

Building
New Solutions

Business Division
Building Envelope

 **Lindner**



True Hybrid
Wood-Aluminum System –
An Impressive Combination

Lindner ECO_N®

Lindner ECO_N® Hybrid Curtainwall System Facade

An Impressive Combination of Wood and Aluminum

The ECO_N® is the first hybrid facade system in the Lindner unitized facade series. By combining wood modules with aluminum, it successfully merges economic efficiency with sustainable design.

- **Sustainability**
Leveraging pure materials for a consistent circular economy
- **Sleek Design**
Achieving the perfect harmony between aluminum profiles and wood modules through an impeccable fit
- **Flexibility related to Building Physics**
Compatibility with the Lindner ECO® full aluminum system ensures wet room use with the same system family
- **Preventive Fire Protection**
Non-combustible materials at slab area
- **Freedom of design: custom-made**
Featuring variable mullion depths, variety of wood species and finishes, integrated LED lighting and internal jointing options.
- **Innovative Strength**
Featuring patented functional components and advanced force-locking technology
- **Durability**
Guaranteed protection for your wooden structures





Sustainability in Focus: Embracing a Greener Future

CO₂-neutral Wood Module

The emphasis on sustainability and CO₂ neutrality naturally shifts attention to the use of wood in facade evaluation. It is clear that enhancing the building's classification can significantly improve its overall value.

Wood, a unique and versatile material, requires a distinct approach to technical implementation compared to aluminum construction. Lindner addresses this challenge by seamlessly integrating a reliable aluminum basic construction with an efficient wood module that ensures structural stability.

In addition to the patented components like the spring clip mounting and PA pressure strip, this innovation introduces a dovetail connection between the wood module and the aluminum profile. This advancement, along with a wide range of design

options, significantly enhances the new building envelope.

The prefabrication of system components in our production facility ensures optimal quality assurance, which is essential for efficient and timely installation at the construction site. Lindner prioritizes clear and transparent documentation related to life cycle assessments and environmental management practices, fostering accountability and sustainability in our processes.

The hybrid facade utilizes exclusively single-source materials that boast the highest levels of recyclability. Its commitment to durability not only enhances the sustainability of the product but also assures investors of longterm value retention for the property.

- Lindner ECO_N® consequently separates the wood module from the functional waterproofing level. The durability thus corresponds to that of a proven aluminum facade.
- The aluminum content within the facade unit can be reduced with the help of the structural wood module, which provides an enormous ecological added value.
- The energy input used to heat and cool the building is significantly reduced due to the thermal insulation properties of the facade.



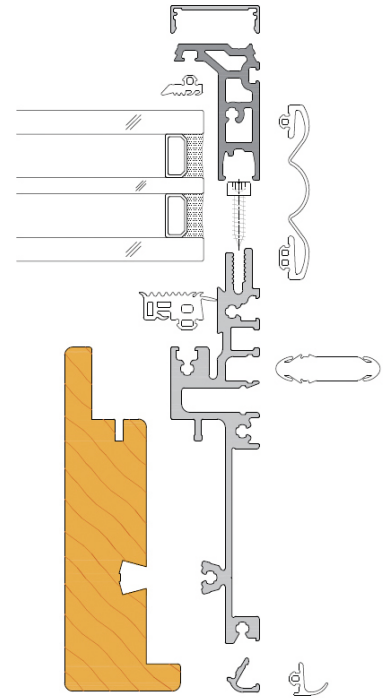
Material Recovery Cycle

Enhancing Separability, Reusability, and Recyclability through Innovative Product Design

Use of Single-Source Materials

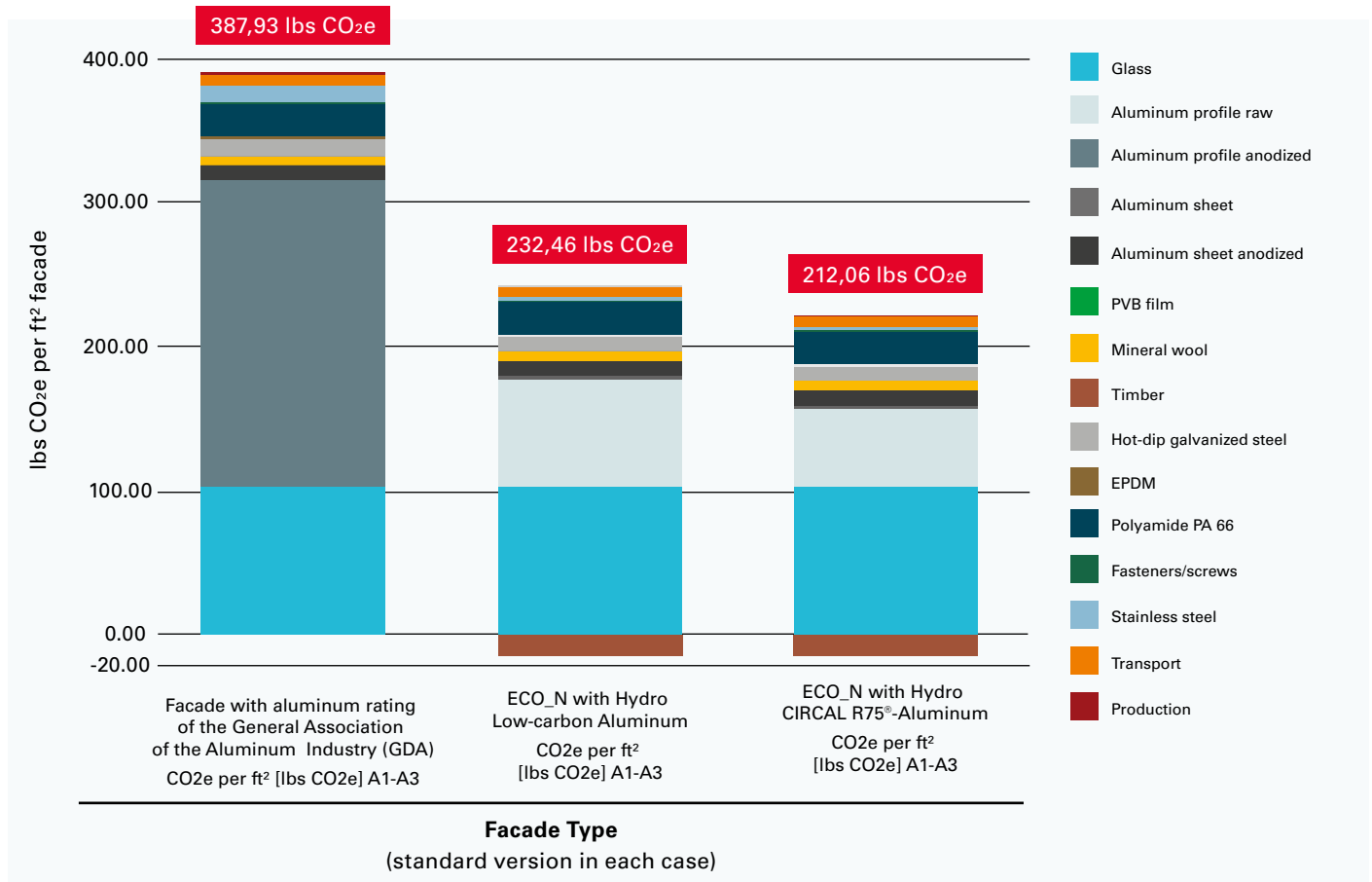
The hybrid façade employs premium materials known for their high recyclability. Lindner ECO_N® is manufactured from environmentally classified materials, ensuring sustainability. The assembly process relies solely on mechanical methods, facilitating easy separation of materials by type at the end of their lifecycle.

Additionally, the choice of high-quality components guarantees a long lifespan, allowing individual units to be reused even after their initial period of use.



Reduction of Carbon Dioxide

Saving CO₂-intensive Aluminum by Using Wood and Hydro Low-carbon Aluminum¹



¹ Hydro Low-carbon Aluminum is produced with renewable forms of energy.

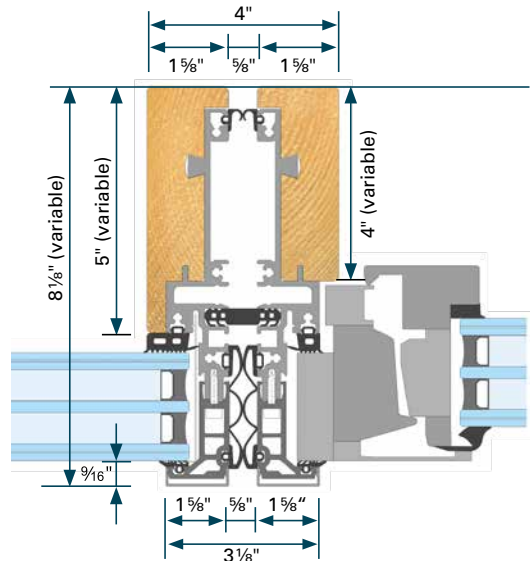
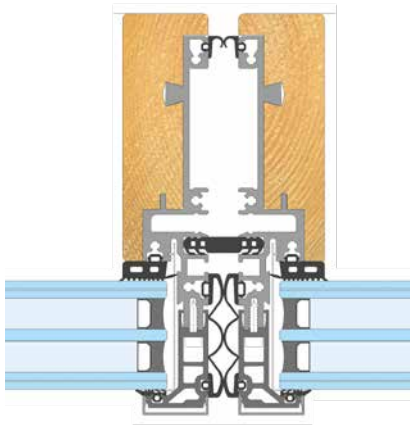
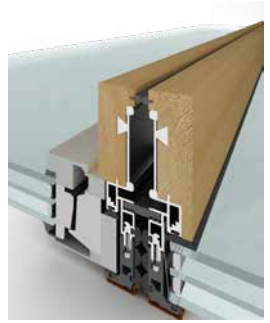
Product Variations

Lindner ECO_N® III (TGU)

Pure Wood appearance

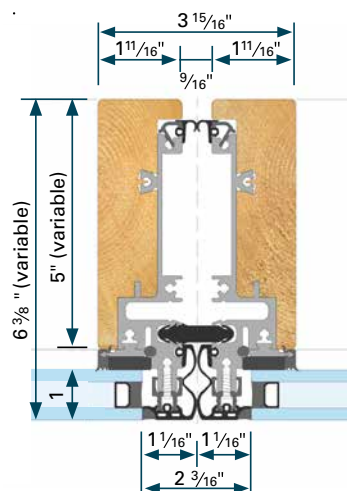
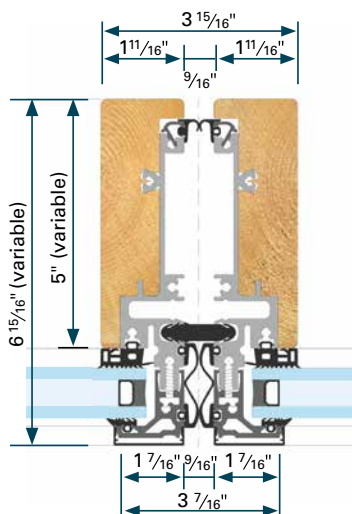
Visible width inside: 4" (100 mm)

Visible width outside: 3 1/8" (80 mm) (2 x 1 1/4" (32.5 mm) in ceiling strip + 5/8" (15 mm) joint)



Lindner ECO_N® II (DGU)

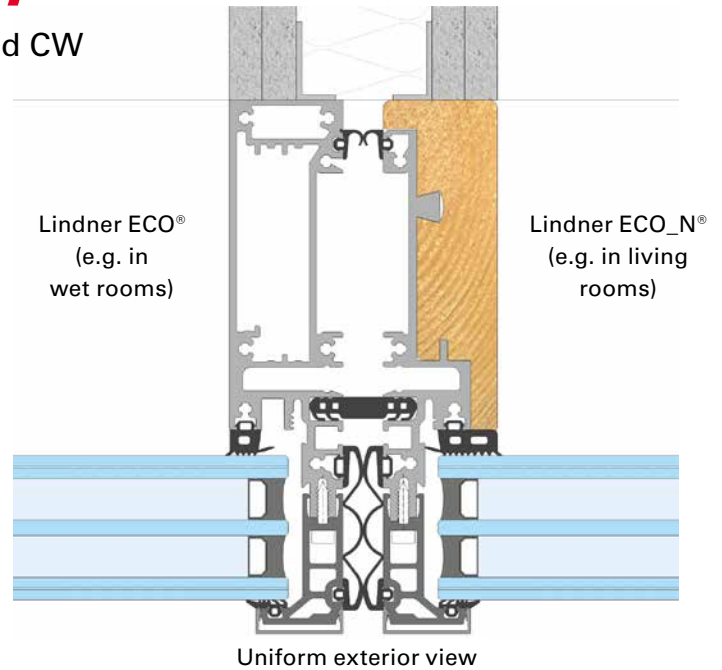
Lindner ECO_N® II (SSG)



System Compatibility

Combination of Hybrid and Aluminum unitized CW

- Individual design freedom
- Various types of wood available in addition to colored aluminum
- Individual response to the building physics requirements of different room environments
- Combination of hybrid and aluminum profiles within one unit (e.g. transom in aluminum, mullion in wood look)
- Uniform exterior view (3 1/8" (80mm))
- Uniform profile geometry



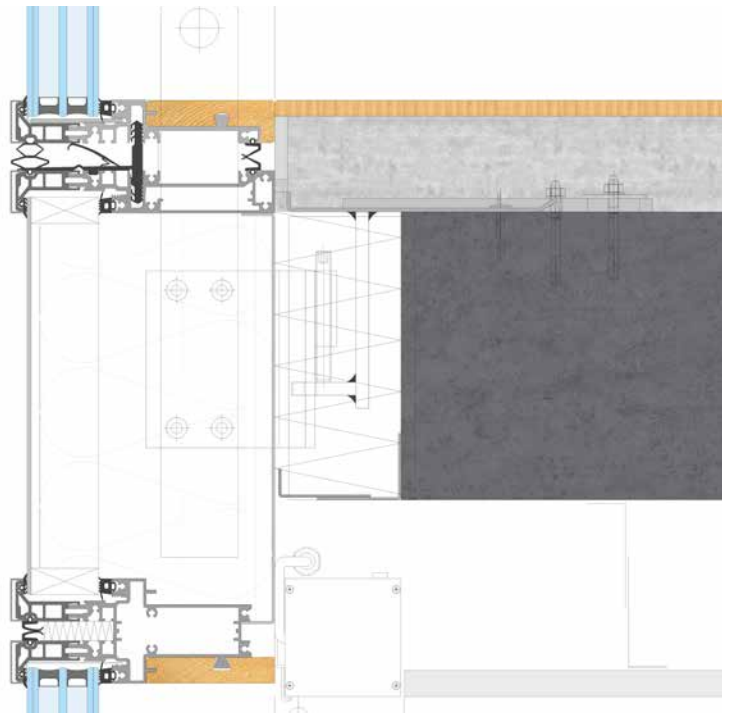
Preventive Fire Protection

Wood-Free slab edge zone

Only non-combustible materials are used in the ceiling termination and connection area to ensure maximum safety. The wood module can be statically compensated. The force connection of the unitized CW to the building envelope takes place without a direct fire load, so that possible fire-promoting sources in this area are avoided.

The high stability of the hybrid system offers enormous advantages in terms of passive fire protection, which positively affects the fire protection concept of the building. The fire and smoke compartmentalisation from storey to storey takes place in the standard way as with conventional aluminum unitized CW.

As an option fire retardant treatment (FRT) to wood surfaces is available on request.



Durability

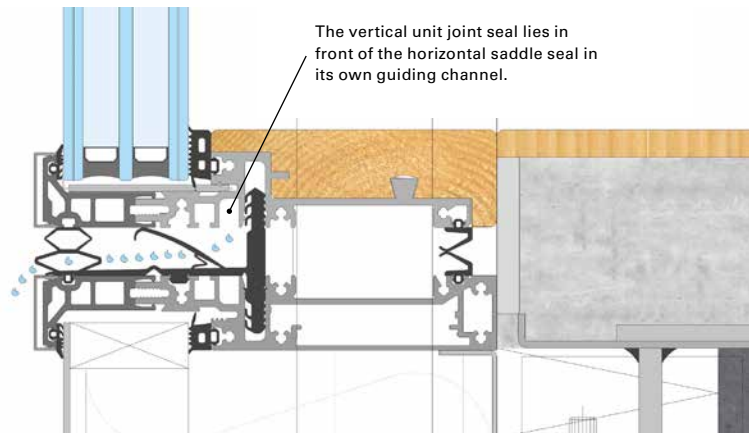
Economically and Ecologically Valuable

Proven sealing and drainage levels (cascade drainage system) ensure the functional efficiency of the curtain wall.

The aluminum profiles exposed to moisture are clearly separated from the dry area of the wood modules.

Due to the dovetail form closure on the aluminum profile, the specific swelling and shrinking properties of the wood are not affected.

The different materials find their best place in the system in terms of quality, so that the ECO_N convinces with excellent durability and longevity.



Performance Features

Wood Species (PEFC certified)

Softwood/coniferous wood	Spruce, fir, larch, douglas fir (solid glued wood, finger-jointed)
Hardwood/deciduous wood	Solid oak, oak composite (soft wood core inside, hardwood outside)

Surfaces (material ecologically tested)

Glazed, oiled, lacquered, FRT on request

Safety

Fall protection according to DIN EN 18008-4 Category A

Environmental Performance

U-value CW, triple glazed: 0.14 Btu/(h·ft²·°F), incl. TGU 2 3/16" with Ug of 0.09 BTU/(h·ft²·°F)

U-value CW, double glazed: 0.24 Btu/(h·ft²·°F), incl. DGU 1" with Ug of 0.2 BTU/(h·ft²·°F)

Superior accoustic values (STC 43 / OITC 39 with standard Triple glazing)

Performance Test

System approval according to DIN EN 13830:A4 | RE750. General building authority test certificate No. P-0300222-PFB

System approval acc. ASTM E283/283M, ASTM E331, AAMA 501.1 incl. interstory test acc. AAMA 501.4/501.7

Structural Capacity

ECO_N (standard version) $I_x = 5.29 \text{ in}^4$, variable mullion depths available to suit project conditions

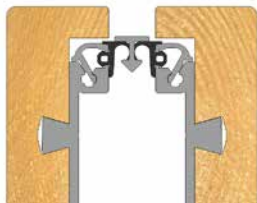
Aluminum: ENAW-6060 T66

Wood: Spruce S13/GL30, other species also available on request

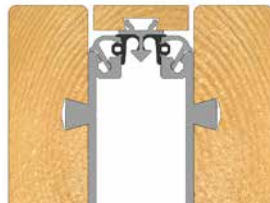
Basically: System is flexible for project-specific structural requirements

ECO_N Variations

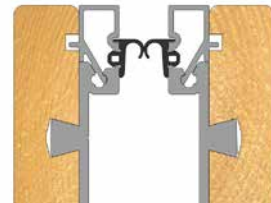
Material Change/Material Combination/Joint Design



Aluminum clip joint strip
Colored alu profiles |
colored silicone gaskets



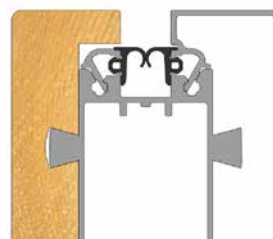
Pure Wood appearance
Wooden cover
of butt joint



**Aluminum adapter profile
with gasket**
Wood embedded in
colored aluminum

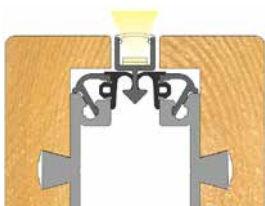


Pure Wood appearance
Wooden cover
of butt joint

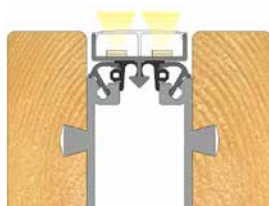


Wood-aluminum combination
with sealing joints

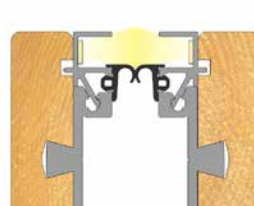
Interior Lighting/LED Modules



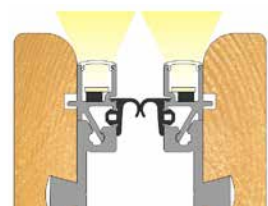
**Linear direct
LED lighting**
as joint design at
unit joint



**Linear direct two-fold
LED lighting**
as joint design
at unit joint



**Linear indirect
LED lighting**



**Linear direct
LED lighting**
Reversible, simple
integration of electrical
supply lines

Wooden Innovation ECO_N

Sustainable Building Technology with „Green“ Exterior Facade

1 Lindner's new system innovation is based on the proven, statically highly effective dovetail connection, which allows the wood to naturally expand and contract.

2 The sealing of the unit system occurs cascadelike within the aluminum area.

3 When fusing wood and aluminum profiles, the different properties of both materials are carefully coordinated and optimally utilised.

4 The CO₂ reduction through the use of wood promotes true sustainability by permanently protecting the wood from moisture.

5 Lindner ECO_N® impresses with a high-quality, modern appearance and meets the criteria for the "Quality Seal Sustainable Building". The facade with wooden modules creates an immediate connection to nature through their aesthetics.



Find out more about
Lindner ECO_N®



Rethinking Spaces

Add.Vantage

Over time, the Lindner Group has developed into a technically sound, solution-oriented and reliable partner with a rock-solid commercial footing. Our comprehensive product and service portfolio for building envelopes, interior fit-out and insulation technique in almost all fields of application is second to none. True to the motto "Rethinking Spaces" we develop perfectly customized and yet versatile solutions and concepts for your building project.

As a 100 % family-owned company we attach particular importance to our environment. With innovative concepts such as Cradle to Cradle Certified®, low-emission products and well thought-out room concepts we create Add.Vantage for people and their environment. As a service provider and employer we place people at the centre of our activities. Our customers notice this too: We enjoy our work, have conviction in what we do and are proud of what we are capable of achieving.

Stability and Growth

Our head office is located in Arnstorf in Lower Bavaria, where we have seen massive growth in recent decades since the company was founded in 1965 by Hans Lindner. We are proud to be the largest employer in the Rottal-Inn district with some 7,100 employees worldwide. We handle 2,500 projects on a daily basis, mostly revolving around our core business of construction. This is complemented by our foundation, the mk | hotels, microbreweries and – most recently – sustainable agriculture and forestry.



Lindner Group Headquarters
Arnstorf, Germany

Lindner Facades Inc.

200 Barr Harbor Drive | Suite 290 | Conshohocken, PA 19428

Phone +1 267-576-1669 | FacadesOffice@Lindner-Group.com | www.Lindner-Group.com

ECO_N/US/1.3