

LUMEAL

MINIMALIST SLIDER



Architect: Lopes Da Costa
Photography: Ivo Tavares



By  Hydro



LUMEAL

/ DESIGNED TO ENHANCE
PERFORMANCE

DESIGN AND INNOVATION

LUMEAL Minimal, 100 mm module, is a minimalist sliding system with a concealed opening sash.

Its minimalist design ensures an 8 to 14% gain in glass surface area depending on the application. LUMEAL Minimal can be used to create different opening configurations combining a fixed section and sliding section, associated with a slim central meeting stile.

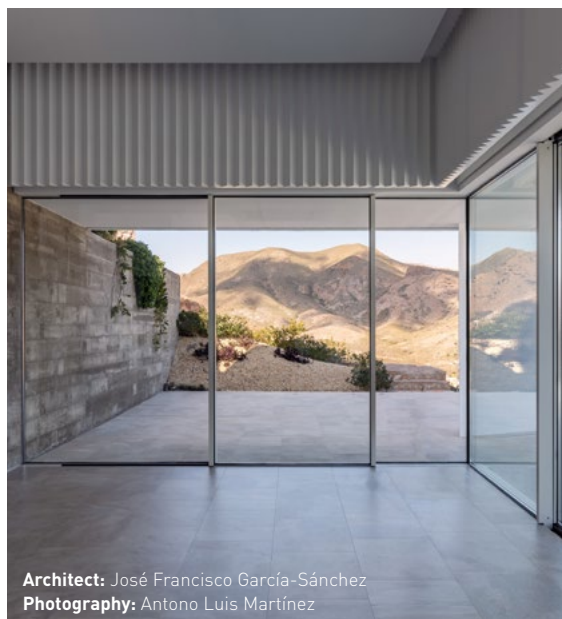
A SOLUTION FOR YOUR LOW ENERGY BUILDING PROJECTS

LUMEAL Minimal offers a real solution for low energy building projects due to its very low air permeability and outstanding thermal performance. $1,39 \text{ m}^3/\text{h}/\text{m}^2$ (under a pressure of 100 Pascals).

1 leaf + fixed section patio door
(WxH 3000 x 2500 mm)

$U_w = 1,2 \text{ W}/\text{m}^2.\text{K}$ et $S_w = 0,45$ $T_{Lw} = 0,64$

Double glazing with $U_g = 1,0 \text{ W}/\text{m}^2.\text{K}$ + insulating spacer with dimensions (WxH 4500 x 2700 mm).



Architect: José Francisco García-Sánchez

Photography: Antono Luis Martínez

LUMEAL

/ AN INNOVATIVE SLIDING SYSTEM



FEATURES AND KEY INNOVATIONS

LARGE DIMENSIONS

- Maximum sizes up to (WxH) 4500 x 2700 mm
- Maximum weight per leaf: 300 kg with triple stainless steel rollers

THERMAL PERFORMANCES

- Up to $U_w = 1,2 \text{ W/m}^2\cdot\text{K}$, $S_w = 0,46$ and $T_{Lw} = 0,65$
- Double glazing with $U_g = 1,0 \text{ W/m}^2\cdot\text{K}$ + Insulation spacer with dimensions (WxH) 4500 x 2700 mm

WEATHER PERFORMANCES

Air permeability

- Very little loss, a solution for low energy building projects
- Up to $1,39 \text{ m}^3/\text{h}/\text{m}^2$ (1 leaf + fixed section: WxH 3000 x 2500 mm) under a pressure of 100 Pascals.

ACOUSTIC PERFORMANCE

- Reduction equivalent to a hinged window / patio door
- 1 leaf + fixed section patio door (WxH 2800 x 2200 mm) + fixed section: 35 dB (Ra,Tr)

DESIGN

- Lighter aluminium weight (-35%) with only 68 mm and 77 mm of visible aluminium
- Slim central meeting stile
- Concealed drainage for all applications

ACCESSIBILITY AND COMFORT

- Device adapted for easy access
- Flat threshold fitted into the floor or access ramp profile have been developed to improve user's comfort
- Motorized option to make easier opening/closing of large dimensions and heavy frames

LOCKING MECHANISMS

- Several handle options with a refined design, non-locking or 2-point and 3-point locking

SUSTAINABILITY

- Profiles in Hydro CIRCAL®: prime quality aluminium made with a minimum of 75% recycled end-of-life aluminium (postconsumer scrap). Carbon footprint of 2.3 kg of CO₂ per kilo of aluminium.
- EPD on demand.

LUMEAL

/ AN EXCLUSIVE DESIGN

This attractive and effective solution is created using minimalist lines and an exclusive design. The design optimises natural light. The slider has a distinct refined finish with no overlapping of profiles and concealed drainage. Square-jointed assembly also helps to refine the structure.

The concealed opening sash principle is used to create a more attractive finish: Only the frame remains visible with a 68mm aluminium sight line (in relation to a 150mm conventional sliding system) which maximises the glass surface area by +8%. Several exclusive design handles are available to customise the slider.



Minimal handle on service opening sash and semi fixed sash.



Straight design handle on service opening sash.



Knob.

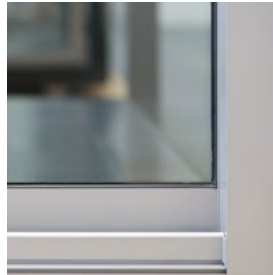
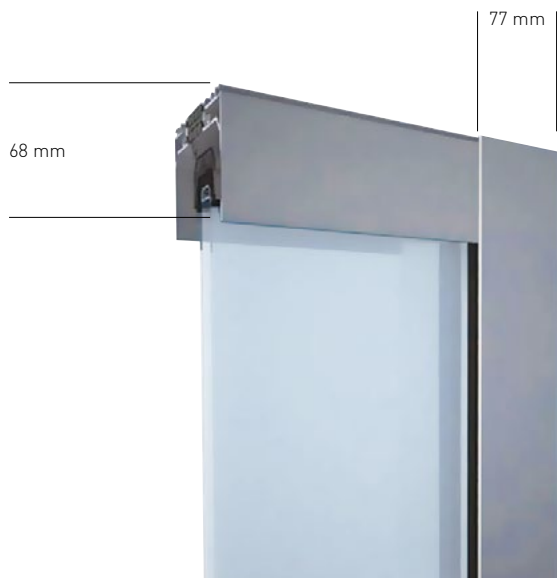


Central opening handle on 4 and 6-sash.



Minimal handle design.





top-left:
Exterior detail of frame:
frame-lower transom

top:
Central mullion

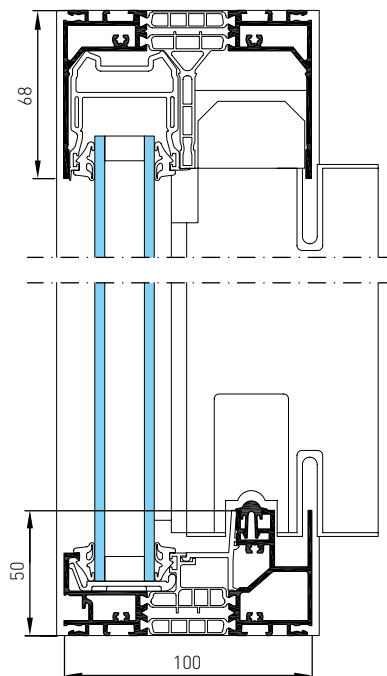
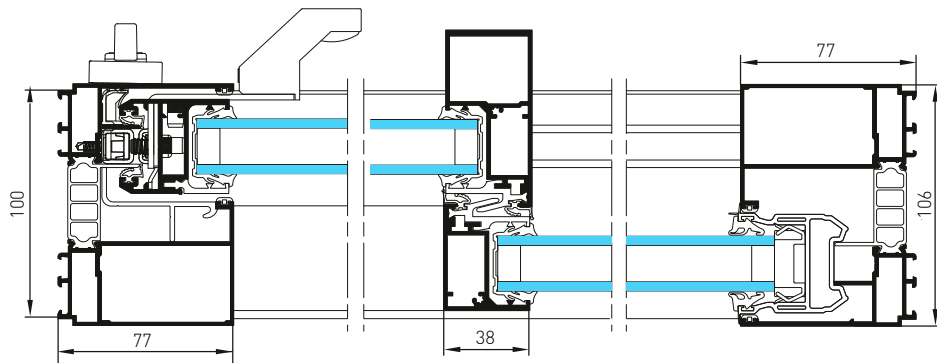
left:
frame detail: frame-opening
sash



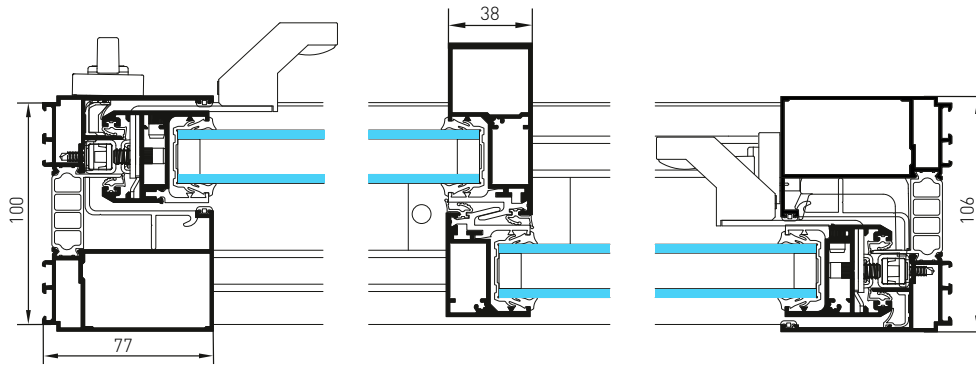
SECTIONS

/ WITH THERMAL BREAK

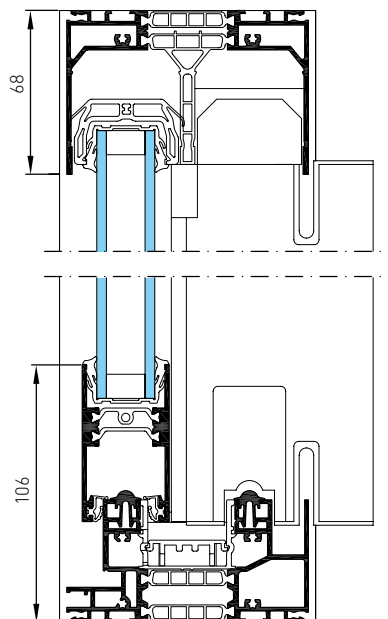
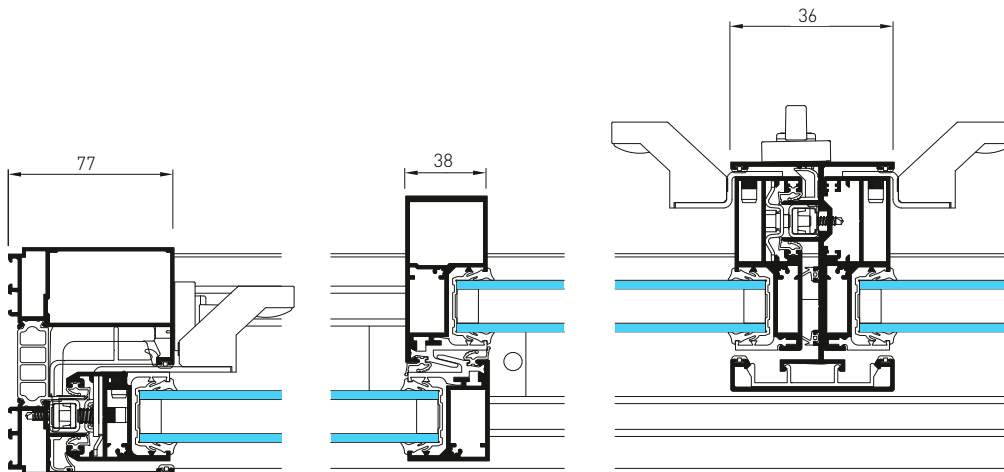
1-LEAF + 1 FIXED SECTION - 2 TRACKS



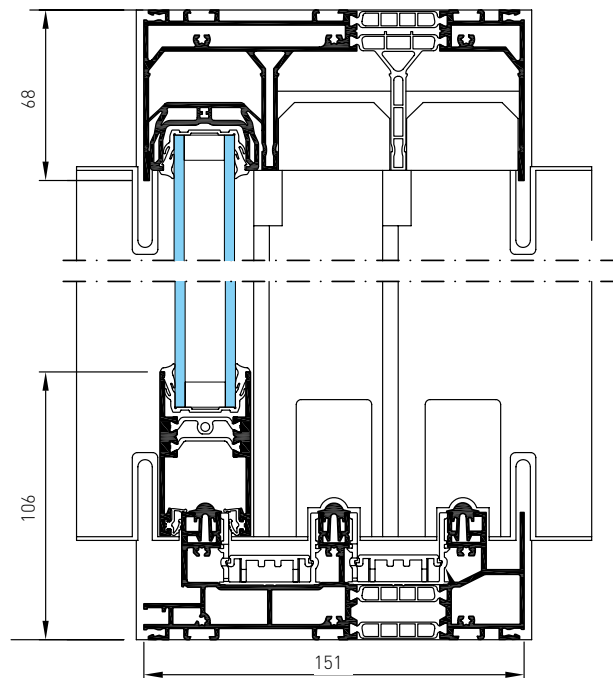
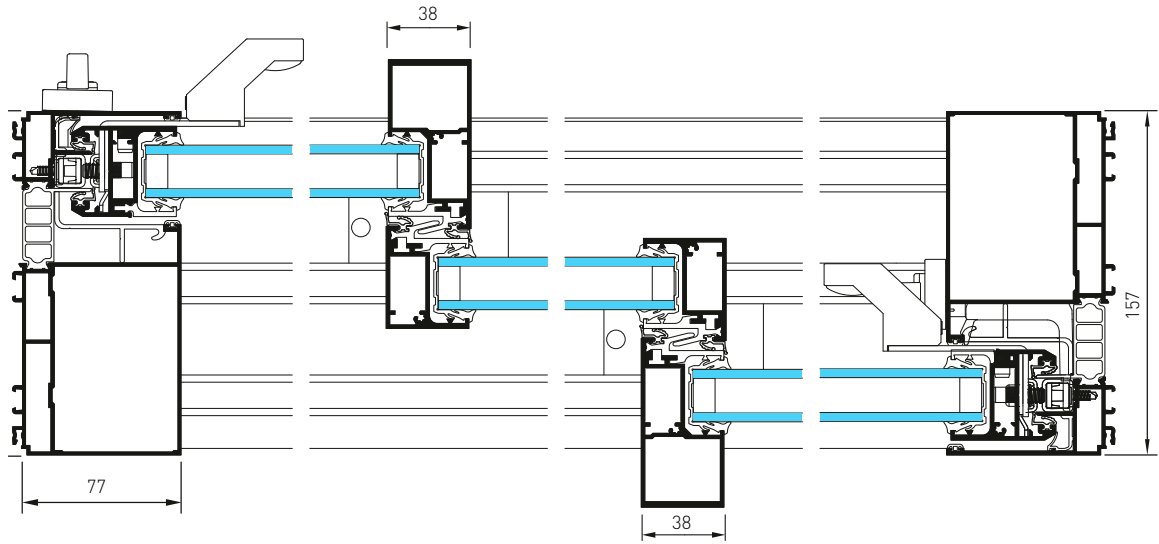
2-LEAVES - 2 TRACKS



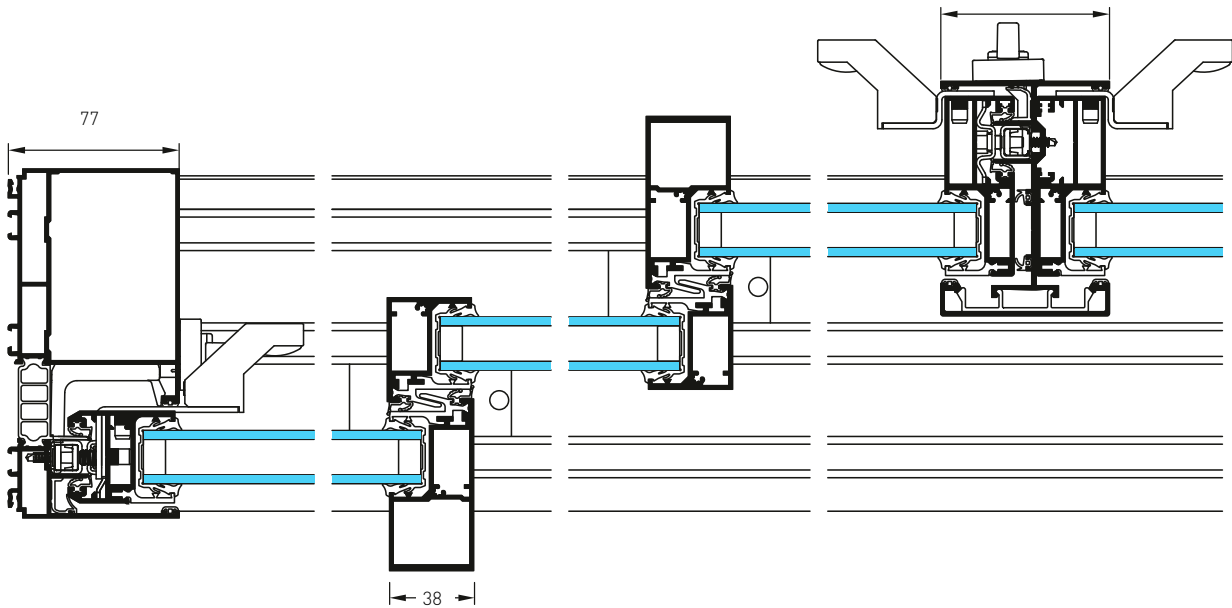
4-LEAVES - 2 TRACKS



3-LEAVES - 3 TRACKS

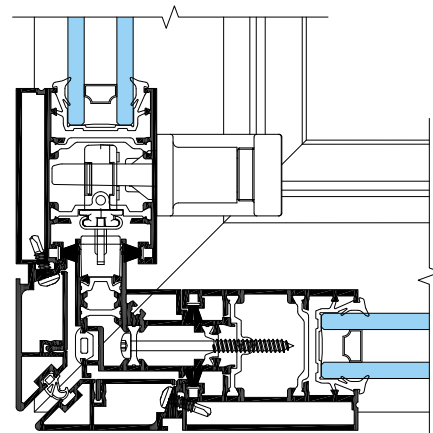


6-LEAVES - 3 TRACKS



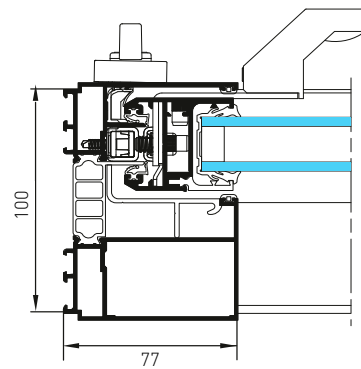
OPEN CORNER / 90° CORNER SOLUTION

LUMEAL sliding system provides external and internal corner solutions. You can configure the frame to corner at 90° without the need for a corner post.



SECURITY / FORCIBLE ENTRY DELAY

LUMEAL sliding system, resistance class level 3 (RC3) against burglary according to the European norm EN 1627-30, by resisting more than 5 minutes to an attempted break-in. Locking system inaccessible from the outside, with either non-locking or 2-point and 3-point locking.



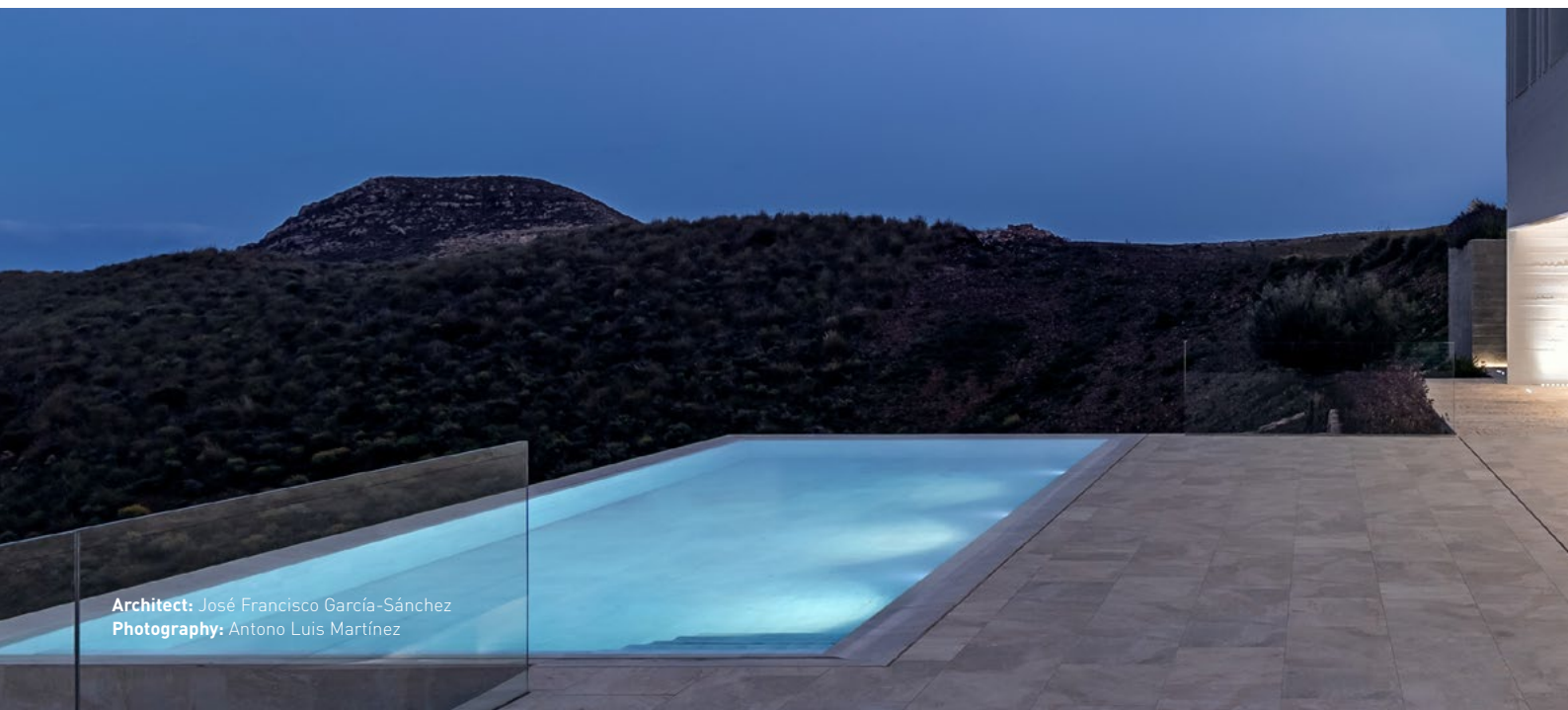
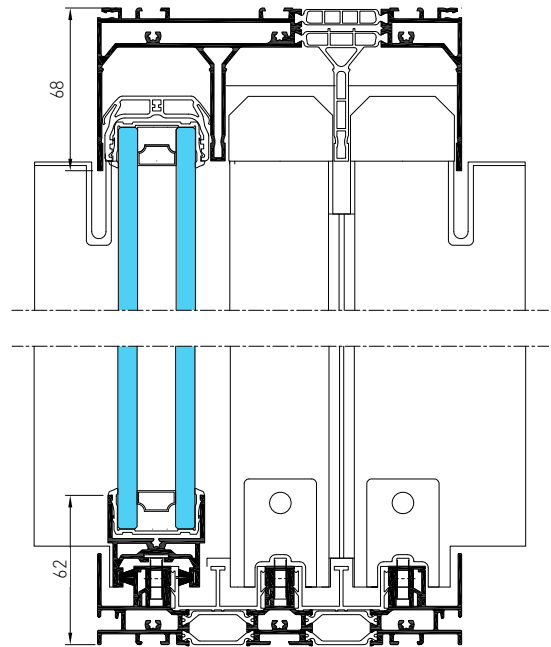
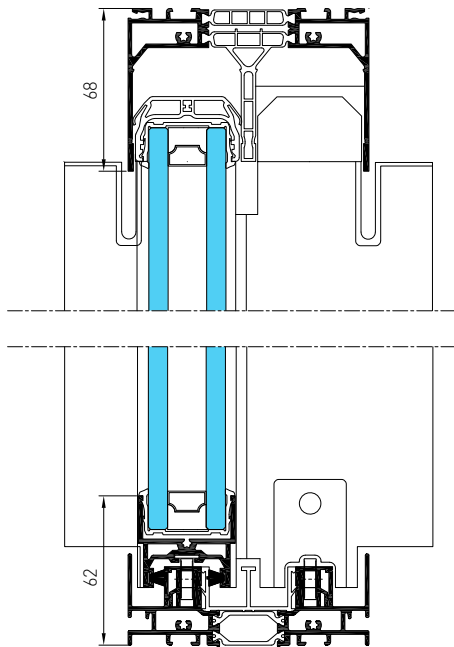
Multipoint lock inaccessible from outside

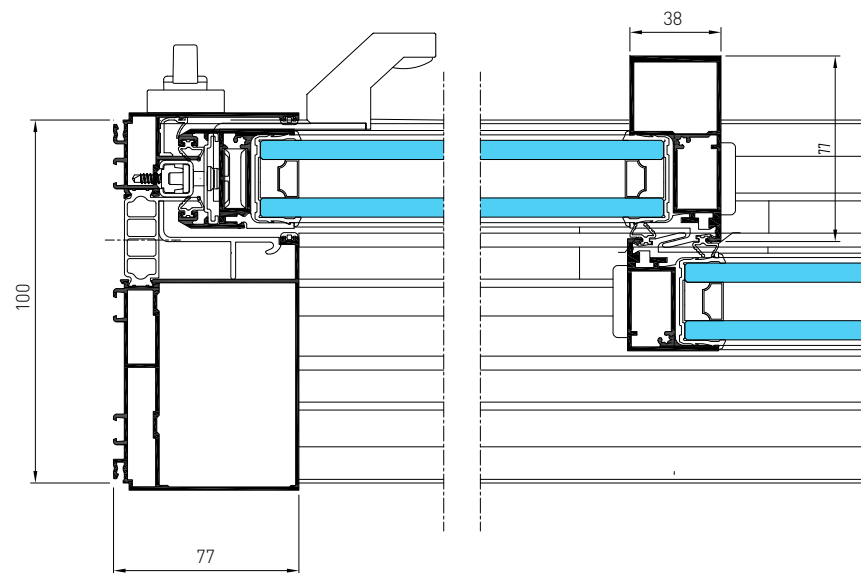
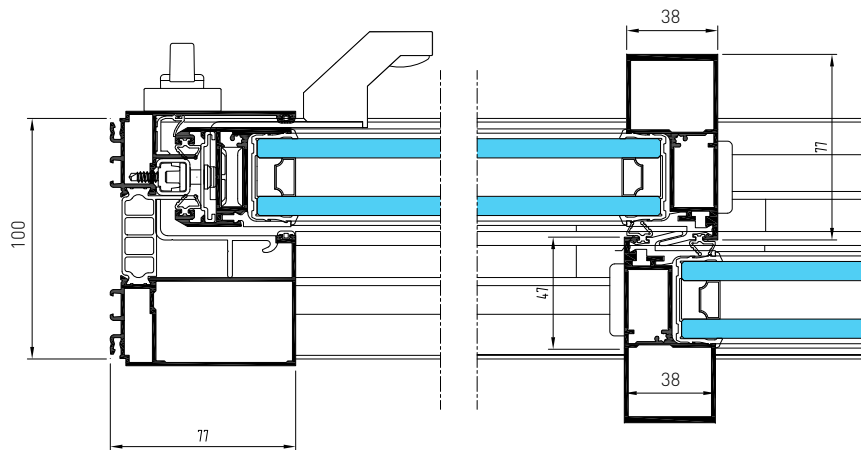
LUMEAL XXL

/ LARGE DIMENSION SLIDER

Lumeal XXL is an innovative solution that allows you to create a wide glass surface area.

The bearing system can accommodate up to 600 kg per leaf whilst offering a smooth operability. Its central reinforced profile ensures outstanding wind resistance, allowing the realization of remarkable heights.





LUMEAL

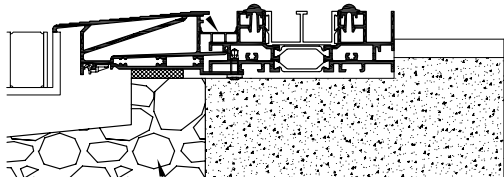
/ ACCESSIBILITY AND COMFORT

FLAT THRESHOLDS

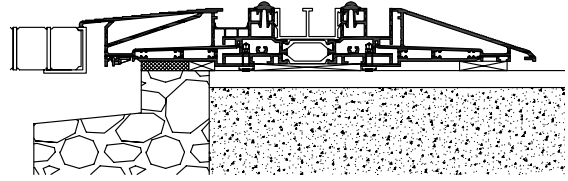
The LUMEAL patio door threshold complies with the French law concerning building accessibility regulating patio door access whilst ensuring watertightness.



BUILD-NEW INSTALLATION CASE: THRESHOLD FITTED INTO THE FLOOR

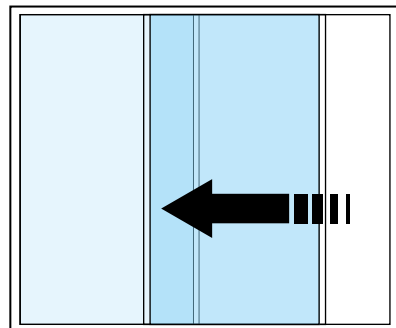


RENOVATION INSTALLATION CASE: ACCESS RAMP PROFILE



FOR MORE COMFORT AND ACCESSIBILITY: MOTORIZED OPTION

The LUMEAL patio door threshold complies with the French law concerning building accessibility regulating patio door access whilst ensuring watertightness.



APPLICATIONS

2 TRACKS



2 leaves



1 leaf + fixed



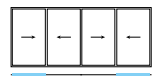
1 leaf offset + fixed



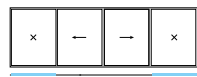
3 leaves



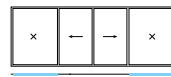
2 leaves + fixed



4 leaves



2 leaves + 2 fixed



2 leaves offset + 2 fixed

3 TRACKS



CORNER SLIDER APPLICATIONS

SINGLE TRACK

Pocket Window Chassis



2 x 1 leaf external corner



2 x 1 leaf internal corner

2 TRACK

Base Frames

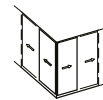


2 x 2 leaves external corner

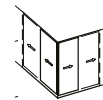


2 x 2 leaves internal corner

Pocket Window Chassis



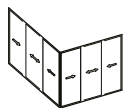
2 x 2 leaves internal corner



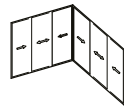
2 x 2 leaves internal corner

3 TRACK

Base Frames

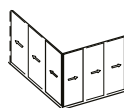


2 x 3 leaves external corner

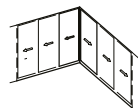


2 x 3 leaves internal corner

Pocket Window Chassis



2 x 3 leaves internal corner



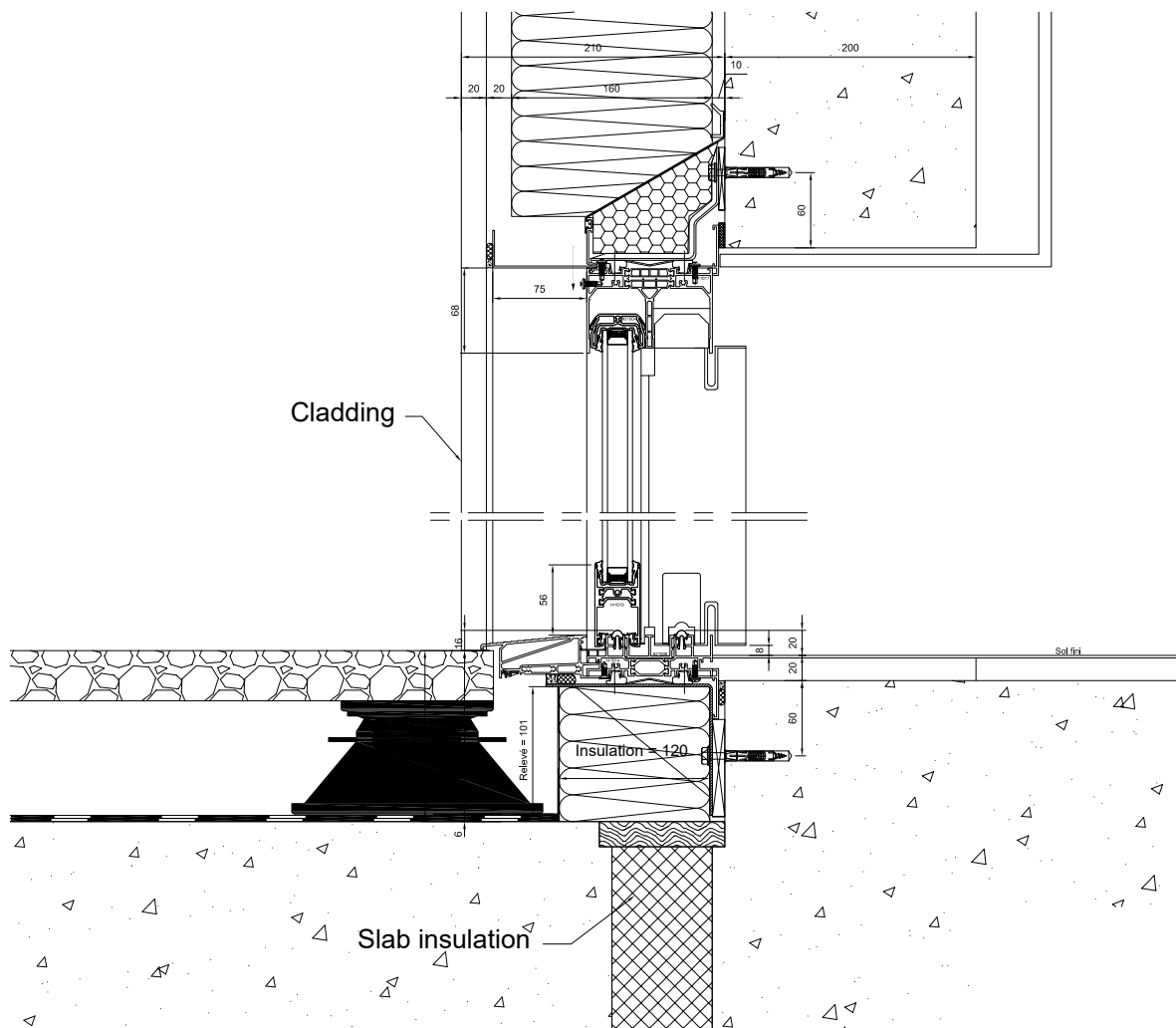
2 x 3 leaves internal corner

All of these applications are available with concealed drainage.

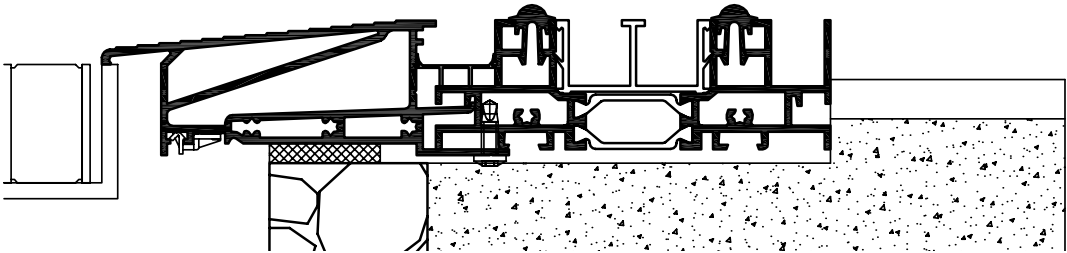
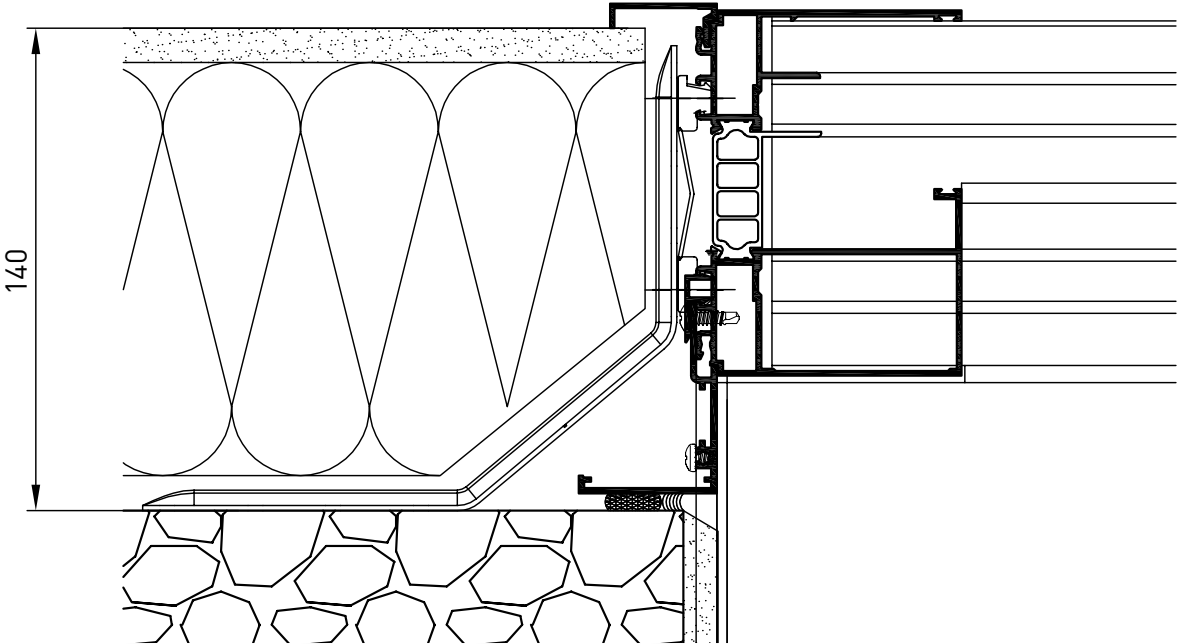
LUMEAL

/ INSTALLATION OPTIONS

EXTERIOR INSULATION INSTALLATION



INSIDE INSTALLATION



PERFORMANCES

Whether for residential or office buildings, the thermal regulations RT 2012 aim to fix a maximum energy consumption for new buildings. These regulations do not impose a minimum requirement: TECHNAL® aims to support architects in this new objective.

The LUMEAL sliding system preserves the permeability of the building envelope due to its excellent Q100* and Q4 values.

*Q100 represents leakage from the frame at 100 Pascals. For Low Energy Consumption Building. Q100 must not exceed 5.1 for single-family housing or 8.5 apartment blocks (in m³/(h.m²)).

THERMAL PERFORMANCE - U_w				
Applications	Dimensions WxH in mm	U_w with U_g 1.1	U_w with U_g 1.1 warm edge	U_w with U_g 1.0 warm edge
2 tracks – 1 leaf + 1 fixed	2300 x 2180	1.5	1.5	1.4
2 tracks – 2 leaves	2300 x 2180	1.6	1.5	1.5
2 tracks – 4 leaves	4600 x 2180	1.6	1.5	1.4
3 tracks – 3 leaves	3450 x 2180	1.7	1.6	1.5
3 tracks – 6 leaves	6500 x 2180	1.7	1.6	1.5

PERFORMANCE - SOLAR FACTOR			
Applications	Dimensions WxH in mm	S_w with U_g 1.1 S_g of single glazing 0.6 *	S_w with U_g 1.0 S_g of single glazing 0.5
2 tracks – 1 leaf + 1 fixed	2300 x 2180	0.53	0.44
2 tracks – 2 leaves	2300 x 2180	0.53	0.44
3 tracks – 3 leaves	3450 x 2180	0.54	0.45

PERFORMANCE - LIGHT TRANSMISSION			
Applications	Dimensions WxH in mm	T_{Lw} with U_g 1.1 T_{Lg} of single glazing 0.8 *	T_{Lw} with U_g 1.0 T_{Lg} of single glazing 0.7
2 tracks – 1 leaf + 1 fixed	2300 x 2180	0.68	0.6
2 tracks – 2 leaves	2300 x 2180	0.67	0.59
3 tracks – 3 leaves	3450 x 2180	0.69	0.6

* Dark coloured sections, absorption equal to 1.0

AIR, WATER, WIND SEALING PERFORMANCE						
Applications	Dimensions WxH in mm	Air permeability	Water tightness	Wind resistance	Q100	Q4
2 tracks – 1 leaf + 1 fixed section	3000 x 2500	Class 4	Class 7A	Class B3	1.39	0.16
2 tracks – 1 leaf + 1 fixed section disabled access threshold	2970 x 2482	Class 4	Class 5A	Class B2	1,92	0.22
2 tracks – 2 leaves	3000 x 2500	Class 4	Class 7A	Class B3	1.9	0.22
2 tracks – 2 leaves disabled access threshold	2400 x 2150	Class 4	Class 5B	Class B2	2.28	0.27
2 tracks – 4 drilled section leaves	3500 x 2350	Class 4	Class 5A	Class C3	2.93	0.34
3 tracks – 3 leaves	3500 x 2348	Class 4	Class 6A	Class B2	2,24	0.26

AIR PERMEABILITY FOR LOW ENERGY CONSUMPTION BUILDINGS (average per m ² including walls)		
	equivalent to	
	Q4 Pa Max	Q100 Pa Max
Private housing m ³ /(h.m ²)	0.6	5.1
Apartment blocks m ³ /(h.m ²)	1	8.5

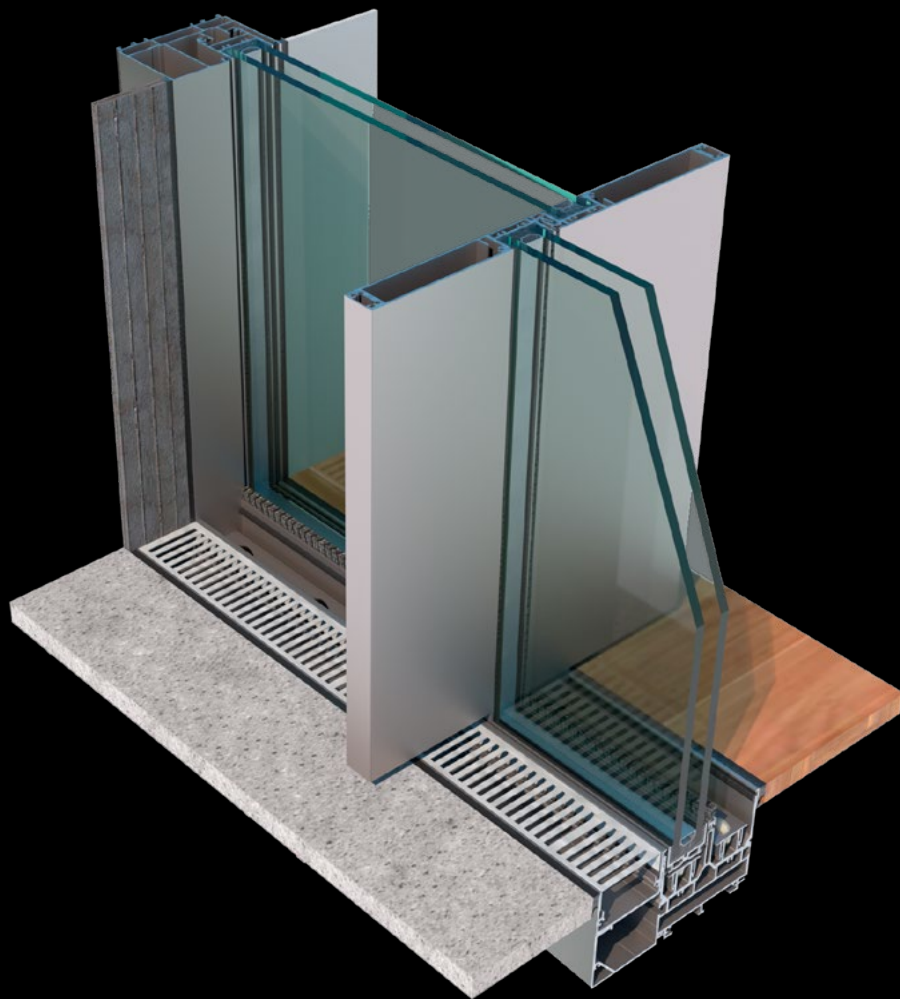
Note: $Q = Q100 \times (P/100)^{2/3}$ / $Q100 = \text{Leakage flow at 100 Pa}$ / $P = \text{Pressure Pa}$ / $Q = \text{Leakage flow at P Pa}$

ACOUSTIC PERFORMANCE								
Applications	Description	Dimensions WxH in mm	Glazing			Windows		
			R _w [C;C _{tr}]	R _a	R _{a,Tr}	R _w [C;C _{tr}]	R _a	R _{a,Tr}
Window								
2 tracks – 1 leaf + 1 fixed section	44 - 1 Where (14)10	1390 x 1400	42	40	38	40	39	37
2 tracks – 1 leaf + 1 fixed section with disabled access threshold	44 - 1 Where (14)10	1390 x 1400	42	40	38	39	39	37
2 tracks – 2 leaves	44 - 1 Where (14)10	1390 x 1400	42	40	38	38	38	36
2 tracks – 2 leaves + 1 fixed section with disabled access threshold	44 - 1 Where (14)10	1390 x 1400	42	40	38	37	37	35
Patio door								
2 tracks – 1 leaf + 1 fixed section	44 - 1 Where (14)10	2800 x 2200	42	40	38	38	37	35
2 tracks – 2 hidden frame leaves	44 - 1 Where (14)10	2954 x 2268	42	40	38	37	36	34
2 tracks – 2 leaves	44 - 1 Where (14)10	2800 x 2200	42	40	38	38	37	35

In accordance with EN 14351-1, these window performances are valid for:
- R_w+C_{tr} (for index R_{a,Tr}) glass greater than or equal to the values of the glass tested-corrections
- 1 dB for leaf surface + 50% to + 100% / - 2 dB for + 100 % to + 150% / - 3 dB for + 150 % to + 200%

LUMEAL MINIMALIST

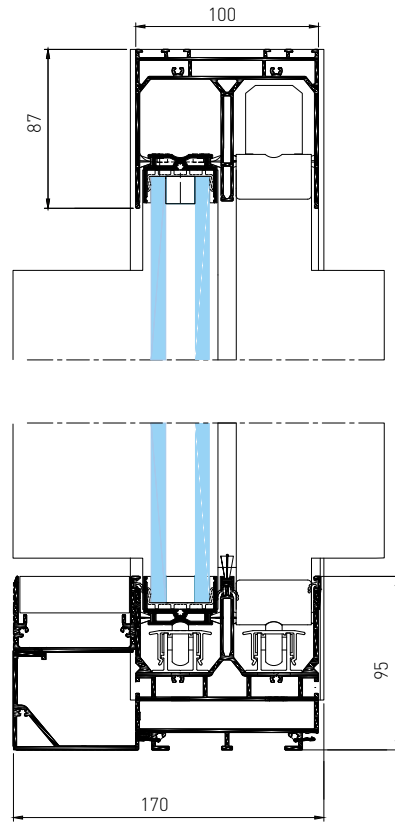
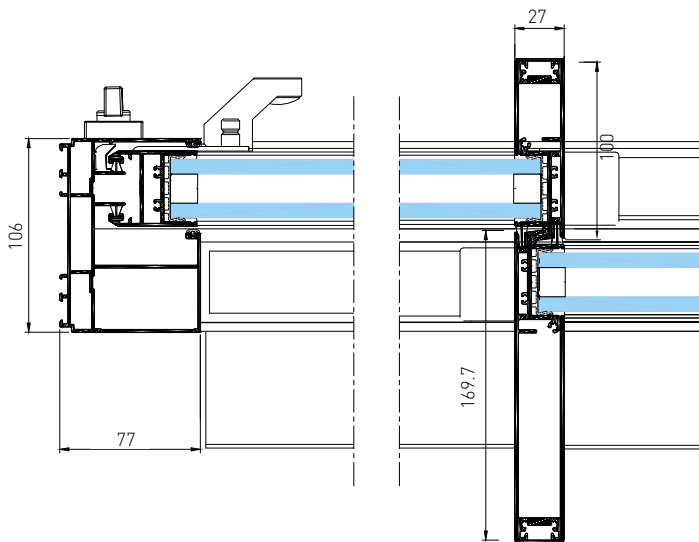
/ INNOVATIVE MINIMAL SLIDING SYSTEM



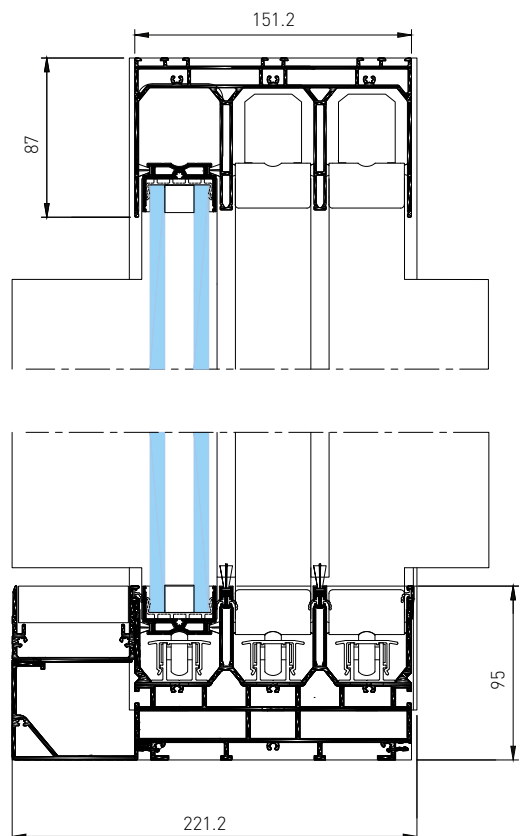
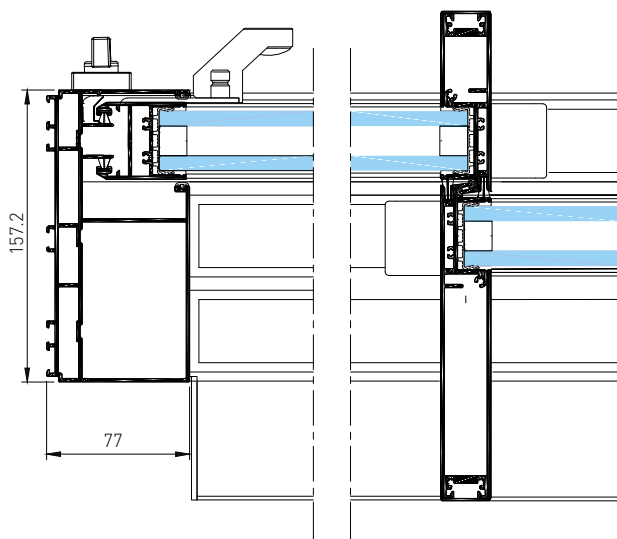
SECTIONS

/ WITHOUT THERMAL BREAK

2-LEAVES - 2 TRACKS



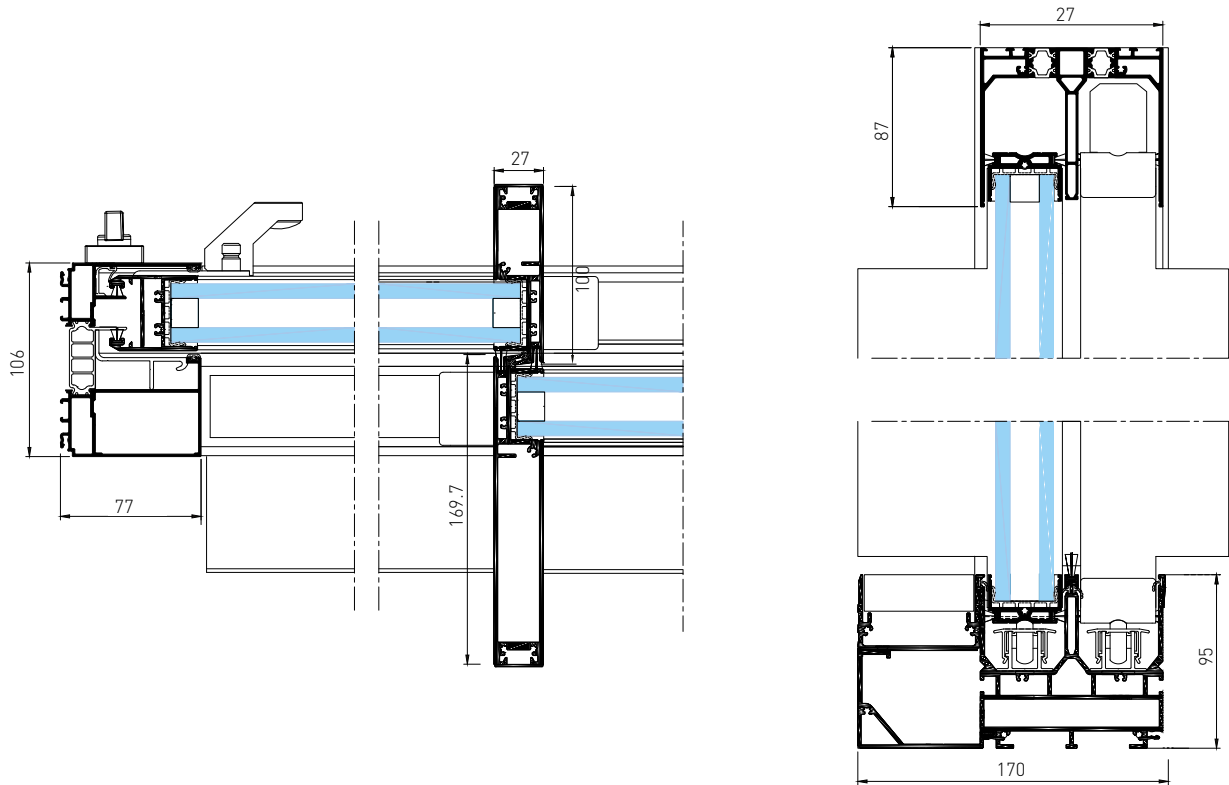
3-LEAVES - 3 TRACKS



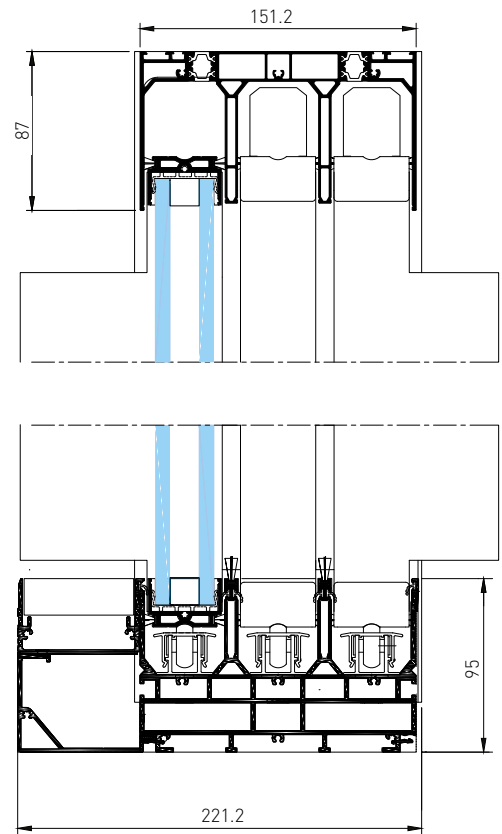
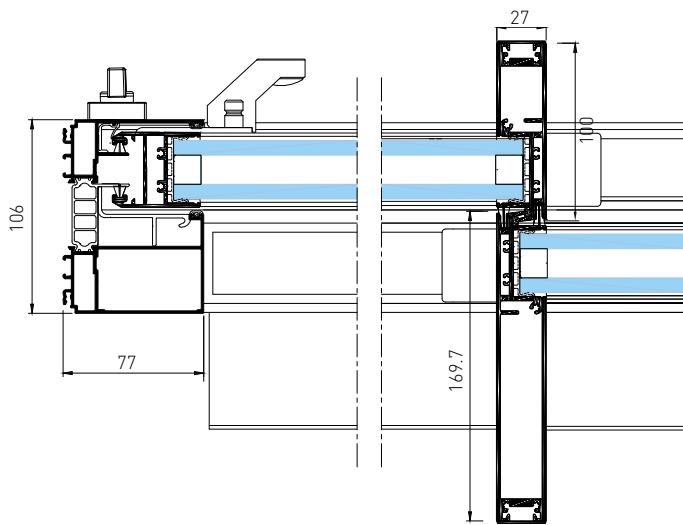
SECTIONS

/ MINIMALIST WITH THERMAL BREAK

2-LEAVES - 2 TRACKS

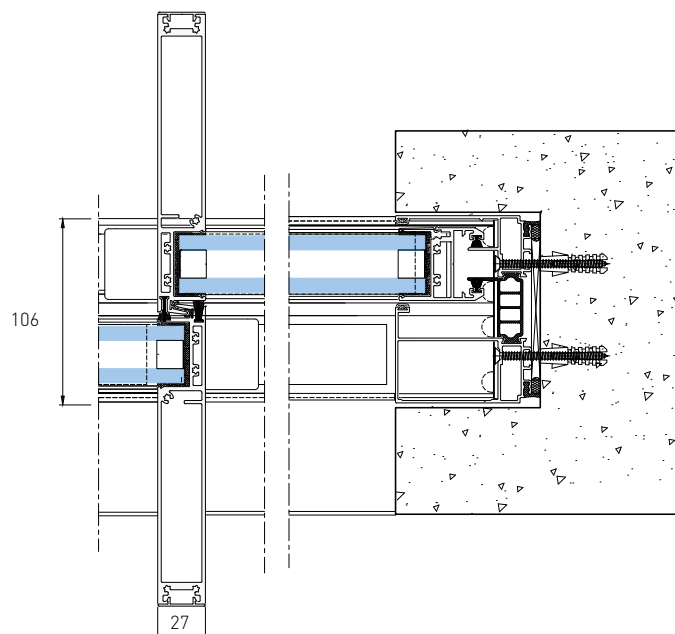
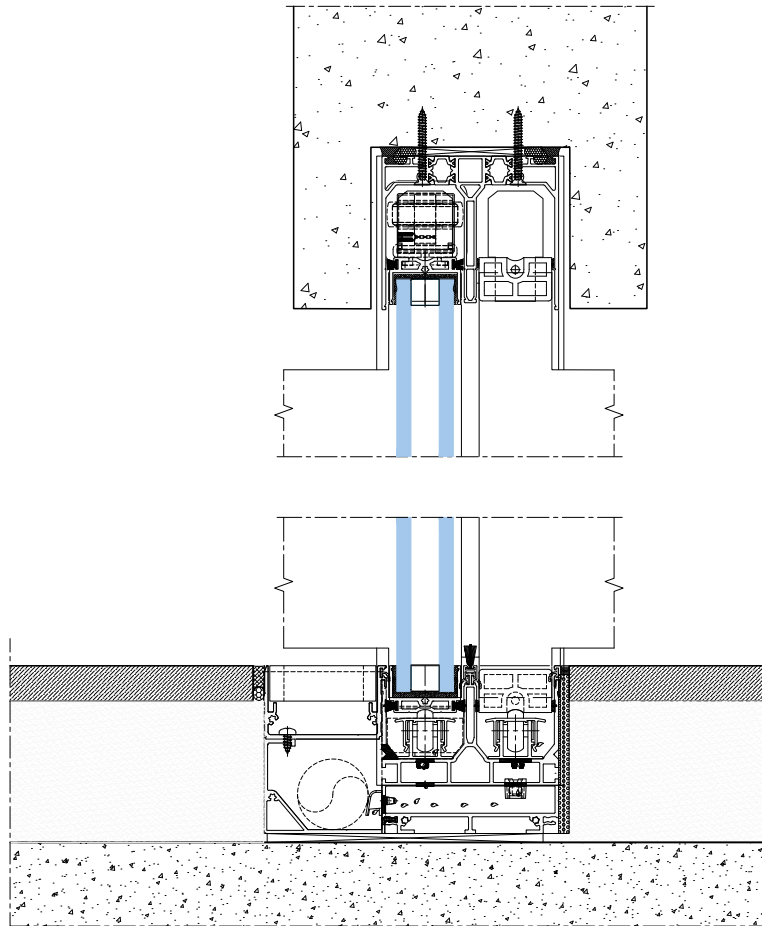


3-LEAVES - 3 TRACKS



LUMEAL MINIMALIST

/ CONCEALED TOP AND JAM DETAILS



/ ACCESSIBILITY AND COMFORT

LUMEAL MINIMALIST FLUSHED THRESHOLD

The LUMEAL patio door threshold is lowered into the floor with a completely flushed threshold.

This version ensures a seamless connection of indoor and outdoor spaces, making it more accessible and visually continuous. The Gutter cover can be made of any material to match the flooring and leaving only the tacks visible.

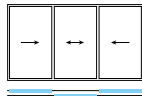


/ PERFORMANCES AND APPLICATIONS

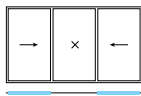
2 TRACKS



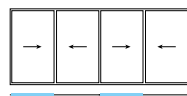
2 leaves



3 leaves



3 leaves + fixed



4 leaves

3 TRACKS



3 leaves



5 leaves

LUMEAL MINIMALIST - WEATHER PERFORMANCES*

Application (Height x Width)	Air Permeability	Water Tightness	Wind Resistance (deflection)	Test to Failure
2 leaf 2 rail H3400 x L 3200	2.99 m ³ /hr/m ² at 600 Pa	390 Pa with no water penetration	2000 Pa : f<L/175	Under -6400 Pa

* Results of tests performed as per ASTM standard
 - Air Permeability test as per ASTM standard E283-04(2012)
 - Watertightness as per ASTM standards E331-00(2009) and ASTM E547-00(2009)
 - Wind Resistance test as per ASTM standard E330/E330M-14

** Maximum weight per sash: 180 Kg per linear meter of roller

LUMEAL

/ COMMITMENT AND SUSTAINABILITY*

TECHNAL demonstrates its strong commitment to the environment in all areas: by using recycled and low-carbon materials, with a product design that is adapted to a circular economy, and produced within a responsible supply chain. In addition, these statements are certified by external organisations to ensure maximum transparency.

HYDRO CIRCAL®

We are demonstrating our focus on sustainability by using Hydro CIRCAL® for our system solutions, one of the most sustainable aluminium alloys in our sector. Hydro CIRCAL® is a range of prime quality aluminium made with a minimum of 75% recycled end-of-life aluminium (post-consumer scrap). The production process is verified by an independent third party (DNV-GL), and confirmed by an EPD (Environmental Product Declaration). Hydro CIRCAL® also has **one of the smallest CO₂ footprint worldwide: 2.3 kg CO₂ per kilo of aluminium** – 4.5 times less than the world global primary average.

RECYCLED & RECYCLABLE

Following our path to the certified circular economy, all of our systems are composed with a majority of materials and components that can be infinitely recyclable, that can come from recycled raw materials, that can be recycled to have a second life or components that can also be reused.

In rough figures, we're talking about **75% recycled content and 95% recyclable content**. It's an efficient way to drastically reduce the impact of materials on the life cycle of a building. Finally, our greener approach goes a step further thanks to recycled thermal strips for 75 mm modules.

75% RECYCLED POST CONSUMER

Hydro CIRCAL® is the world's first certified recycled aluminium which means that at least 75% of the prime-quality aluminium alloy comes from post-consumer materials.

95% ENERGY SAVED

By recycling post-consumer scrap aluminium, the remelting process saves up to 95% of energy that would normally be spent and maintain the same high quality as primary aluminium.

85% REDUCTION OF CO₂ EMISSIONS

The consequence of using Hydro CIRCAL® is the drastic reduction in CO₂ emissions which sums more than 85% when compared with the global average for primary aluminium production.

* For profiles sourced in Europe

LUMEAL

75% RECYCLED
95% RECYCLABLE





ENVIRONMENTAL PRODUCT DECLARATION (EPD) *

Life cycle indicators	Unit per window	Results
Non-renewable primary energy	(MJ)	2912
Renewable primary energy	(MJ)	184.5
Water consumption	(kg)	3261
Reduction in abiotic resources	(kg Sb eqv.)	1.634
Climatic warming potential	(kg CO2 eqv.)	313.1
Ozone layer depletion potential	(kg R11 eqv.)	6.892E-005
Acidification potential	(kg SO2 eqv.)	1.33
Eutrophication potential	(kg PO4 eqv.)	0.1406
Photochemical ozone creation potential	(kg ethene eqv.)	0.1653
Non-hazardous waste	(kg)	10.14
Hazardous waste	(kg)	6.116

The indicators are calculated based on mean representative data for the production of aluminium in the European Union, and on generic data for a standard glass unit and standard gaskets.

* For profiles sourced in Europe



MATERIALS AND COMPONENTS

As with all TECHNAL systems, only high-quality materials and components are used to reduce maintenance and guarantee long-term performance.

- The aluminium profiles are extruded from alloys 6060 Building compliant with EN 12020, EN 573-3, EN 515 and EN 775-1 to 9.
- Accessories are cast using Zamak 5 as in EN 12844.
- All gaskets are Thermoplastic elastomer (TPE) EPDM.
- Polyamide thermal breaks are extruded using PA6-6 (0,25 FV).
- Screws are stainless steel.

FINISHES AND COLOURS

A wide range of finishes is available to meet the requirements of individual projects, to enhance existing buildings and to offer increased design choice to architects and designers.

- Natural anodised in compliance with EN123731: 2001.

- Polyester powder coating finishes in an extensive range of colours, in compliance with «QUALICOAT» standards.
- LUMEAL is also available in painted finishes in Exclusives TECHNAL colours for a stylish and modern appearance.

PROFILES

- LUMEAL is made from Hydro CIRCAL®, recycled low carbon aluminium. That means it's prime quality aluminium made with a minimum of 75% recycled end-of-life aluminium (post-consumer scrap). Hydro CIRCAL® has one of the lowest carbon footprint worldwide: 2.3 kg of CO₂ per kilo of aluminium.
- The aluminium profiles are extruded from alloys 6060 Building compliant with EN 12020, EN 573-3, EN 515 and EN 775-1 to 9.

LUMEAL

/ CERTIFICATIONS*



CRADLE TO CRADLE (C2C) CERTIFICATION

From its design to the selection of materials and how it is manufactured, the product must offer the level of performance required by the market by reducing, to the greatest extent possible, environmental impacts such as energy consumption or greenhouse gas emissions.

We classify our range under the criteria of the Cradle to Cradle seal, an independent institute that certifies products and processes from a circular economy perspective. We have numerous Cradle to Cradle certified series, including the manufacturing in our plants. In this way, we are able to ensure that the carbon footprint of transporting our products is as low as possible.

Our facade is under certification.



ALUMINIUM STEWARD INITIATIVE (ASI)

ASI is a multi-stakeholder, non-profit, standards-setting and certification organisation. It is the most internationally recognised standard, which addresses the environmental, social and governance (ESG) aspects of the entire aluminium value chain. The assessment is based around the sustainable production of aluminium, from bauxite or mining to the production of semi-fabricated products, taking into account the recycling of pre- and post-consumer scrap. Hydro was one of the first companies, that received this recognition, in accordance with its commitment to a more sustainable future.

100% of our extrusion plants are ASI Performance Standard Certified.



ENVIRONMENTAL PRODUCT DECLARATION

An Environmental Product Declaration (EPD) is an independently third party-verified document that communicates precise, transparent and comparable information about the life-cycle environmental impacts of a product. But it is not only limited to products, such as a window, but can also be applied to materials (an aluminium billet), assembly parts of products or even for services (like maintenance). This document is used for many different applications, e.g. public procurement or green building rating schemes (i.e. BREEAM, LEED, DGNB).

Thanks to our software TechDesign, it's possible to generate a dynamic EPD according specified dimensions, applications any type of glazing.

* For profiles sourced in Europe



Architect: OECO Architectes
Photographer: Kevin Dolmaire




IMAGINE WHAT'S NEXT

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