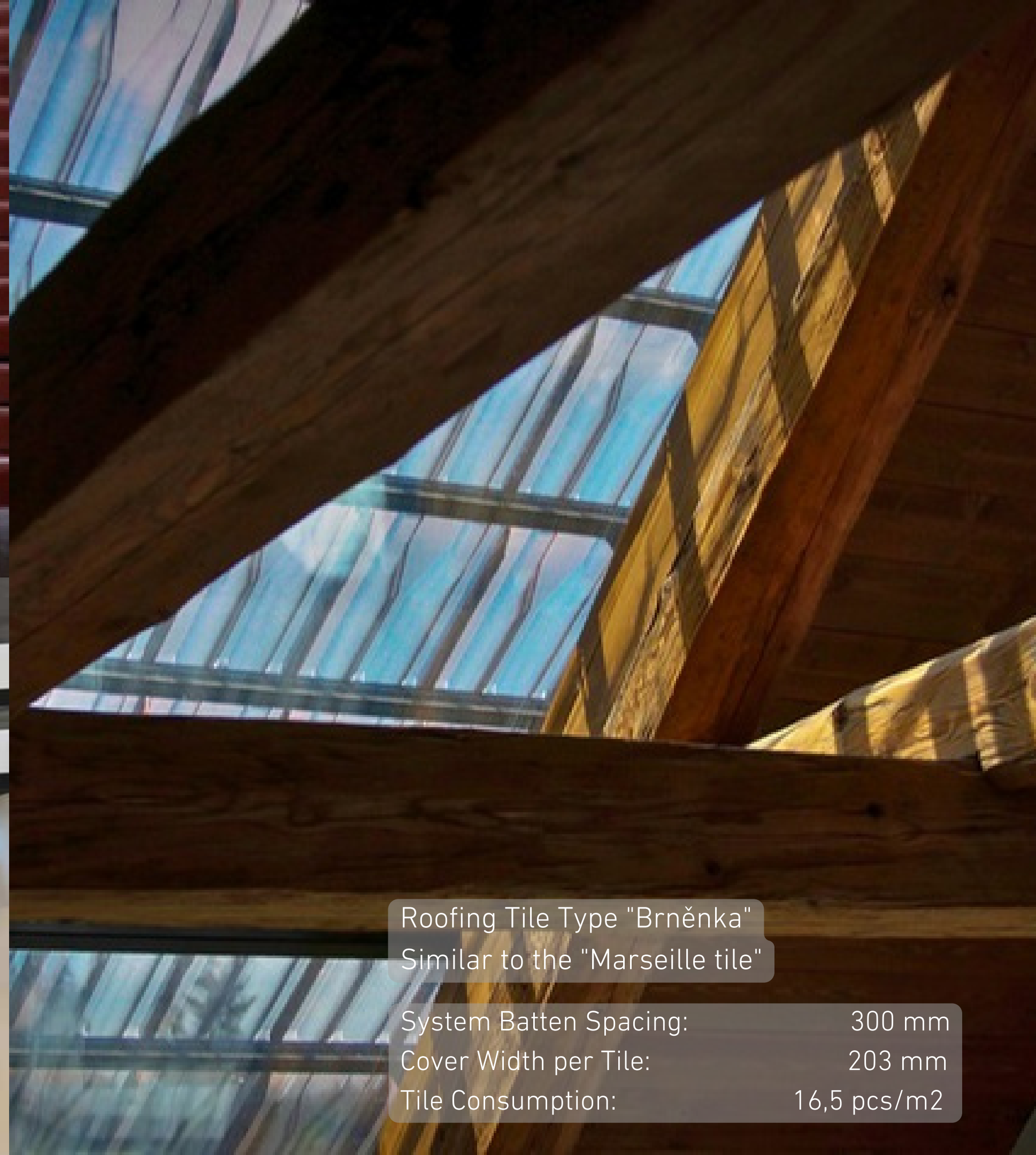


The townhouse from the second half of the 19th century

was enhanced with targeted innovations that create additional utility and design value—without compromising the protected cityscape.

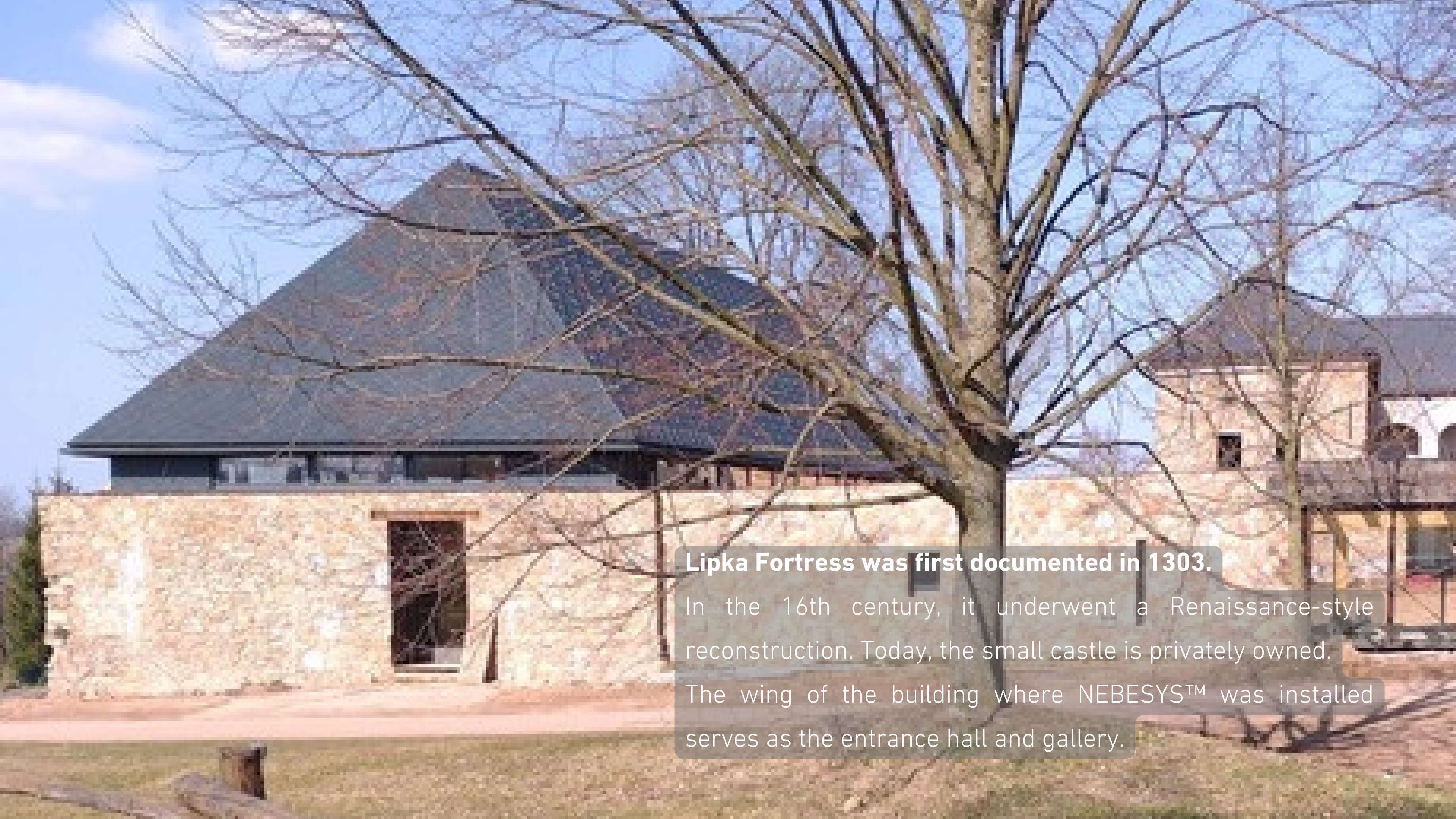
The combination of NEBESYS™ with classic clay tiles is particularly well-suited in this case.

The NEBESYS™ system was installed here in 2021.



Roofing Tile Type "Brněnka"
Similar to the "Marseille tile"

System Batten Spacing:	300 mm
Cover Width per Tile:	203 mm
Tile Consumption:	16,5 pcs/m ²



Lipka Fortress was first documented in 1303.

In the 16th century, it underwent a Renaissance-style reconstruction. Today, the small castle is privately owned.

The wing of the building where NEBESYS™ was installed serves as the entrance hall and gallery.



Roofing Tile Type - Flat Tile
Slate Roofing Imitation

System Batten Spacing:	315 or 335 mm
Covering Width per Tile:	315 or 335 mm
Tile Consumption:	9 or 10,1 pcs/m ²

Instalation process

1.

Disassembled original roofing,
battens, and roof flashing

2.

Installation of the glazed section
(aluminum hinges, rafters,
purlins, and plastic brackets)

3.

Installation of the glass onto
the aluminum rafters and
sealing of the joints with
sealant

4.

Installation of the above-
rafter insulation

5.

Installation of the standing seam
metal roofing outside the glazed
section of the NEBESYS™ system

6.

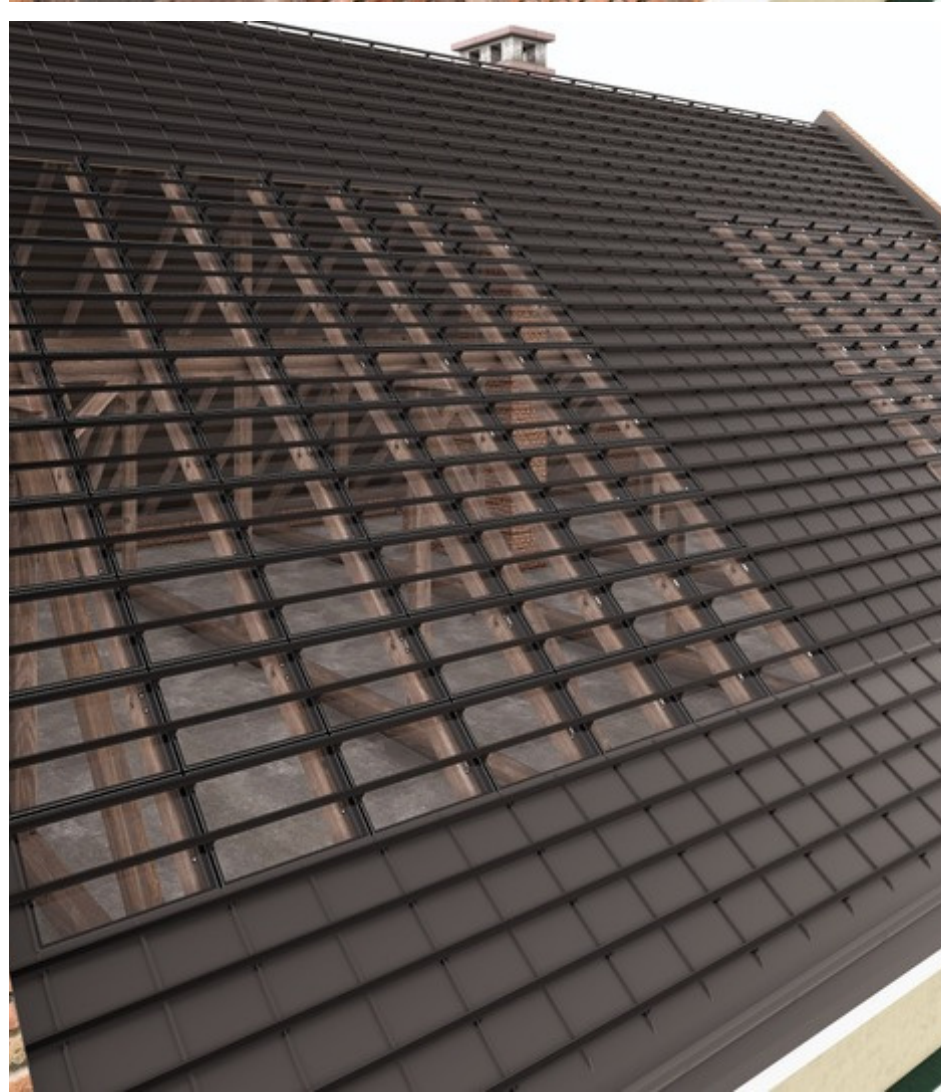
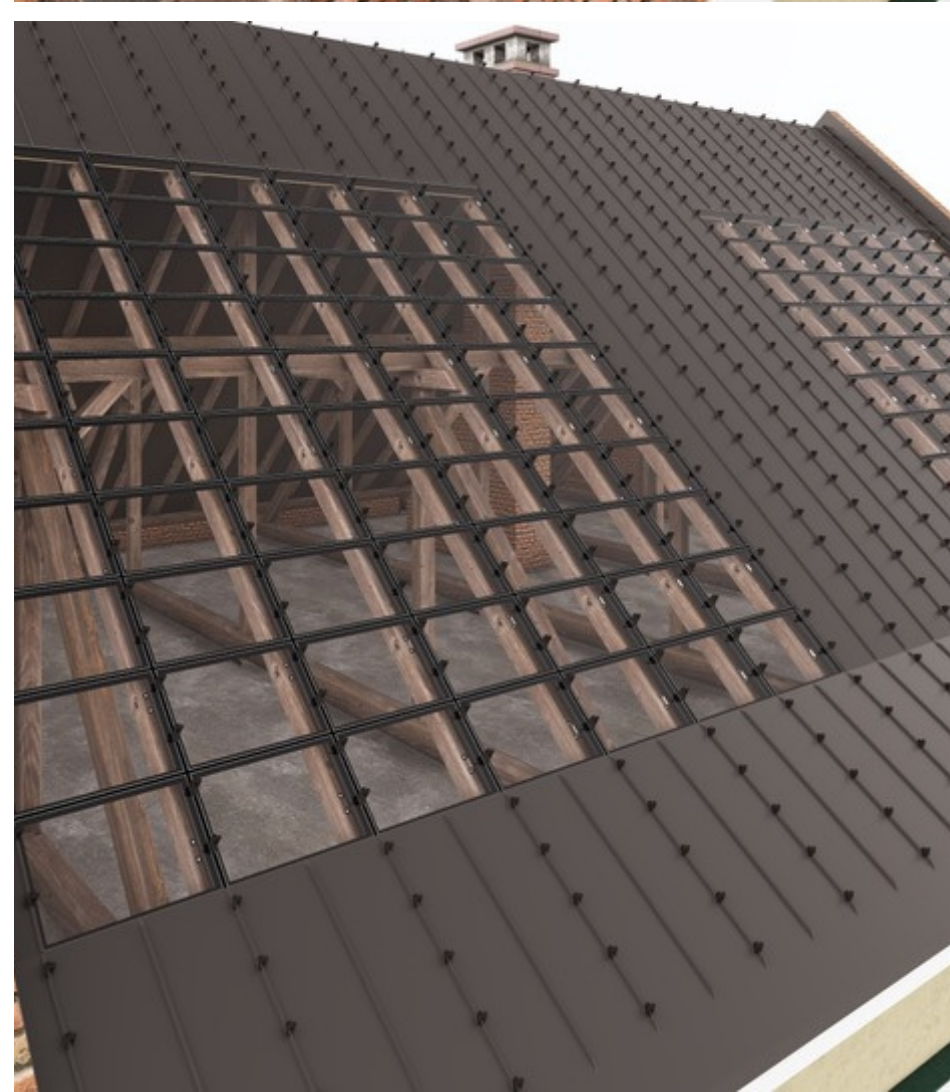
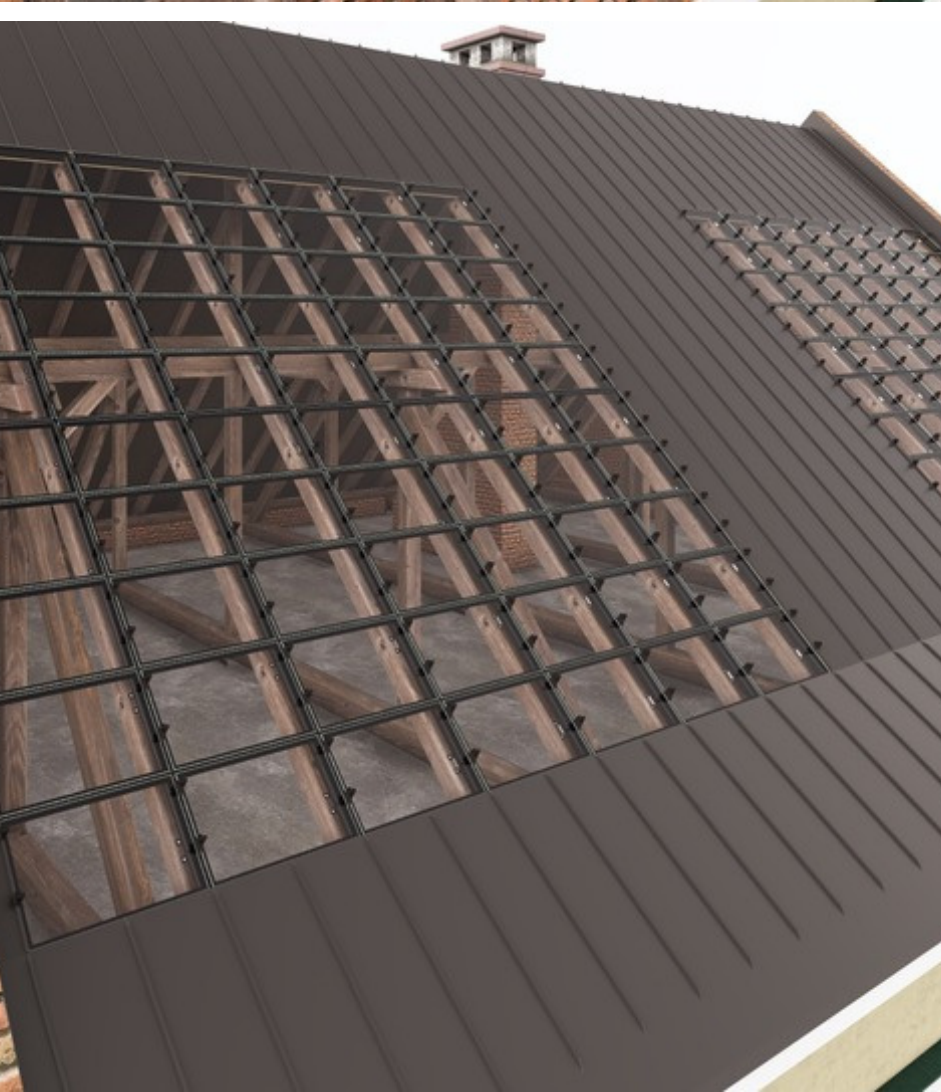
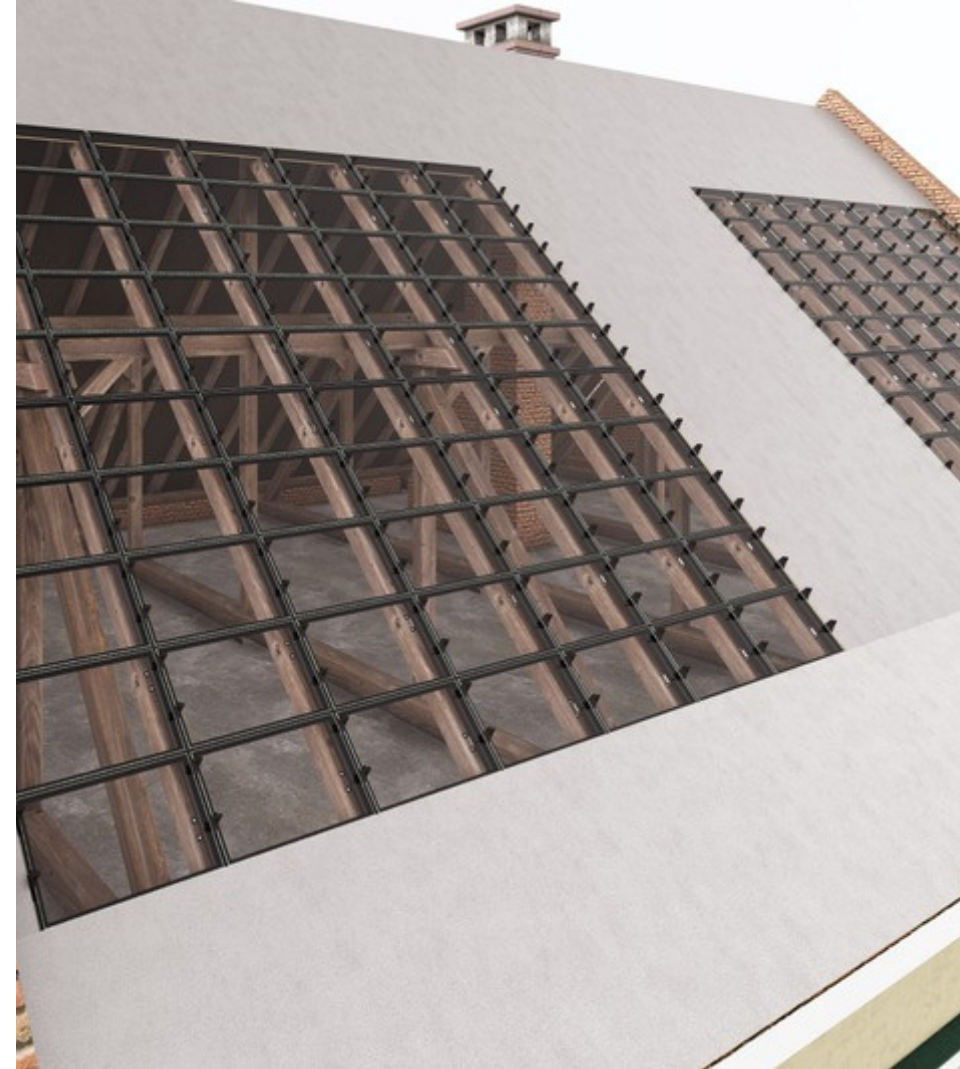
Installation of brackets onto the
standing seam metal roofing in
the fixed part of the NEBESYS™
system

7.

Installation of aluminum
battens into the roof
brackets

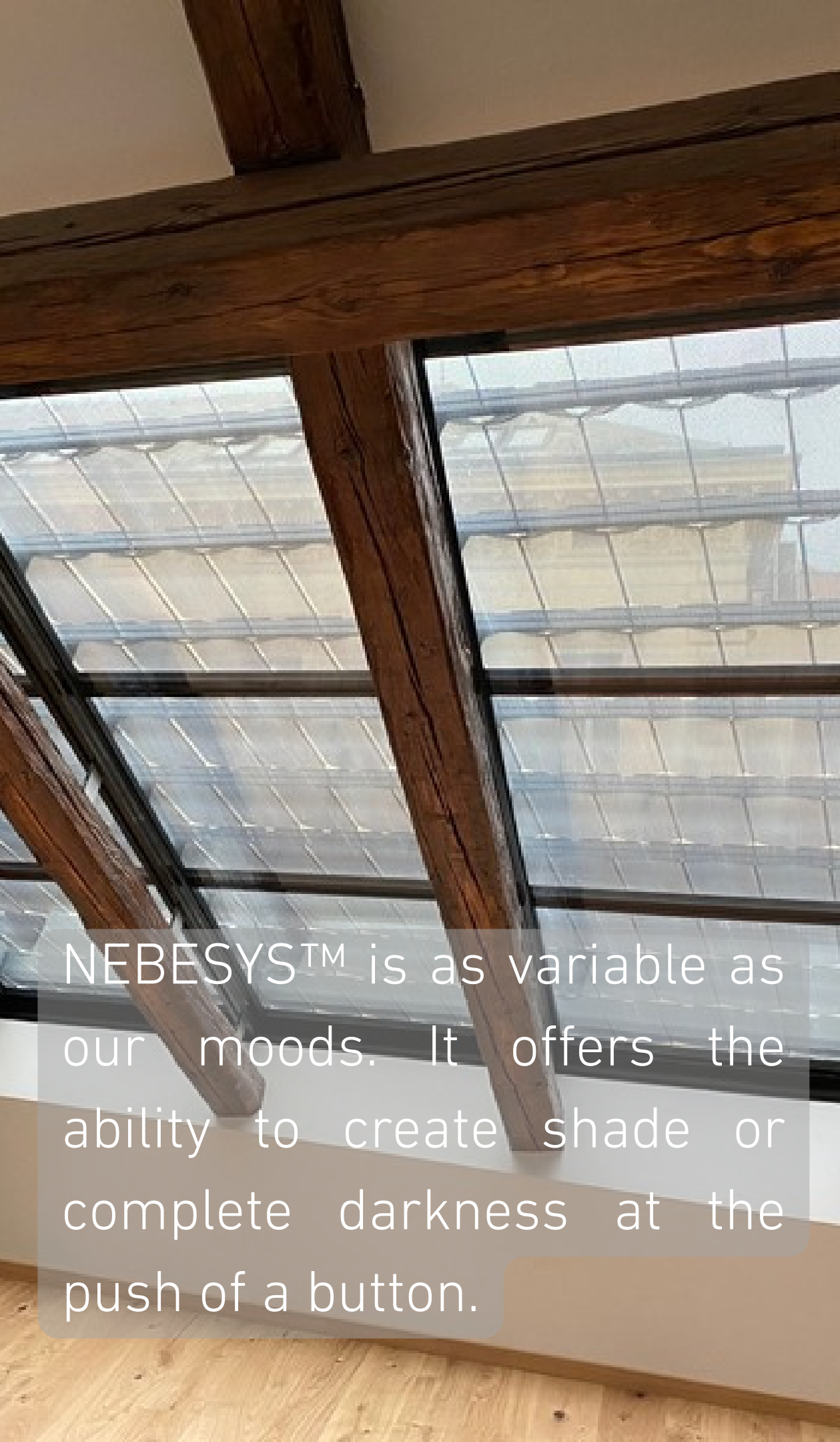
8.

Installation of the
NEBESYS™ roofing onto the
roof battens

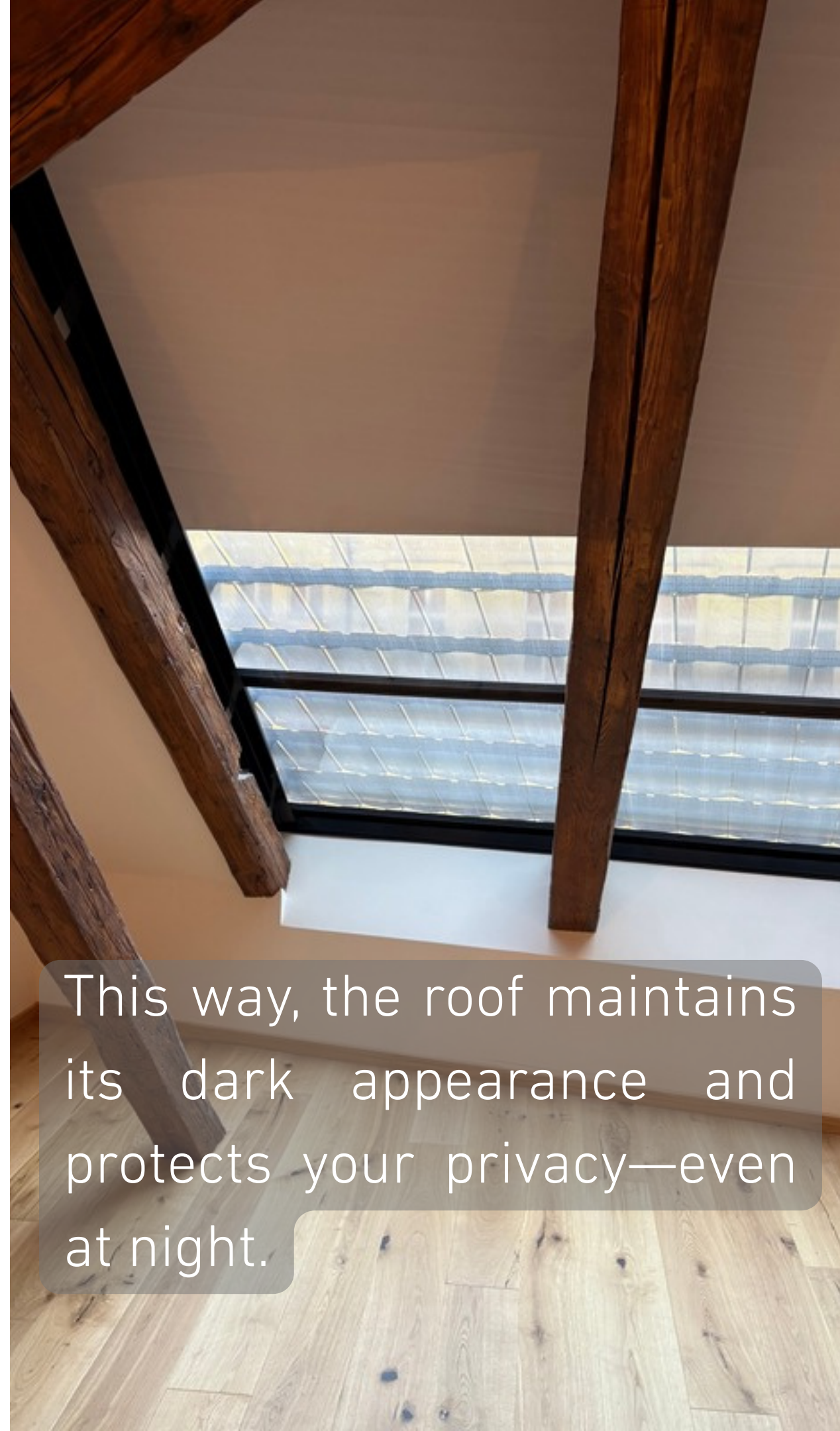




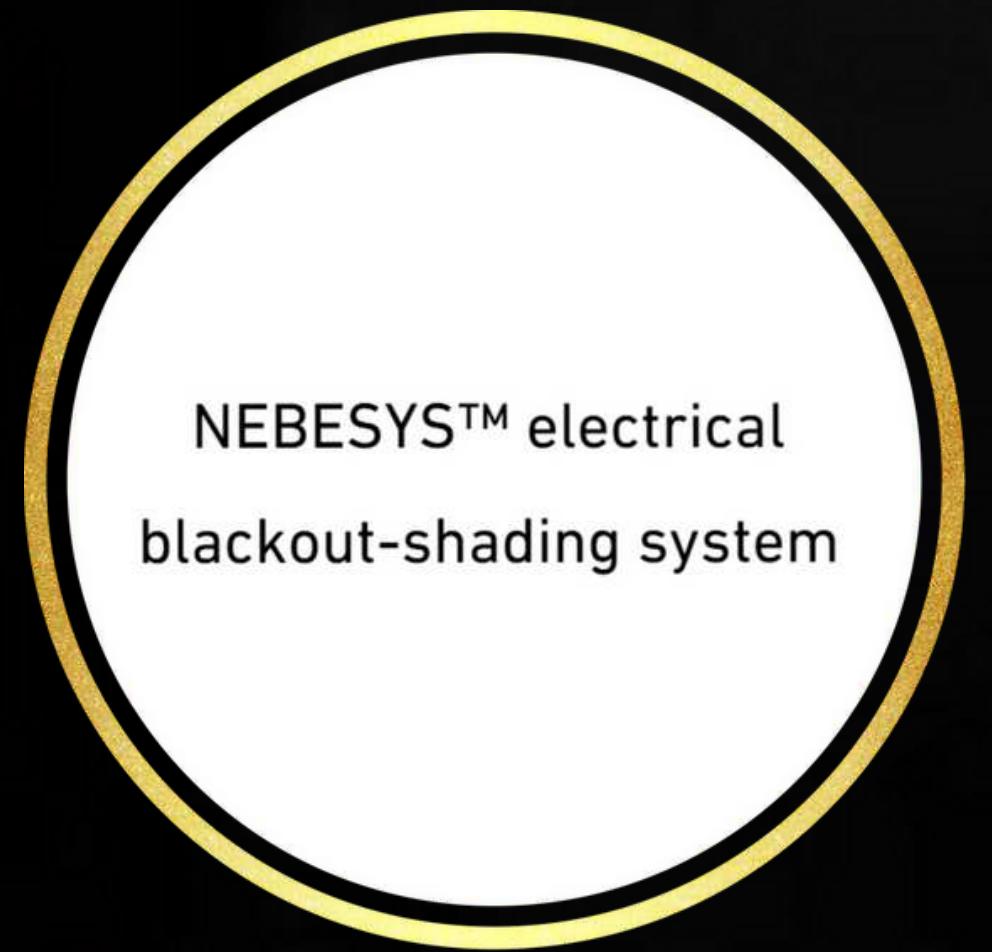
Shading & Ventilation



NEBESYS™ is as variable as our moods. It offers the ability to create shade or complete darkness at the push of a button.



This way, the roof maintains its dark appearance and protects your privacy—even at night.

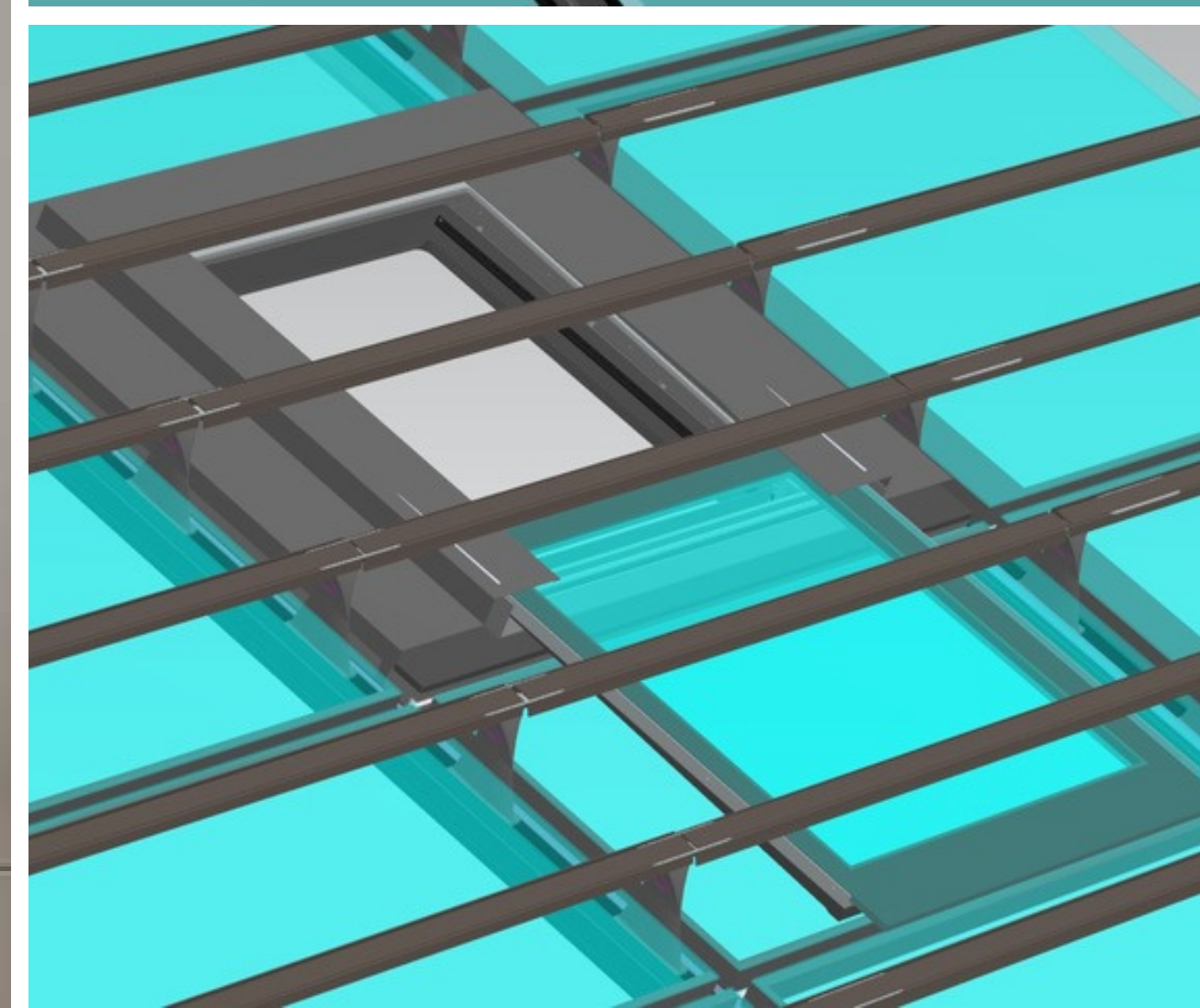
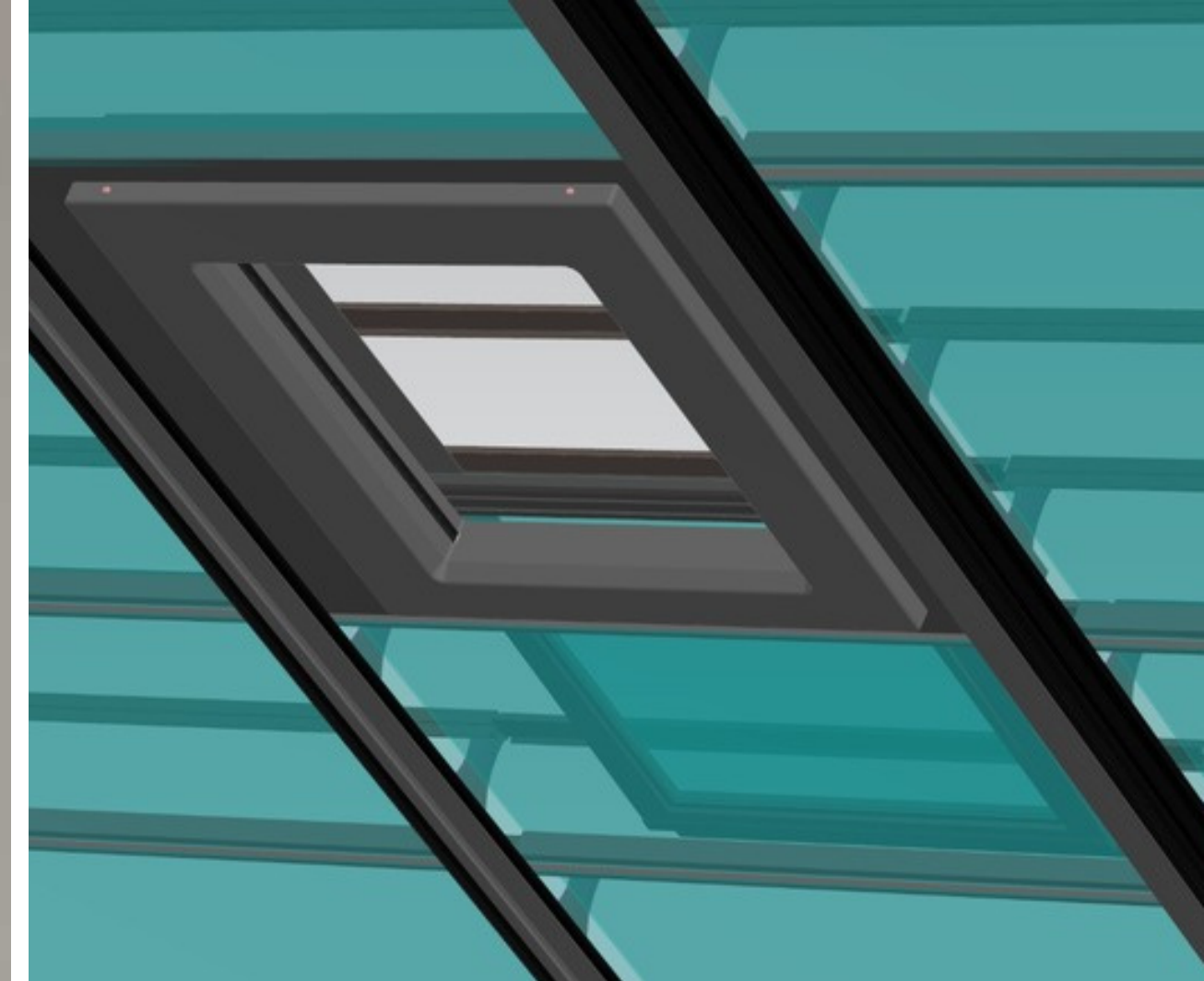




NEBESYS™ electrical sliding
ventilation system

The main image shows a large, multi-paned skylight installed in a grey ceiling. The skylight is composed of several rectangular glass panes held together by dark brown wooden frames. The panes are slightly tilted, allowing for natural light and ventilation. A white circular callout with a yellow border is positioned in the upper left corner, containing the text 'NEBESYS™ electrical sliding ventilation system'. Below the skylight, a grey door is partially visible.

For maximum connection with the outdoors:
Our sliding ventilation elements are hidden
beneath the transparent and fully ventilated
NEBESYS™ roof tiles.



Available Sizes (depending on rafter spacing):

- **Small:** Ventilation opening W 315 x H 580 mm
- **Middel:** Ventilation opening W 540 x H 580 mm
- **Large:** Ventilation opening W 740 x H 580 mm

Components of the Ventilation Element:

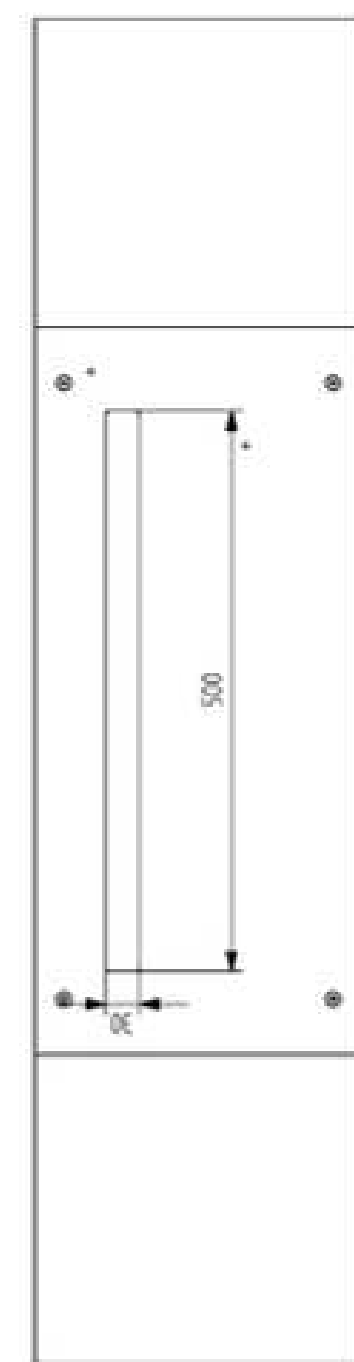
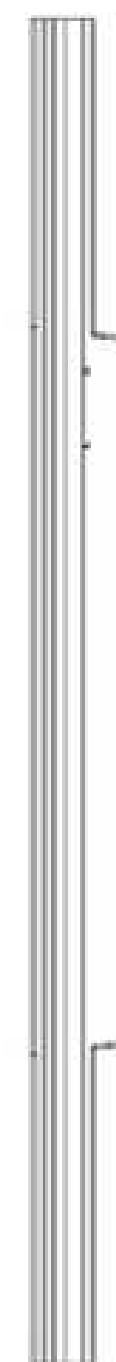
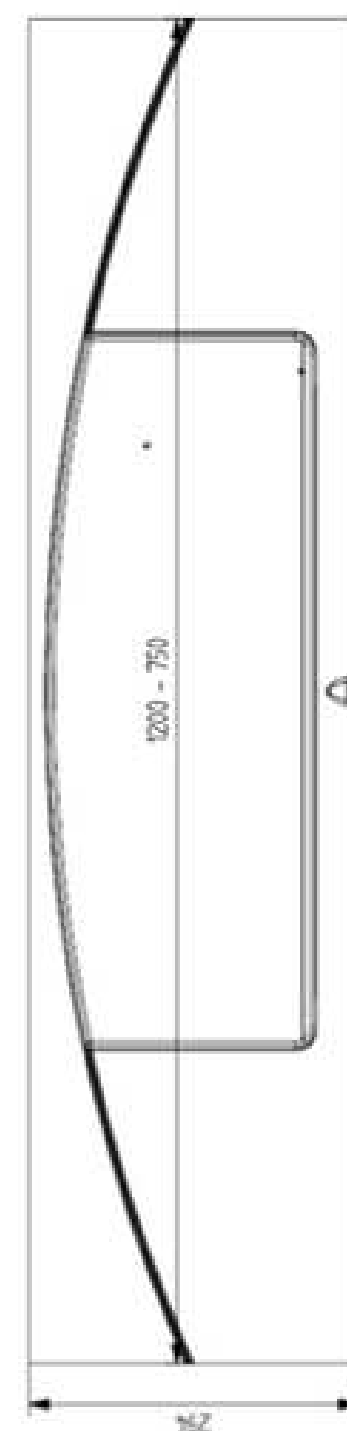
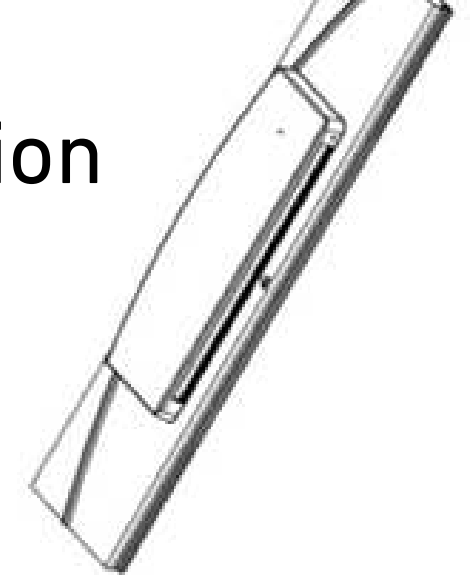
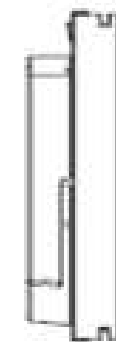
- **Heat-insulating** double glazing made from conex 33.2 laminated glass and vacuum-hardened double glass
- **Stainless steel** sliding elements
- **Safety IR barrier** (not supplied if the sliding ventilation element is installed at an unreachable height, thus posing no risk of entrapment).
- **Rain sensor**
- **Control unit**
- **NEBESYS™ control cabinet**, which includes an emergency power supply to close the element in case of a power outage

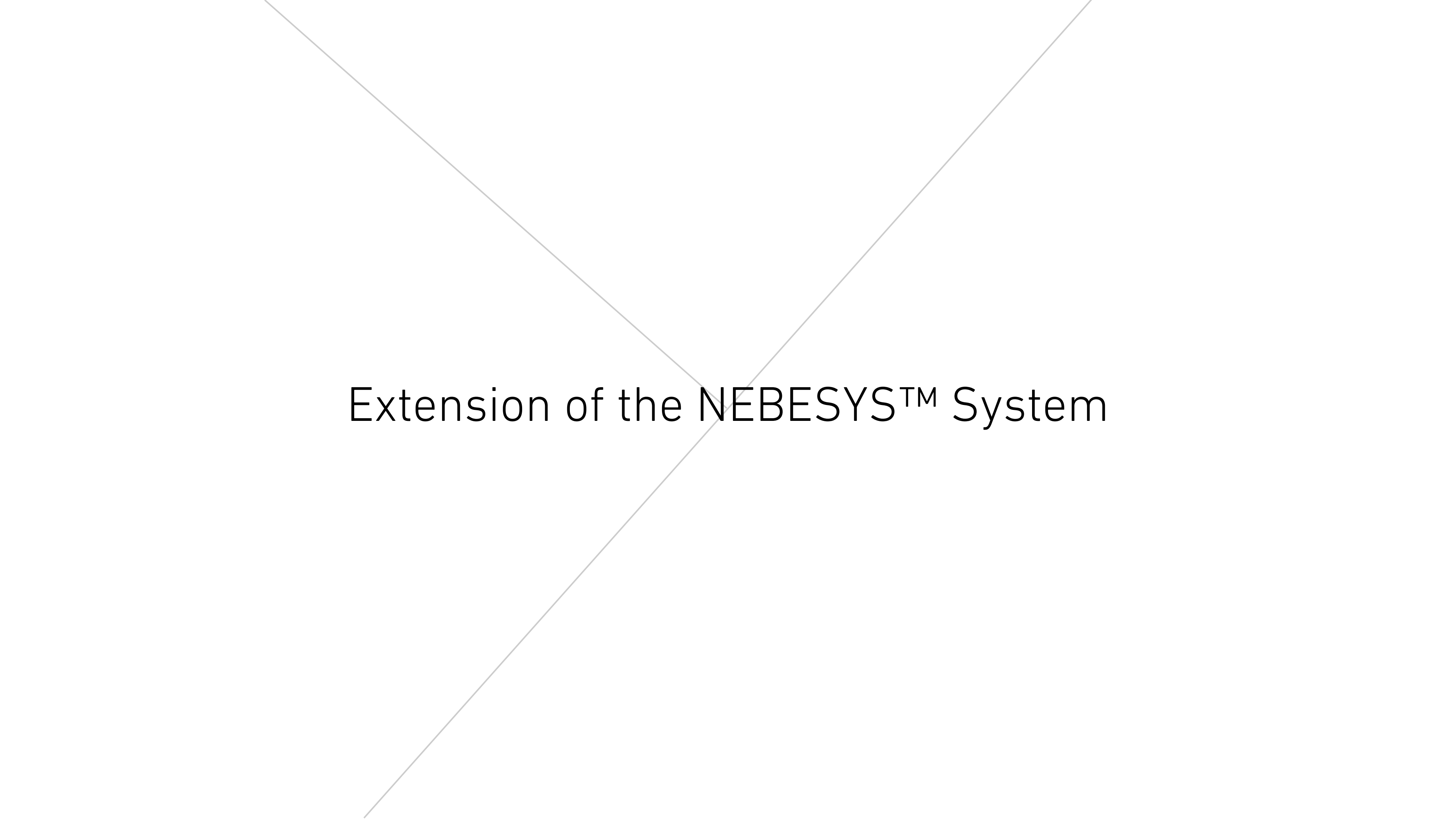
Note: This element is currently under development. Its installation must be discussed on a project-specific basis.

Electric Ventilation Flap with Slot
Size 35 x 550 mm.

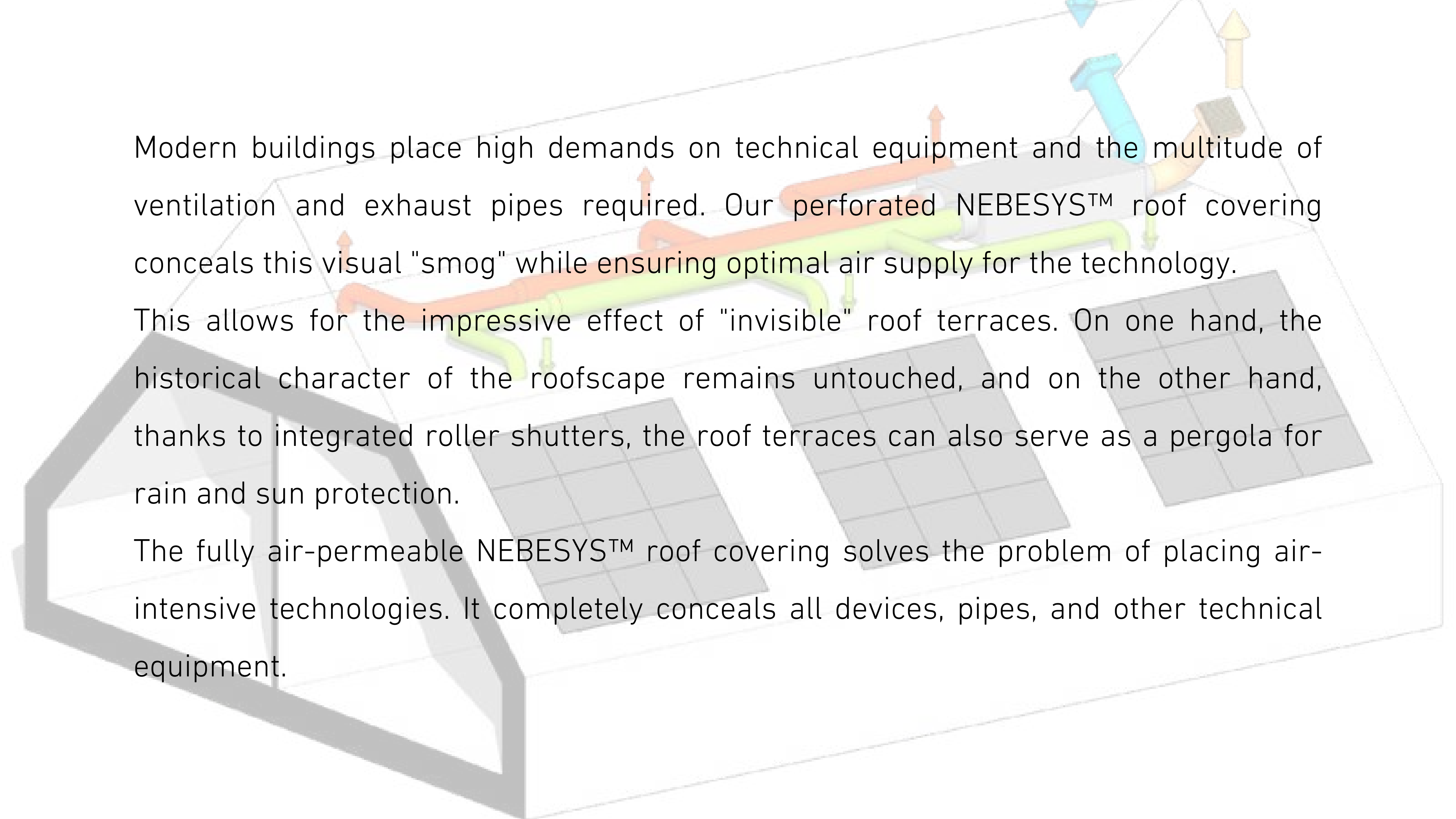
The ventilation flap is hidden
beneath the transparent and fully
ventilated NEBESYS™ roof tiles,
ensuring passive air exchange.

Line ventilation





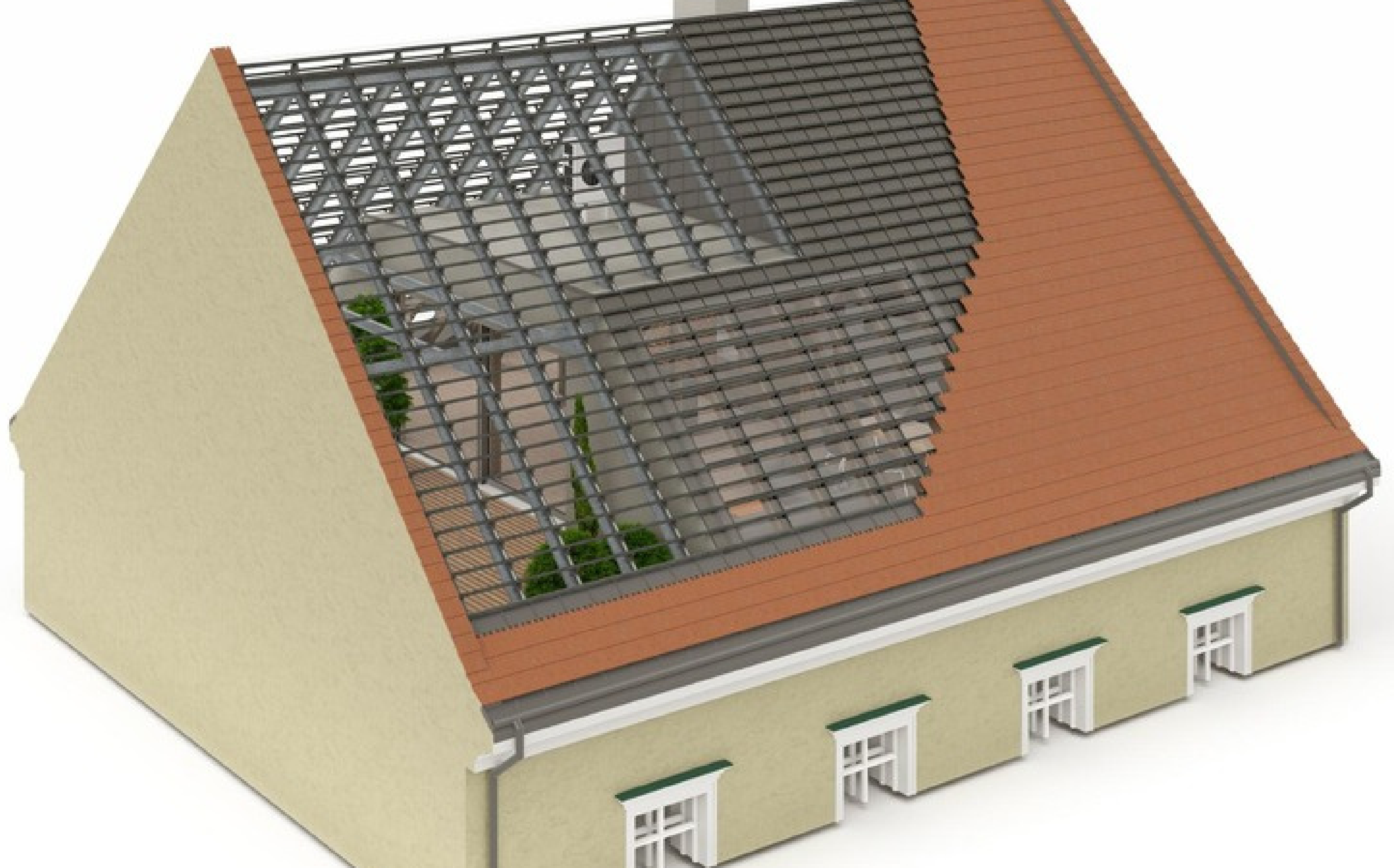
Extension of the NEBESYS™ System

A 3D architectural rendering of a building's roof system. The roof is covered with a grey, grid-patterned material. Several colored pipes (orange, green, blue, yellow) are shown running across the roof, with arrows indicating air flow. Some pipes enter the building, while others exit. The background shows a clear sky and a distant horizon.

Modern buildings place high demands on technical equipment and the multitude of ventilation and exhaust pipes required. Our perforated NEBESYS™ roof covering conceals this visual "smog" while ensuring optimal air supply for the technology.

This allows for the impressive effect of "invisible" roof terraces. On one hand, the historical character of the roofscape remains untouched, and on the other hand, thanks to integrated roller shutters, the roof terraces can also serve as a pergola for rain and sun protection.

The fully air-permeable NEBESYS™ roof covering solves the problem of placing air-intensive technologies. It completely conceals all devices, pipes, and other technical equipment.



What Does the System Consist Of?

NEBESYS™ is a complete roofing system made up of two sections: a transparent part and a non-transparent part.

- 1) The transparent section uses aluminum profiles mounted on existing wooden rafters. Insulating triple glazing is then installed on these profiles to form a thermal seal.
- 2) The non-transparent section consists of thermal insulation with variable thickness, depending on the building's requirements. A waterproofing layer is placed over this insulation.

Both sections are covered with specially perforated aluminum roofing, creating a uniform roof surface with no visible transitions.

Static Design of the NEBESYS™ System?

The system is statically calculated in accordance with current EN standards for the given snow and wind loads.

Do You Install the System?

Yes, our company installs the NEBESYS™ system with our own skilled personnel or through our trained partner companies.

What Does the Thermal Insulation Consist Of?

In the transparent section, thermal insulation comes from the insulating triple glazing, similar to glazed facades.

The thermal transmittance coefficient, according to the technical certificate, is $U \leq 1.05 \text{ W/m}^2\text{K}$. In the non-transparent section, thermal insulation is also used. We typically offer 160 mm thick PIR insulation, which can vary between 100 and 200 mm depending on planning requirements.

Does the Transparent Roofing Need to Be Installed Over the Entire Roof Area?

No, it doesn't. If a non-transparent section is desired, above-rafter insulation is used. We typically offer 160 mm PIR insulation for this, but it can be adjusted between 100–200 mm based on the designer's requirements.

What Does the Waterproofing Layer Consist Of?

In the transparent section, the sealed triple glazing handles this function. In the non-transparent section, waterproofing is ensured via standing seam metal roofing.

Can Only Windows Be Made from the NEBESYS™ System?

The NEBESYS™ system is primarily designed for installation on entire roof surfaces. It's possible to integrate smaller sections into existing or new roofs, but this could lead to differences in aging and color. This should be assessed on a project-by-project basis.

For Which Installations Can the NEBESYS™ System Be Used?

The system is designed for on-rafter installation with a total height of 204–344 mm above the wooden rafters.

What Roof Pitch Is Recommended for Installing the NEBESYS™ System?

The recommended roof pitch is a minimum of 25°. Shallower pitches are possible but require individual consultation.

What Is the Load of the NEBESYS™ System on the Roof Structure?

Depending on the configuration, the system weighs between 60 and 70 kg/m², which does not exceed the weight of the original roofing without insulation.

How Is the System Cleaned?

Regular maintenance of the system is important. While interior cleaning can be done anytime, exterior cleaning must be performed by a specialized service.

We typically supply the exterior glass with a patented coating (Bioclean or Pilkington Activ) that reduces dust and dirt adhesion. Nevertheless, physical cleaning may still be necessary.

Depending on the location, physical cleaning is recommended approximately every 3–6 years. In Litomyšl (see front cover), the system has been in operation since 2011 and hasn't required cleaning yet. In Mikulov (pages 14 & 15), the roof was cleaned for the first time after 4 years.

We are currently developing a maintenance robot to clean the system from the outside.

Should you have any further questions, please don't hesitate to contact us!

What Color Options Are Available?

By default, the roof system is supplied in RAL 9005 semi-matt. The interior of the roof tiles is also in RAL 9005, while the exterior color scheme can be customized according to the client's, architect's, or heritage preservation guidelines.

What Types of Roof Tiles Are Available?

We offer various roofing types, including Monk and Nun tiles, double-trough interlocking tiles, beaver tail tiles (crown and imbricated laying), Steinbrück tiles, Flat tiles (slate tiles imitation) and standing seam metal roofing. The transparency or perforation of the roof tiles can be 29.6%, 40.3%, or 44.5%, which influences the solar protection factor.

What Is the Solar Factor?

The solar factor indicates how much solar energy penetrates the roof into the interior space. Our roofing material reduces this value by approximately 60%.

Can the System Be Ventilated?

Yes, there are two ventilation options:

- 1) Sliding Ventilation Element – an element currently under development. We offer 3 sizes depending on the rafter spacing.
- 2) Linear Ventilation – an electric ventilation flap with a slot size of 35 x 550 mm.

What Fire Resistance Does the System Have?

The transparent part of the system is flame-retardant and is considered a glazed opening according to fire safety requirements. In planning, it should be classified as a fire-open area and can be supplemented with non-transparent fire protection measures if necessary.

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