Architect: A.D.H. Photography: DR Technal

SOLEAL

THE UNIVERSAL WINDOW

TECHNAL®

Architect: Manuelle Gauterand Photography: Vincent Fillon

SOLEAL casement,
A range of different solutions

Architect: W Architectures Photography : DR Technal

An all-in-one design

The SOLEAL range offers many possibilities for your projects.
SOLEAL is available in two main styles, the visible opening window and the minimal opening window, thus accommodating all your stylistic needs.
This range is characterised by the number of options available: 1 & 2 leaf windows and balcony doors, integrated or stacked units, casements on sills, with transom or side light, and tilting, turning, projecting and top-hung casements.

Most of these options are available in two types of module:
- 55 mm with a 20 mm thermal break
- 65 mm with a 30 mm thermal break

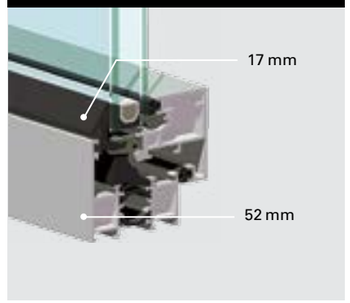
The evolutionary nature of this range means that it will be able to cope with the increasingly demanding regulatory requirements of the future.
The balcony doors are also available with disabled access thresholds. The installation and finishing options are the same for both SOLEAL doors and sliding systems.

A new generation of windows

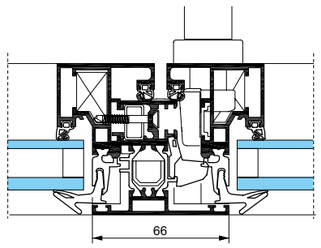
The SOLEAL range offers exceptional thermal and acoustic performance, and weather resistance - properties which come as standard with the new generation of TECHNAL windows. As a result, SOLEAL not only meets current regulatory demands but anticipates future requirements with its high performance.

MINIMAL

MINIMAL

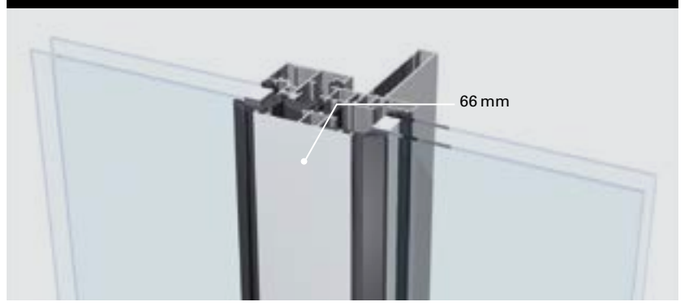


The flashing ensures the seamless integration of the opening frame and the fixed and opening sections appear as one. The fine, minimalist lines are reminiscent of the steel frame construction used for commercial buildings.

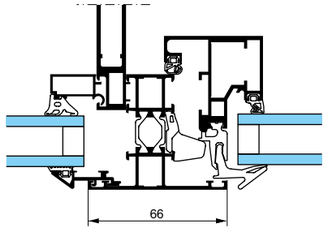


Available in the 55 mm and 65 mm version

EQUILIBRE

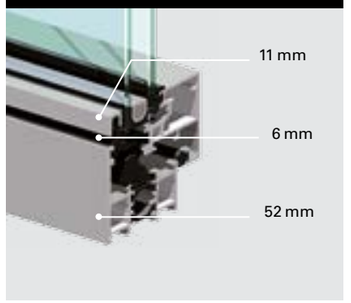


Consistent external appearance for the whole assembly. A harmonious balance between the mullions and transoms. Composite assemblies for large sizes whilst still minimising the external visual impact with a 66-mm aluminium frame.

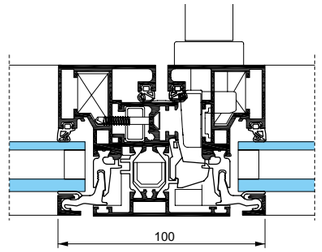


Available in the 55 mm version

CLIP-ON TRIM



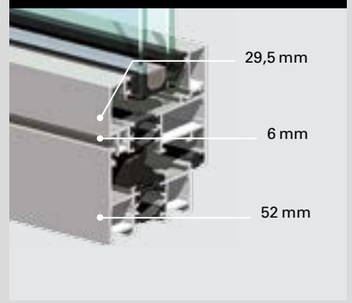
The clip-on trim subtly borders the opening frame, giving it a contemporary feel.



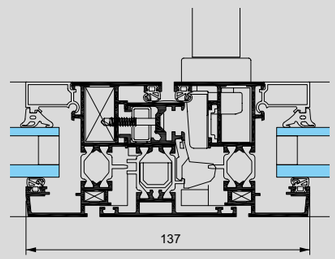
Available in the 55 mm and 65 mm version

VISIBLE

VISIBLE



The visual impact of the opening and outer frames has been carefully balanced resulting in an assembly purveying opulence and high quality.

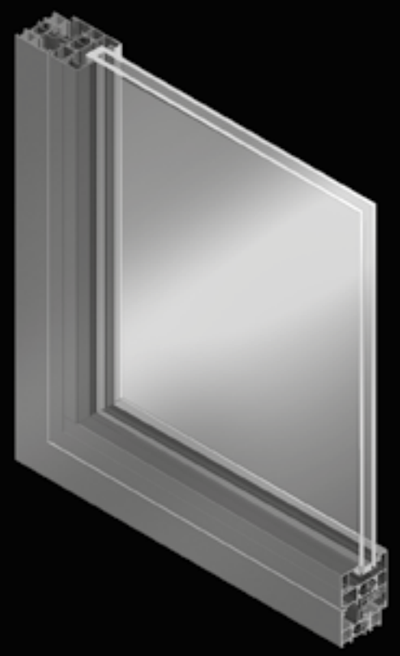


Available in the 55 mm and 65 mm version

SOLEAL, the universal window

SOLEAL Minimal
en 55 mm

SOLEAL Visible
en 65 mm



Key features and innovations

Design

- Several versions are available to meet all your projects' requirements:
  - Minimal: a minimalist opening frame with fine and subtle lines
  - Equilibre: a minimalist version which emphasises the symmetry and finesse of the assemblies
  - A minimalist opening frame with "clip-on trim" creating a contemporary feel
  - A visible opening assembly purveying opulence and high quality
- Concealed drainage for discrete water removal from all configurations of opening as well as fixed frames
- Flashings available in different shapes and styles

Multiples configurations

- Fixed casement
- 1 and 2 leaf
- Integrated or stacked composite assemblies with transom or side lights
- Projecting top-hung casement

Thermal, weather resistance and acoustic performance

- SOLEAL casement frames meet the demands of regulatory changes: RT2012, permeability criteria for Low Energy Consumption Buildings and acoustic attenuation requirements in urban areas

Closure systems and security

- Various combinations are available up to 6-point with or without key locking systems
- Handles centred on the central mullions of 2-leaf casements reduced to 66 mm (minimal opening frame) and 116 mm (visible opening frame) are available as an option
- The Technal-exclusive handles are available for all configurations and ensure style consistency regardless of the type of opening system and can be adapted for use on doors and sliding systems
- Windows subjected to forced entry delay tests achieving a score of RC2 in accordance with the EN-1627-30 standard.

Accessibility

- System adapted for easy access for all available configurations

Innovation

- 7 patents for innovative window vision
- 3 patents pending for aesthetic ideals

SOLEAL, made-to-measure design

Purety, finesse and subtlety

Minimal version

Clip-On Trim Minimal version

Visible version

Concealed drainage

Subtle edges

Concealed hardwares

A wide range of closure systems

Stainless steel handle

Exclusive Technal-designed handle

Exclusive Technal-designed handle with lock

Classic handle

Closure systems operated via 2-way espagnolette locking and drive

Architect: Ateliers Jean NOUVEL / François Fontès Architecture Photography: Luc Boegly

Architect: FORMA 6 Photography: Patrick Miara

SOLEAL for disabled users

The disabled access thresholds used on SOLEAL balcony doors meet the requirements of the French regulations for door and balcony door access whilst ensuring optimum weather tightness

Disabled access threshold with thermal break

Security

- Windows can be fitted with 2 to 6 point locks depending on the desired level of security.
- Windows have been subjected to forced entry delay tests achieving a score of RC2 in accordance with the EN-1627-30 standard.

Top point

Mid-point between the handle and mechanism

Bottom of opening frame

Bottom of outer frame

SOLEAL CASEMENT FRAME 55
Adaptability and diversity

Wide range

Several models are offered to meet all stylistic requirements:
- "Contemporary" for residential or commercial architectural projects
- "Classic" for projects involving the general public
- "Traditional" to provide an exact replacement for the original joinery used on traditional buildings
- The installation and covering conditions are the same for both SOLEAL doors and sliding systems

Multiple configurations

- Fixed casement
- 1 and 2 leaf
- Integrated or stacked composite assemblies with transom or side lights
- Projecting and top-hung casement

2 versions of opening frames

- Minimal and Clip-on trim versions opening frame with glazing infills up to 32 mm
- Visible opening frame with glazing infills up to 42 mm
- The fixed sections shared by both types of opening frames can accommodate glazing up to 42 mm

Thermal, weather resistance and acoustic performance

- Optimised thermal loss values Uw up to 1.2 W/m².°K, Sw =0.41 and LTw = 0.54 with triple glazing (Ug = 0.6 + warm edge)
- Very low air permeability meeting 2012 thermal regulations Q4 up to 0.058 m3/(h.m²)
- Very good thermal performance: up to 40 dB (RA,Tr) of acoustic attenuation. Test on window with 44.1/20/12 glazing

	Contemporary model	Classic model	Traditional model
External view	 Straight and minimalist	 Soft and rounded	 Bevelled and moulded
Internal view	 For architectural projects	 For residential projects	 For traditional buildings

Les 3 lignes

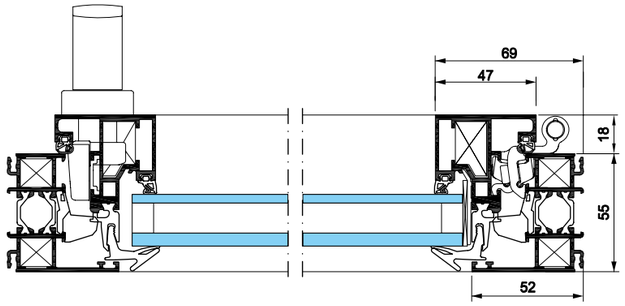
	VISIBLE	CLIP-ON TRIM	MINIMAL	EQUILIBRE
Contemporary	x	x	x	x
Classic	x	x	x	
Traditional	x	x	x	

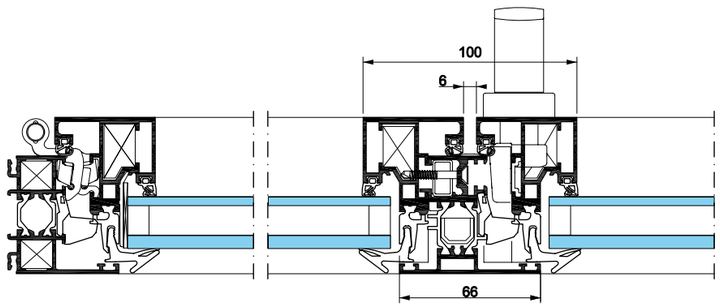
Architect: ANMA Photography : Stéphane Chalmeau

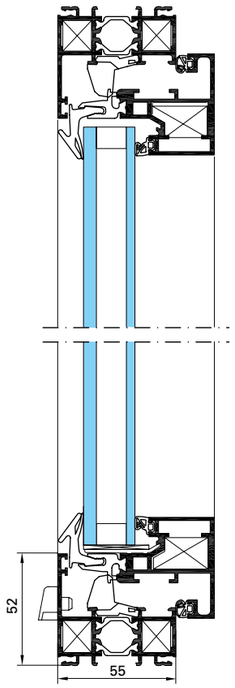
Cross-sections

SOLEAL 55 MINIMAL

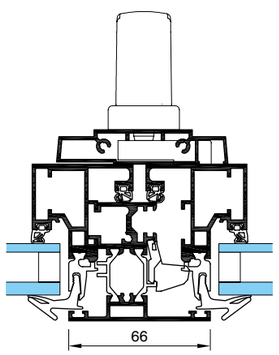
1 and 2 leaf window and balcony door





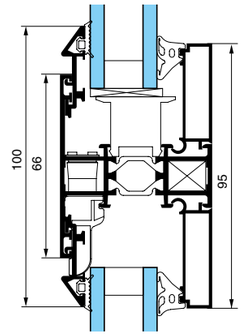


Centred handle option

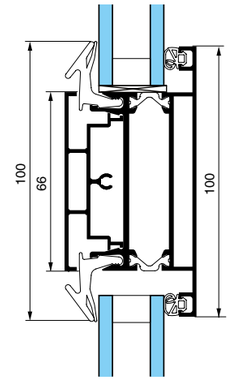


SOLEAL 55 MINIMAL
Equilibre version

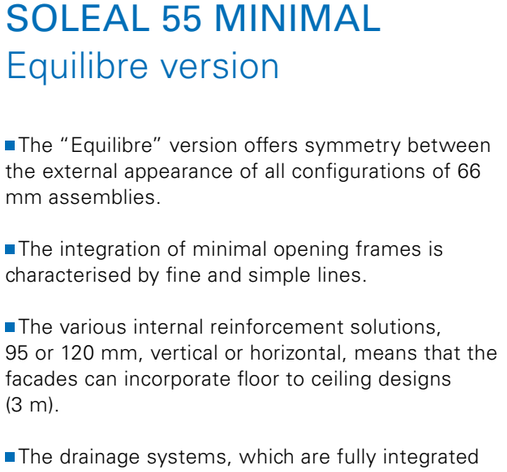
- The "Equilibre" version offers symmetry between the external appearance of all configurations of 66 mm assemblies.
- The integration of minimal opening frames is characterised by fine and simple lines.
- The various internal reinforcement solutions, 95 or 120 mm, vertical or horizontal, means that the facades can incorporate floor to ceiling designs (3 m).
- The drainage systems, which are fully integrated into the transoms, provide a smooth and flat external appearance.



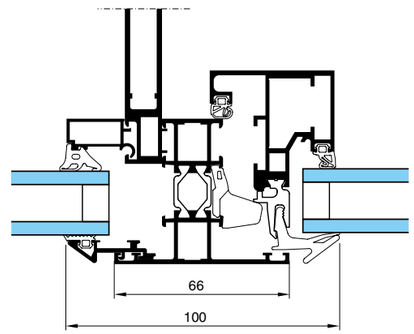
1 Fixed transom on the 66 mm with concealed drainage



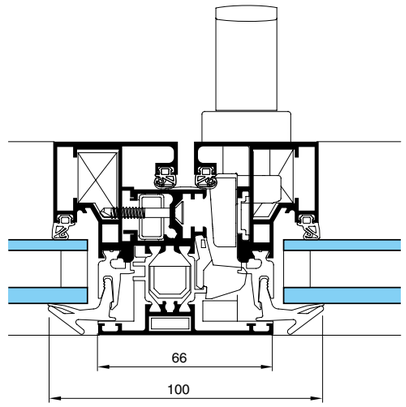
2 Opening frame transom



Composite frame with double leaf open-in on fixed cill with 4 lateral sections

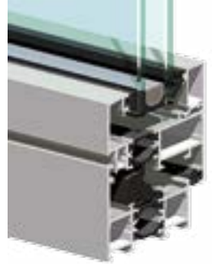


3 Flat external appearance of the mullion on the 66 mm with aluminium reinforcement



4 Subtlety of the opening vent's central mullion 2 leaves = 66 mm

TECHNAL

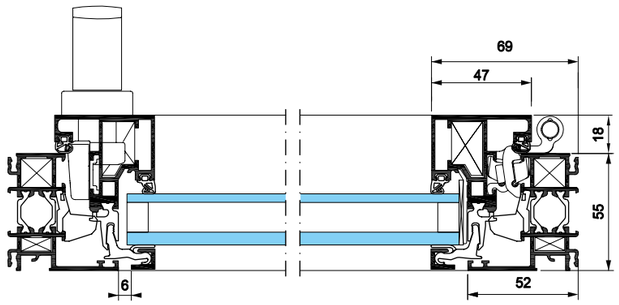


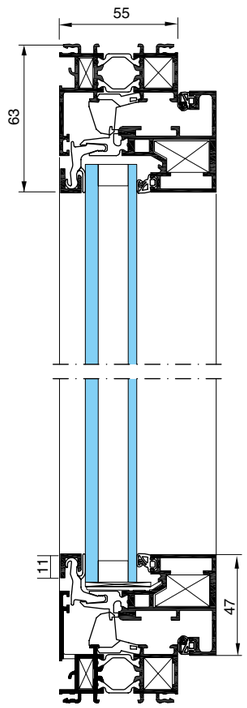
Cross-sections

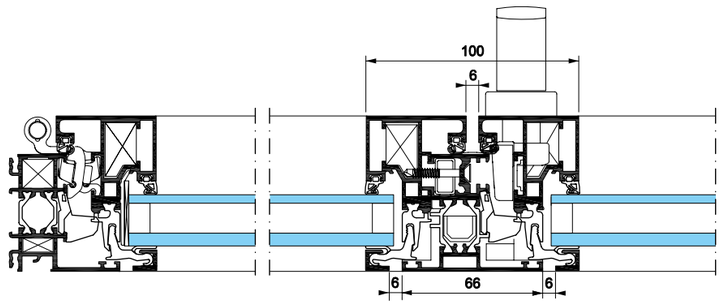
SOLEAL 55 MINIMAL

Clip-On Trim Version

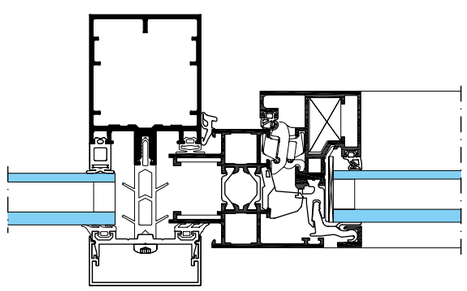
1 and 2 leaf window and balcony door





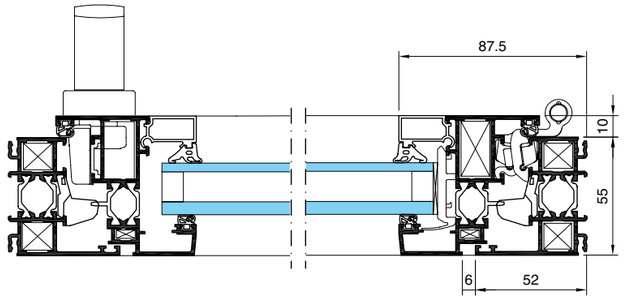


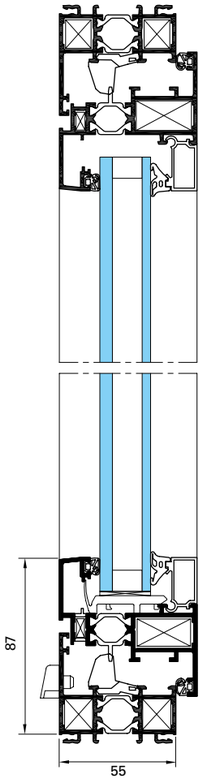
Integration into GEODE curtain walling

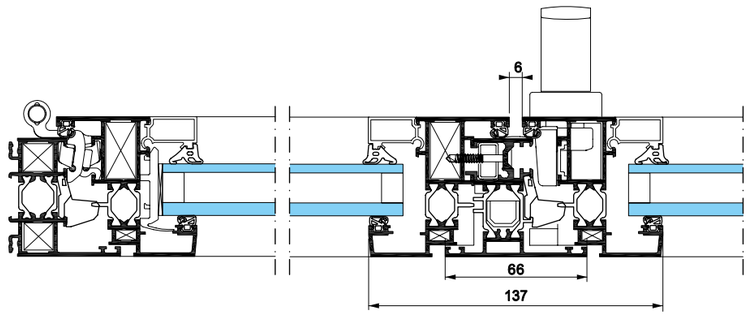


SOLEAL 55 VISIBLE

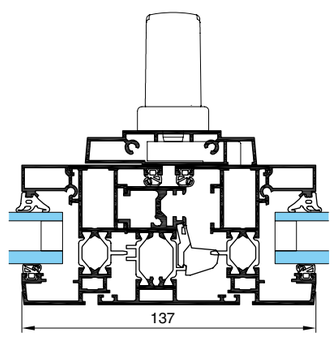
1 and 2 leaf window and balcony door







Centred handle option



Architect: Manuelle Gauterand Photography: Vincent Fillon

SOLEAL CASEMENT FRAME 65
Advanced performance

Thermal and weather resistance performance

- Optimised thermal loss values up to 0.9 W/m².°K, Sw =0.41 and LTw = 0.54 with triple glazing (Ug = 0.5 + warm edge)
- Very low air permeability meeting 2012 thermal regulations Q4 up to 0.02 m3/(h.m²)

Acoustic performance suited to urban environments

- Very good sound-proofing: up to 43 dB (RA, Tr) of acoustic attenuation
- Test on window with 88.1/-20/-66.2 sound-proof glazing

2 versions of opening frames

- To meet all market needs, many of the configura-tions
of the SOLEAL 65 range are available in openin and open-out versions
- Minimal open-in frame glazing infill up to 42 mm
- Visible opening frame (open-in and open-out) glazing infill up to 52 mm
- The fixed sections shared by both types of opening frames can accommodate glazing up to 52 mm

Concealed hardwares on visible opening frame

- Available with 110° opening and maximum weight: 160 kg
Offers a variety of frames: 1 leaf, 2 leaves, French, tilt & turn opening frames

Multiple configurations

- Fixed casement
- 1 and 2 leaf
- Integrated or stacked composite assemblies with transom or side lights

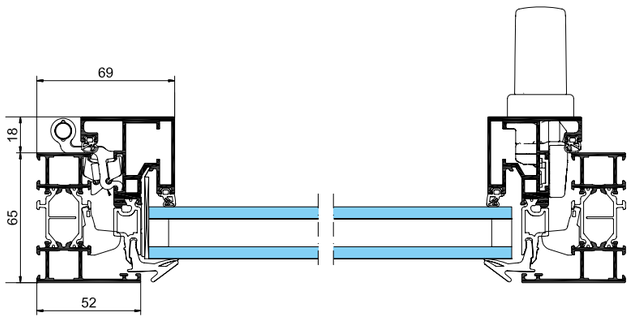
Special openings

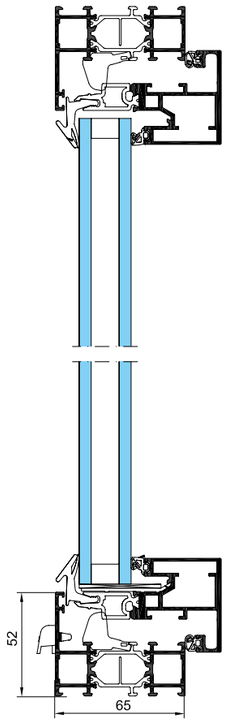
- Top-hung casement
- Projecting casement
- Parallel casement
- Horizontal and vertical pivot casement
- Turn/slide casement

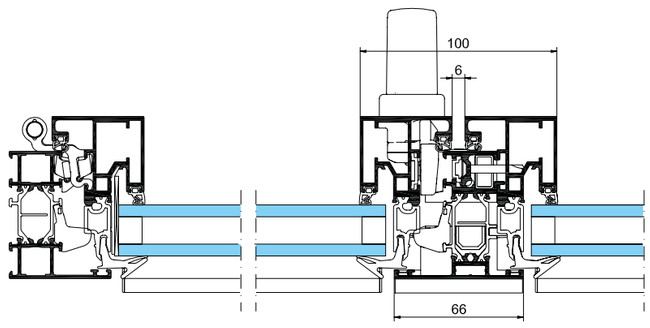
Cross-sections

SOLEAL 65 MINIMAL
Open-in

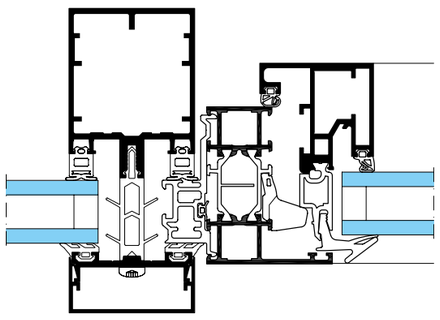
1 and 2 leaf window and balcony door





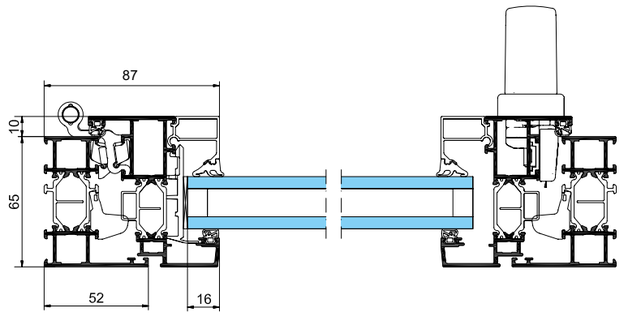


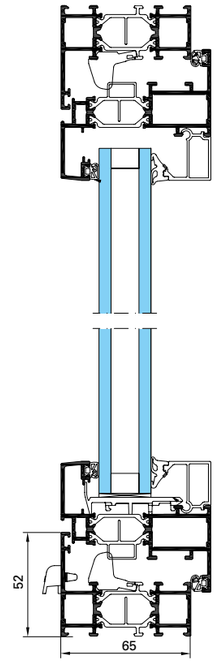
Integration into GEODE curtain walling
Open-in and open-out

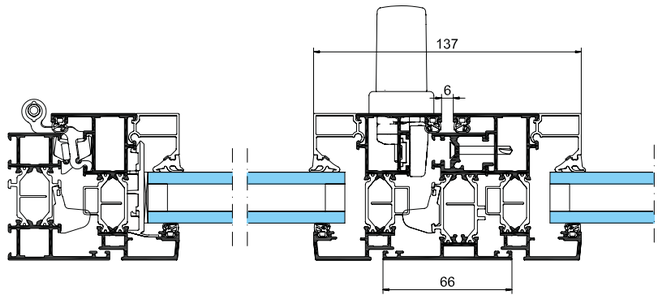


SOLEAL 65 VISIBLE
Open-in

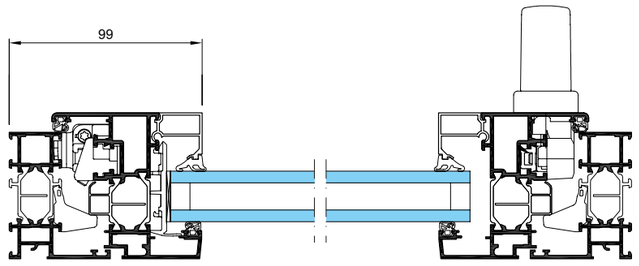
1 and 2 leaf window and balcony door

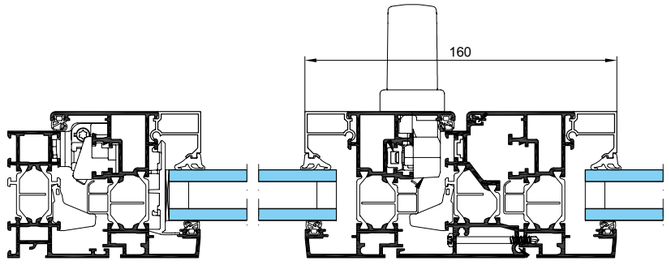


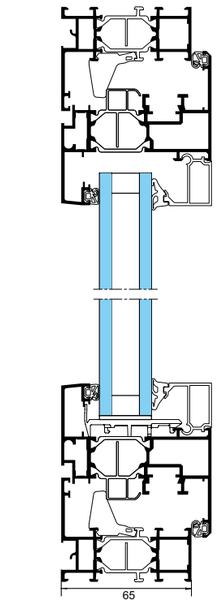


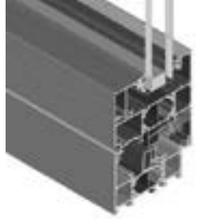


Concealed hardwares



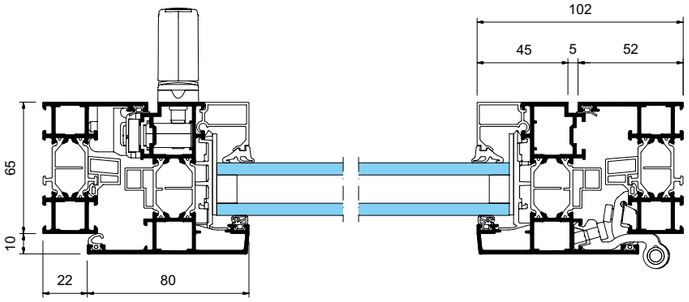


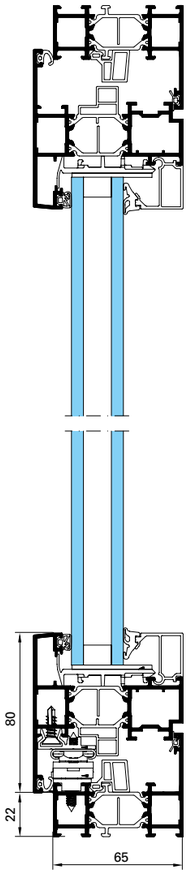


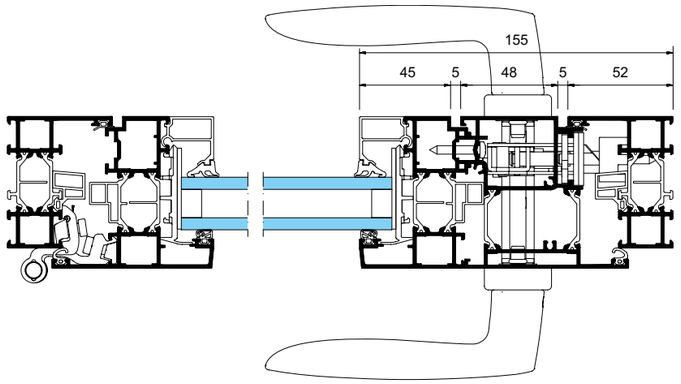


SOLEAL 65 VISIBLE
Open-out

1 and 2 leaf window and balcony door

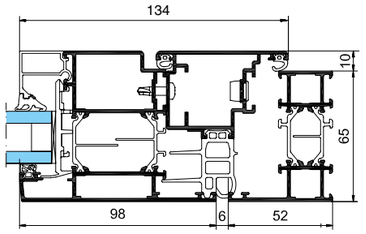




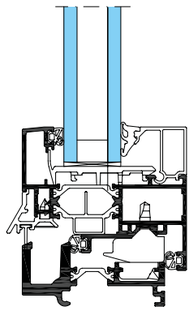


SOLEAL 65 VISIBLE

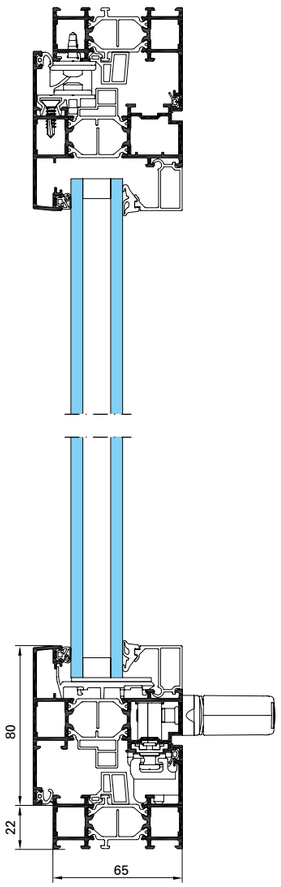
Tilt/turn casement



2-leaf balcony door with disabled access threshold Open-in



Top-hung casement Open-out



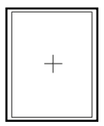
Configurations

All configurations feature concealed drainage.
All balcony door configurations are available with disabled access thresholds

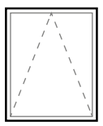
External view diagrams

Open-in

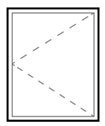
* 55 and 65 mm version



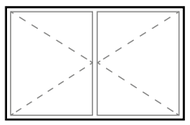
*casement fixed**



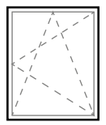
*casement bottom-hung**



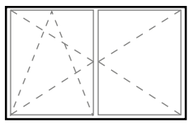
*1 leaf**



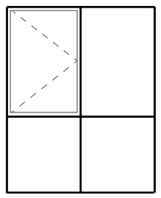
*2 leaves**



*Turn/tilt or tilt/turn 1 leaf**



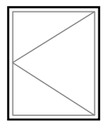
*Turn/tilt or tilt/turn 2 leaves**



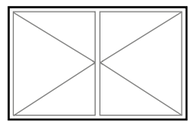
*Fixed composite open-in window**

Open-out

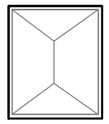
* 55 and 65 mm version
** 65 mm version



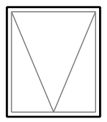
*1 vantail***



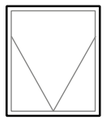
*2 leaves***



*Parallel window***



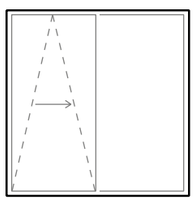
*Projecting window**



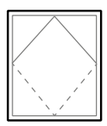
*Top-hung window**

Special openings

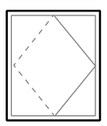
** 65 mm version



*Turn/tilt***



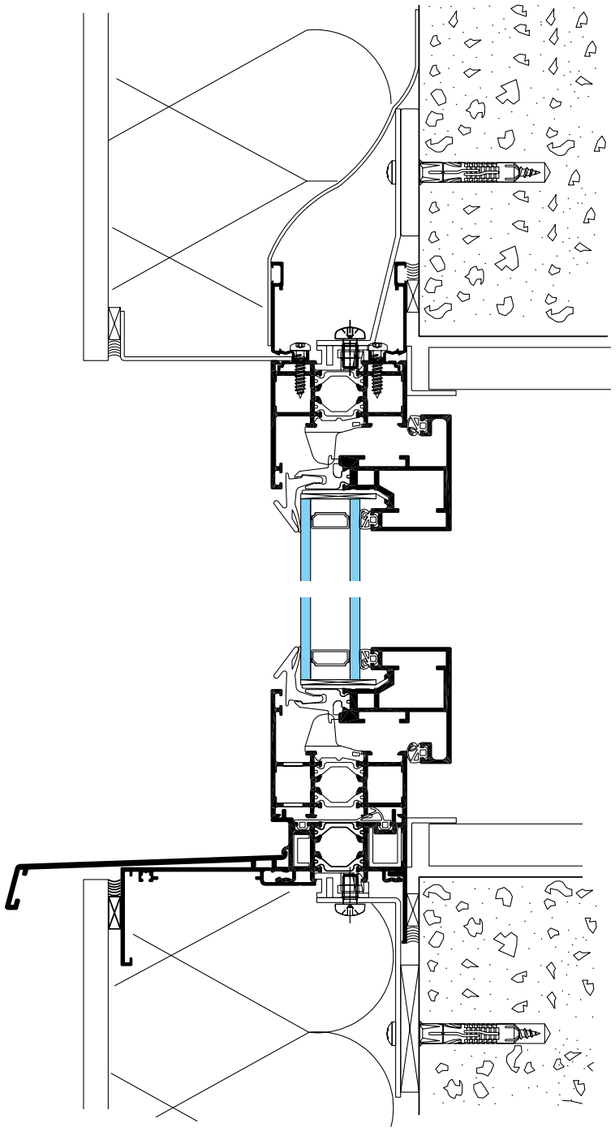
*Tilting***



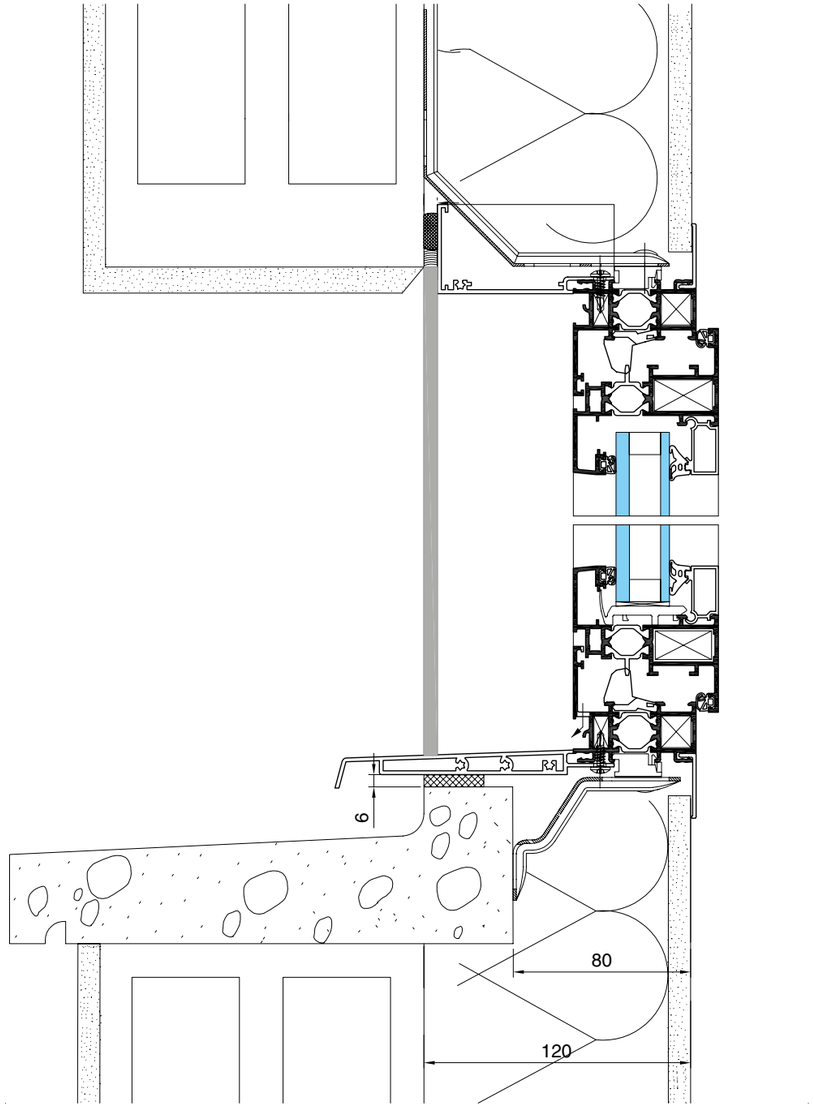
*Turning***

SOLEAL CASEMENT
Installation cases (same for 55 and 65 mm)

Installation into external cladding

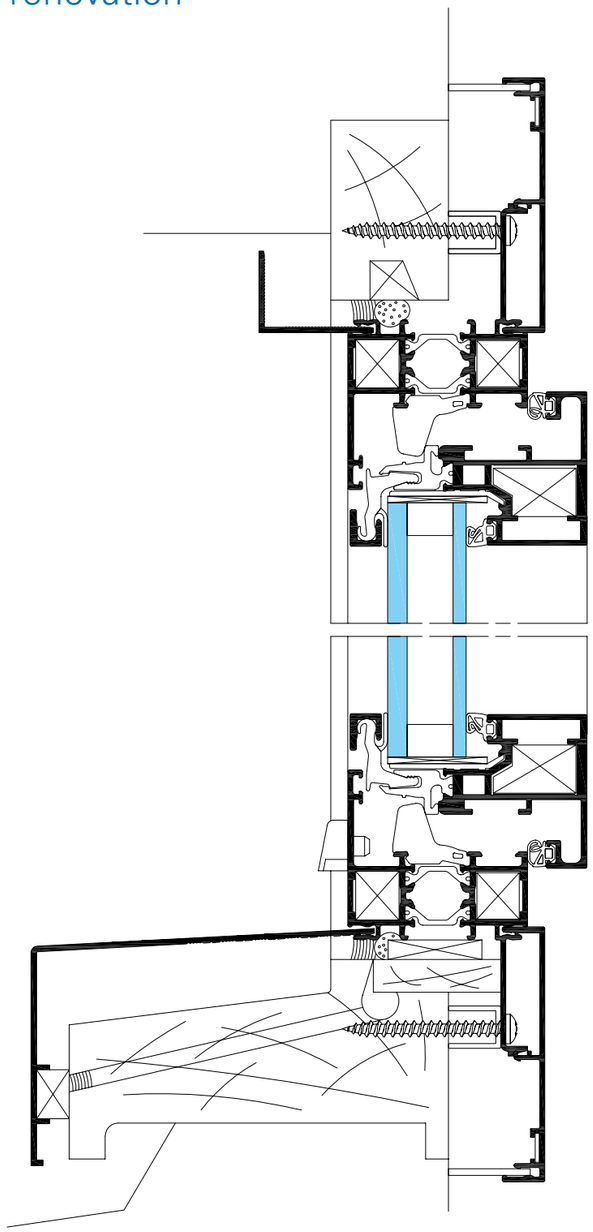


Internal installation



SOLEAL CASEMENT FRAME
Installation cases (same for 55 and 65 mm)

Installation for renovation



Architect: Taillandier Architectes Associés - Photography: DR Technal

SOLEAL CASEMENT FRAME 55 Performance

Whether for residential or commercial buildings, the RT 2012 aims to limit the maximum energy consumption of new buildings.

There are no minimum requirements in terms of frames but Technal has been assisting architects with these new demands.

Therefore, SOLEAL windows contribute to maintaining the permeability of the building's outer shell thanks to very good Q4 ratings.

WEATHER TIGHTNESS A.E.V. (Air, Water, Wind)						
Configurations	**Size W x H in m**	**A**	**W**	**Wi**	**Q4**	**Q100**
Soleal Minimal						
Window						
1 leaf Turn/tilt	1,6 x 1,8	4	9A	C3	0	0
Balcony door						
1 leaf	1,26 x 2,28	4	9A	C3	0,5	1,27
2 leaves with disabled access threshold	1,4 x 2,25	4	8A	C3	0,12	0,36
Soleal Visible						
Window						
1 leaf Turn/tilt	1,4 x 1,6	4	9A	C3	0	0
Balcony door						
1 leaf split-hinge 3 blades	1,2 x 2,25	4	9A	C3	0	0

WEATHER TIGHTNESS (Air, Water, Wind)	Equivalence	
	Q4	**Q100***
Individual housing unit m3 (h.m2)	0,6	5,1
Collective housing unit m3 (h.m2)	1	8,5

*Q100 represents the casement leak at 100 pascals. For Low Energy Consumption Buildings, the Q100 must not exceed 5.1 for individual housing units and 8.5 for collective housing units (m3/(h.m2).

ACOUSTIC PERFORMANCE								
Configurations	**Designation**	**Size W x H in m**	**Glazing**			**Window**		
			Rw (C ; Ctr)	**Ra**	**Ra,Tr**	**Rw (C ; Ctr)**	**Ra**	**Ra,Tr**
SOLEAL Minimal and Visible								
Window								
1-leaf MOF turn/tilt	6(16) 4	1,45 x 1,48	34	33	29	34	33	31
1-leaf MOF turn/tilt	64-1SI(12) 10	1,45 x 1,48	42	40	37	42	41	38
1-leaf MOF turn/tilt	6(16) 4	1,45 x 1,48	34	33	29	35	34	31
1-leaf MOF turn/tilt	44-1SI(20) 12	1,45 x 1,48	46	44	40	43	43	40
1-leaf MOF turn/tilt	12(12)8	1,23 x 1,48	38	37	35	37	36	35
Balcony door								
2- leaf VOF	6(16) 4	1,45 x 2,18	34	33	29	36	35	32

According to EN 14351-1 for windows, this performance data is valid for:
- rw+Ctr glazing (for the rA,tr rating) equal to or greater than the values of the tested glazing- corrections
- 1 dB for leaf surface area of + 50% to + 100% / - 2 dB for + 100 % to + 150% / - 3 dB for + 150 % to + 200%

MOF = Minimal Opening Frame
VOF = Visible Opening Frame

SOLEAL CASEMENT FRAME 55
Performance

Uw: Frame thermal loss
Sw: Solar factor
LTw: Light transmission

THERMAL PERFORMANCE

Soleal Minimal	Size W x H in m		With Ug = 1,1 + Warm edge	With Ug = 1,0 + Warm edge	With Ug = 0,8 + Warm edge
Window					
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,5	1,5	1,3
		Sw	0,52	0,42	0,42
		TLw	0,64	0,57	0,57
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,6	1,6	1,4
		Sw	0,50	0,40	0,40
		TLw	0,61	0,54	0,54
Balcony door					
1 leaf	1,25 x 2,18	Uw (W/m².K)	1,5	1,4	1,2
		Sw	0,54	0,43	0,43
		TLw	0,67	0,59	0,59
2 leaves	1,53 x 2,18	Uw (W/m².K)	1,6	1,5	1,3
		Sw	0,51	0,41	0,41
		TLw	0,63	0,56	0,56

Soleal Minimal - Clip-on trim	Size L x H in m		Avec Ug = 1,1 + Warm edge	Avec Ug = 1,0 + Warm edge	Avec Ug = 0,8 + Warm edge
Window					
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,6	1,5	1,3
		Sw	0,52	0,41	0,41
		TLw	0,65	0,57	0,57
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,7	1,6	1,5
		Sw	0,49	0,39	0,39
		TLw	0,61	0,54	0,54
Balcony door					
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,5	1,4	1,3
		Sw	0,53	0,42	0,42
		TLw	0,67	0,59	0,59
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,6	1,5	1,4
		Sw	0,51	0,41	0,41
		TLw	0,63	0,56	0,56
Balcony door with disabled access threshold					
1 leaf	1,25 x 2,18	Uw (W/m².K)	1,5	1,5	1,3
		Sw	0,54	0,43	0,43
		TLw	0,67	0,6	0,6
2 leaves	1,53 x 2,18	Uw (W/m².K)	1,6	1,6	1,4
		Sw	0,51	0,41	0,41
		TLw	0,63	0,57	0,57

THERMAL PERFORMANCE*

Soleal Visible - Open-in	Size W x H in m		Avec Ug = 1,1 + Warm edge	Avec Ug = 1,0 + Warm edge	Avec Ug = 0,8 + Warm edge	Avec Ug = 0,6 + Warm edge
Window						
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,6	1,5	1,4	1,2
		Sw	0,49	0,39	0,39	0,39
		TLw	0,61	0,54	0,54	0,54
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,7	1,6	1,4	1,3
		Sw	0,46	0,37	0,37	0,37
		TLw	0,56	0,50	0,50	0,50
Balcony door						
1 vantail	1,25 x 2,18	Uw (W/m².K)	1,5	1,4	1,3	1,1
		Sw	0,51	0,43	0,43	0,43
		TLw	0,63	0,56	0,56	0,56
2 vantaux	1,53 x 2,18	Uw (W/m².K)	1,6	1,5	1,4	1,2
		Sw	0,48	0,4	0,4	0,4
		TLw	0,58	0,52	0,52	0,52
Soleal Visible - Open-out						
Top hung window	1,53 x 1,48	Uw (W/m².K)	1,7	1,6	1,5	1,3
		Sw	0,46	0,37	0,36	0,36
		TLw	0,56	0,5	0,5	0,5
Projection window with central gasket	1,53 x 1,48	Uw (W/m².K)	1,5	1,5	1,3	1,2
		Sw	0,46	0,36	0,36	0,36
		TLw	0,56	0,5	0,5	0,5

* Thermal performance data obtained with addition insulation at the bottom of the glazing rebate

SOLEAL CASEMENT FRAME 65
Performance

Uw: Frame thermal loss
Sw: Solar factor
LTw: Light transmission

WEATHER TIGHTNESS A.E.V. (AIR, WATER, WIND)

Frame under ITT (Initial Type Test)

Configurations	Size W x H in m		Report nº	Q4	Q100
Special Openings	**H x W**	**Classification**			
Tilting (visible pivot)	1,7 x 2	A_3 E_{8A} V_{C4}	404/12/276-4 FCBA	0,41	3,54
Turning (concealed pivot)	2,2 x 1,8	A_4 E_{6A} V_{C4}	404/12/413-5 FCBA	0,08	0,72
Visible Open-in Frame					
Window					
1 leaf Tilt/Turn	1,6 x 1,2	A_4 E_{1050} V_{C4}	404/12/111-1 FCBA	0,06	0,52
1 leaf Tilt/Turn	1,6 x 1,2	A_4 E_{1050} V_{C5}	404/11/231-2 FCBA	0,06	0,53
Balcony door					
2-leaf balcony doors	2,25 x 1,6	A_4 E_{9A} V_{C2}	404/11/231-1 FCBA	0,28	2,4
1-leaf balcony door with side light	2,25 x 2	A_4 E_{9A} V_{B3}	404/11/461-3 FCBA	0,08	0,65
Minimal Open-in Frame					
1-Leaf Tilt/Turn Window	1,6 x 1,2	A_4 E_{750} V_{C4}	404/12/111-2 FCBA	0,03	0,28
1-leaf balcony door with side light	2,25 x 2	A_4 E_{9A} V_{B3}	404/12/461-1 FCBA	0,02	0,15
Visible Open-out Frame					
Top-hung assembly (opening frame's dimensions)	1,5 x 1,4	A_4 E_{1050} V_{C4}	404/12/276-3 FCBA	0,02	0,19
Projection	1,8 x 1,6	A_3 E_{1050} V_{C4}	404/12/276-1 FCBA	0,07	0,58
Visible opening - Concealed hardwares					
1-Leaf Tilt/Turn Window	1,8 x 1,3	A_4 E_{1200} V_{C4}	404/14/29-1 FCBA	0,063	0,54
1-leaf balcony door with side light	2,5 x 1,4	A_4 E_{1200} V_{C4}	404/14/29-3 FCBA	0,015	0,13

ACCOUSTIC PERFORMANCE

Frame size W x H (1480 x 1230)

Configurations	Glazing	Seal AS0180	Glazing performance alone			Window performance		
			RW (C;Ctr)	RA	RA,tr	RW (C;Ctr)	RA	RA,tr
Soleal Visible								
1-leaf turn/tilt VOF	6-16-10		37	36	34	38 (-2;-3)	36	35
1-leaf turn/tilt VOF	44.1 sil-16-12	x	46	44	40	44 (-2;-5)	42	39
Turn/tilt VOF	88.1-20-66.2	x	54	53	49	46 (-1;-3)	45	43
Soleal Minimal								
1-leaf turn/tilt MOF	6-16-10		37	36	34	37 (-1;-3)	36	34

MOF = Minimal Opening Frame
VOF = Visible Opening Frame

THERMAL PERFORMANCE

Soleal Visible

Open-in configurations	Size W x H in m		With Ug = 1,1 + Warm edge Glazing 24 mm SW-V	With Ug = 1,0 + Warm edge Glazing 24 mm SW-V	With Ug = 0,8 + Warm edge Glazing 32 mm SW-V	With Ug = 0,6 + Warm edge Glazing 42 mm SW-V	With Ug = 0,5 + Warm edge Glazing 48 mm SW-V
Window							
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,4	1,3	1,1	1,0	0,9
		Sw	0,48	0,39	0,41	0,41	0,41
		TLw	0,61	0,54	0,54	0,54	0,54
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,5	1,4	1,2	1,1	1,0
		Sw	0,45	0,36	0,38	0,38	0,38
		TLw	0,56	0,50	0,50	0,50	0,50
Balcony door							
1 leaf	1,25 x 2,18	Uw (W/m².K)	1,4	1,3	1,1	0,9	0,9
		Sw	0,50	0,40	0,42	0,42	0,42
		TLw	0,63	0,56	0,56	0,56	0,56
2 leaves	1,53 x 2,18	Uw (W/m².K)	1,4	1,4	1,2	1,0	1,0
		Sw	0,47	0,37	0,39	0,39	0,39
		TLw	0,59	0,52	0,52	0,52	0,52
Special Opening Configurations							
Tilting/turning	1,53 x 1,48	Uw (W/m².K)	1,7	1,6	1,4	1,3	1,2
		Sw	0,42	0,34	0,35	0,35	0,35
		TLw	0,5	0,45	0,45	0,45	0,45

Soleal Visible - Concealed hardwares

Open-in configurations	Size W x H in m		With Ug = 1,1 + Warm edge Glazing 24 mm SW-V	With Ug = 1,0 + Warm edge Glazing 24 mm SW-V	With Ug = 0,8 + Warm edge Glazing 32 mm SW-V	With Ug = 0,6 + Warm edge Glazing 42 mm SW-V	With Ug = 0,5 + Warm edge Glazing 48 mm SW-V
Window							
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,5	1,4	1,4	1,1	1,1
		Sw	0,47	0,37	0,39	0,39	0,39
		TLw	0,58	0,52	0,52	0,52	0,52
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,6	1,5	1,5	1,3	1,2
		Sw	0,43	0,34	0,36	0,36	0,36
		TLw	0,53	0,47	0,47	0,47	0,47
Balcony door							
1 leaf	1,25 x 2,18	Uw (W/m².K)	1.5	1.3	1.2	1.0	1.0
		Sw	0.49	0.39	0.41	0.41	0.41
		TLw	0.61	0.54	0.54	0.54	0.54
2 leaves	1,53 x 2,18	Uw (W/m².K)	1.4	1.4	1.3	1.2	1.1
		Sw	0.45	0.36	0.38	0.38	0.38
		TLw	0.56	0.49	0.49	0.49	0.49

Performance data obtained with a SW-V Spacer

THERMAL PERFORMANCE

Soleal Minimal

Open-in Configurations	Size W x H in m		With Ug = 1,1 + Warm edge Glazing 26 mm SW-V	With Ug = 1,0 + Warm edge Glazing 26 mm SW-V	With Ug = 0,8 + Warm edge Glazing 32 mm SW-V	With Ug = 0,6 + Warm edge Glazing 42 mm SW-V
Window						
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,4	1,4	1,2	1,0
		Sw	0,50	0,40	0,43	0,43
		TLw	0,64	0,56	0,57	0,57
2 leaves	1,53 x 1,48	Uw (W/m².K)	1,5	1,4	1,2	1,1
		Sw	0,47	0,38	0,41	0,41
		TLw	0,60	0,54	0,54	0,54
Balcony door						
1 leaf	1,25 x 2,18	Uw (W/m².K)	1,4	1,3	1,1	1,0
		Sw	0,51	0,41	0,45	0,45
		TLw	0,66	0,58	0,59	0,59
2 leaves	1,53 x 2,18	Uw (W/m².K)	1,5	1,4	1,2	1,0
		Sw	0,49	0,39	0,42	0,42
		TLw	0,62	0,55	0,56	0,56
Balcony door with threshold						
1 leaf	1,25 x 2,18	Uw (W/m².K)	1,4	1,4	1,2	1,0
		Sw	0,51	0,41	0,45	0,45
		TLw	0,66	0,58	0,59	0,59
2 leaves	1,53 x 2,18	Uw (W/m².K)	1,5	1,4	1,2	1,1
		Sw	0,49	0,40	0,43	0,43
		TLw	0,62	0,55	0,56	0,56

Soleal Minimal - Clip-on Trim

Open-in Configurations	Size W x H in m		With Ug = 1,1 + Warm edge Glazing 26 mm SW-V	With Ug = 1,0 + Warm edge Glazing 26 mm SW-V	With Ug = 0,8 + Warm edge Glazing 32 mm SW-V	With Ug = 0,6 + Warm edge Glazing 42 mm SW-V
Window						
1 leaf	1,25 x 1,48	Uw (W/m².K)	1,4	1,4	1,2	1,0
		Sw	0,50	0,40	0,43	0,43
		TLw	0,64	0,56	0,57	0,57
Balcony door						
1 leaf	1,25 x 2,18	Uw (W/m².K)	1,4	1,3	1,1	1,0
		Sw	0,51	0,41	0,45	0,45
		TLw	0,66	0,58	0,59	0,59
2 leaves	1,53 x 2,18	Uw (W/m².K)	1,5	1,4	1,2	1,0
		Sw	0,49	0,39	0,42	0,42
		TLw	0,62	0,55	0,56	0,56

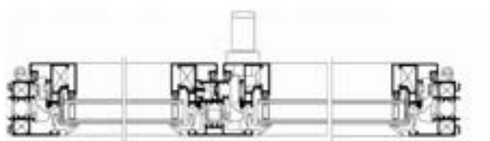
Performance data obtained with SW-V Spacer

Architect: A.D.H. Photography: DR Technal

EPD (Environmental Product Declaration)

Life-cycle indicators	Unit per window	Results
Non-renewable primary energy	(MJ)	1948
Renewable primary energy	(MJ)	129,5
Water consumption	(kg)	1819
Reduction in abiotic resources	(kg Sb eqv.)	1,009
Global warming potential	(kg CO2 eqv.)	200,6
Potential for ozone layer depletion	(kg R11 eqv.)	3,902E-005
Acidification potential	(kg SO2 eqv.)	0,7912
Eutrophication potential	(kg PO4 eqv.)	0,07797
Potential for photochemical ozone formation	(kg ethene eqv.)	0,09789
Non-hazardous waste	(kg)	6,853
Hazardous waste	(kg)	4,256

The indicators are based on average representative data for aluminium production in the European Union and generic data for a standard unit of glazing and standard seals.



Horizontal cross-section of the tested system

Materials and parts

As with all Technal systems, only the best materials and parts are used to minimise maintenance and ensure long-term performance.

- The aluminium profiles are extruded from 6060 T5 EN 12020, EN 573-3, EN 515 and EN 775-1 to 9 alloys.
- Fittings are cast from EN 12844 compliant Zamak 5.
- All seals are EPDM or TPE (Thermoplastic elastomer).
- The polyamide thermal breaks are extruded from pA6-6 (0.25 FV).
- Screws are made from stainless steel.

Finishes and colours

A large range of finishes and colours are available to meet individual project requirements, enhancing existing buildings and offering architects and designers greater design freedom:

- Natural anodised in accordance with EN 23731: 2001.
- Polyester coating finishes in a wide range of colours in accordance with “QUALICOAT” instructions.
- SOLEAL is also available in laquered finishes with exclusive Technal colours for a stylish and contemporary look.

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1. Architectural practice: A.D.H. Photography : DR TECHNAL
2. Architectural practice: Pierre Weiler Photography : JC Ballot
3. Architectural practice: Cardete Huet Architectes Photography : DR Technal

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