

RAICO

WINDOW | DOOR | CURTAIN WALL

We put a face on buildings





**“WE SEE OURSELVES NOT JUST AS
PART OF YOUR SOLUTION ...**

... BUT AS PART OF YOUR TEAM!”

Ladies and Gentlemen!

You're holding the RAICO System Overview – and thus multiple innovative solutions – in your hands. One of our latest is the RAICO THERM⁺ FS-I curtain wall system with an integrated screw channel. Thanks to its versatile design, it wins architects over straight away. And it also won GOLD in the “Product Innovation – Technology” category of the Architects' Darling Award 2017.

The high quality of the THERM⁺ series is equalled in every respect by the RAICO FRAME⁺ Window and Door Systems, as well as our WING System. You'll find all the product benefits plus the most important technical data, test values, models and variations listed in the following pages – as well as inspiring reference projects, ideas and solutions for ambitious architecture.

In addition to the many product highlights, you'll certainly notice another innovation. With the RAICO added benefits, we also show our calibre as people. Whether architect, planner or partner – take a look behind the RAICO façade and find out what makes the collaboration with us so unique.

Enjoy planning, designing and discovering!


Albert Inninger
Managing director


Manfred Hebel
Managing director

CONTENTS

Inside RAICO



Curtain wall system THERM+



Aluminium curtain wall	16
Steel curtain wall	18
Timber curtain wall	22
Components	24
Passive house curtain wall	26
Glass roof construction	27
Structural Glazing	28
Fire protection	29
Burglar resistance	30
Approvals and tests	31

Window system FRAME+



Insert window 75 WI	34
Insert window 75 SF	35
Casement sash window 75 WB	36
Window curtain wall 75 FF	37
Outward opening 75 WA	38
Parallel tilt and slide door PSK	39
Barrier-free threshold 75/90 WI	40
Insert window 90 WI	41
Casement sash window 90 WB	42
Aluminium timber window 90 WB-T	43
Rooflight window 100/120 RI	44
Timber rooflight window 100/120 RI-T ..	45
Ventilation flap 75 LF	46
Approvals and tests	48

Door system FRAME+



Door system 75 DI	52
Design variants	53
Floor connections / Door sills	54
Hinges	55
Door locks	56
Burglar resistance	57
Approvals and tests	58
Door system SLIFT 170	60
Variety & variability	62
Fittings & Accessories	63

Window system WING



Top-hung / Side-hung / Bottom-hung window 50 A	66
Top-hung projecting window 50 SK	67
Rooflight window 105 DI	68
Approvals and tests	69

Credits & Projects



RAICO IS CURIOUS AND INVENTIVE.



Curiosity enables constant further development. As a dynamic, medium-sized company, we at RAICO are inherently open to new things. Thirst for knowledge, creativity and ingenuity are an important part of our profile.



That's why we focus on new tasks and challenges time and again. We listen with interest and attentiveness – and thus inspire ourselves and our customers to seek the best solution for everyone: real added benefits for builder-owners, architects and planners.

*"Why are we always open to new things?
Because we've always believed in the best solution."*

RAICO THINKS ...

... IN A CONSTRUCTIVE AND SOLUTION-ORIENTED WAY.

We stock the right solution for any challenge. But we're not content to stop there. Thanks to our constructive collaboration with customers and partners, architects and planners, new systems and models are constantly being added.

Over the past 30 years, the RAICO Research & Development Team has been able to register over 100 patents and industrial property rights. From the add-on system for timber and steel façades, or the aluminium façade, window and door, to our prize-winning steel façade system. Are you looking for a very special solution, beyond the range offered in our System Overview? In that case, we'll develop it together with you.

"Our strength lies in creating innovative solutions from ambitious reverts."

RAICO ACTS IN A SINCERE AND PERSONAL MANNER.



Invented by RAICO. Made for people. Whatever we do at RAICO, we do it together. Because we're team players. Because we're reliable partners. Because we believe in a sincere and personal way of getting along together. In which people can fulfil themselves. And we can fulfil our company targets.

So it's not just the international RAICO reference projects which have become a special architectural flagship over the years, but also the special quality of the interaction between staff and customers.



"We are developers, suppliers, partners and – first and foremost – people."



RAICO INSPIRES WITH HIGH STANDARDS AND QUALITY.

Our customers' satisfaction over many years is still the best confirmation. It motivates us, inspires us and shows that we're on the right path.

The premium product quality and the design potential which you can fully utilise with our systems also testify to this. Not forgetting RAICO's exemplary development as an employer.

- * 2017 Architects' Darling Award, in the "Best Product Innovation – Technology" category
GOLD for the RAICO THERM⁺ FS-I System
- * 2017 Architects' Darling Award, in the "Best Reference Building" category
BRONZE for the La Seine Musicale, Paris – France
- * 2018 Architects' Darling Award, in the "Best Product Innovation – Technology" category
SILVER for the RAICO ETFE_THERM⁺ system solution
- * TOP 100 Innovation prize – We're therefore among the most innovative of Germany's medium-sized enterprises.
- * EUROPE's 500 Job Creating Companies

We are proud of these and many other awards, and likewise proud of every single one of our reference projects.

"It's always worth getting just that bit better."



THERM⁺

Curtain wall system

Based on its consistent modular design the THERM⁺ curtain wall system provides you with almost unlimited possible combinations using its various components. With this unique flexibility you will find the most suitable, safe, viable and economic solution for every individual project.



Alnatura - Darmstadt, DE



Exhibition hall 3A - Nuremberg, DE



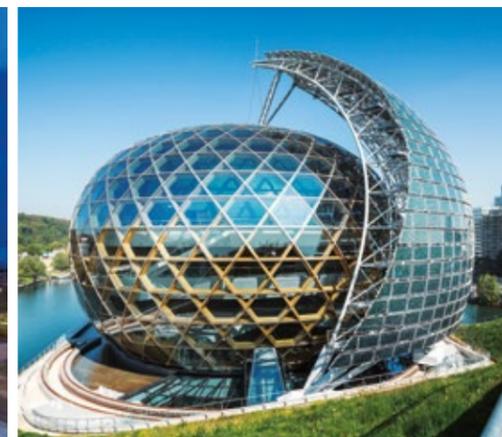
Teamtechnik - Freiberg am Neckar, DE



Flexhouse - Meilen, CH



NEST - Dübendorf, CH



La Seine Musicale - Paris, FR

University library - Freiburg, DE

THERM⁺ A-I/A-V

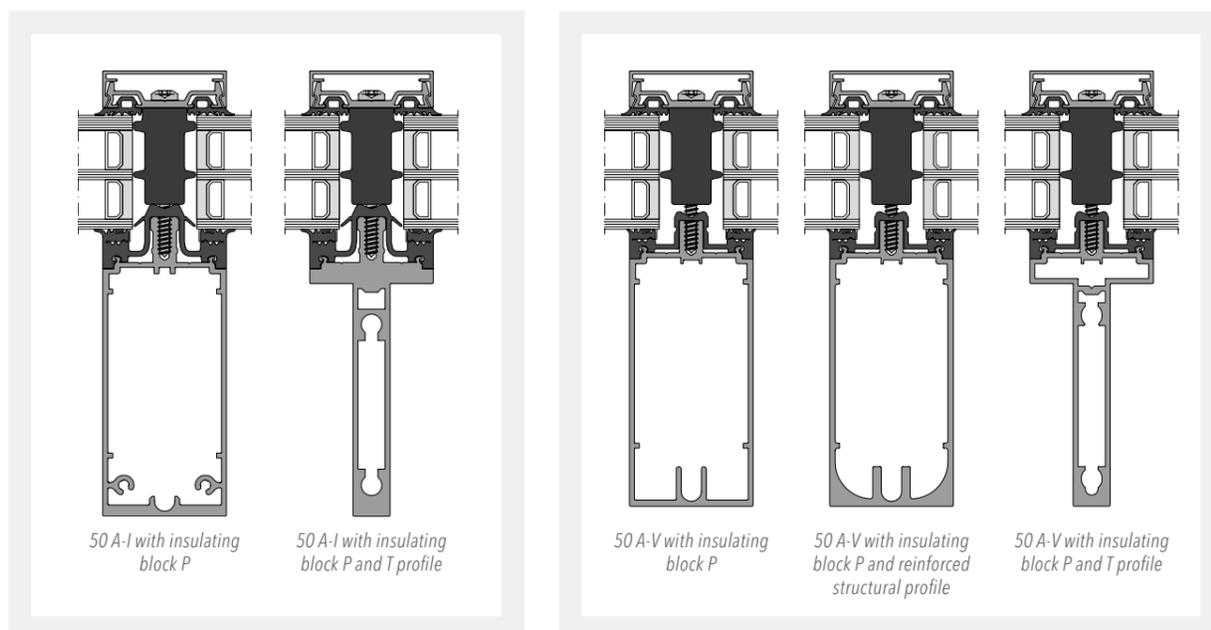
Aluminium curtain wall



The THERM⁺ aluminium curtain wall stick system combines maximum application of the range with straight forward planning and manufacture, providing high processing reliability due to the consistent modular technology.

Advantages

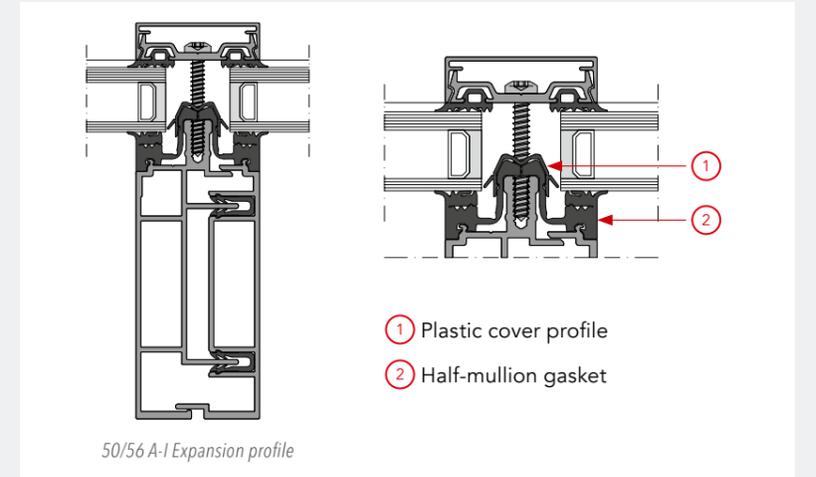
- Passive house certified in all system widths (A-V)
- Maximum thermal insulation with insulating block variant down to $U_{m,t} = 0.85 \text{ W/(m}^2\text{K)}$ including screw influence
- Excellent aesthetics to the flush faced transoms by sharp edge cross sections
- Profiles are all suited for mullion and transom
- Numerous options for the T-connection technology
- A large selection of rectangular and T-shaped structural profiles is available
- Wide range of system accessories available (e.g. sun protection fixation)
- Integrated drainage system in the continuous two or three level hat gasket
- Stepless thermal insulation by means of RAICO Insulating Block Technology
- Maximum inertia values by means of optimised profile design



Expansion profiles

THERM⁺ A-I

Maximal glazing finished pre-assembly of complete mullion-transom-elements. Easy plug-in system using half-mullion gasket for pressing to the aluminium expansion profile. Plastic cover profile for pressing to the gasket. All features as tightness, thermal insulation and easy handling and assembling identical to the basic system.



50/56 A-I Expansion profile

Technical Data

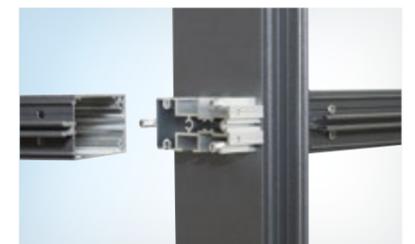
	System width [mm]	Rectangular profile depth [mm]	Expansion profile depth [mm]	T profile depth [mm]	T profile width [mm]	Infill thickness [mm]	Glass weight [kg]	Drainage levels	Polygonal assembly	Application glass roofs	Application conservatories
A-I	50/56	25 to 250*	75 to 200	50 to 200	50	4 to 64	up to 600	2 or 3	up to 45°	up to 2° inclination	yes
A-V	50/56	25 to 200	100 to 200	50 to 175	50	10 to 64	up to 600	2 or 3	up to 45°	-	-
A-V reinforced	50/56	100 to 200	-	-	-	10 to 64	up to 600	2 or 3	up to 45°	-	-

*System width 56 mm

T-connector – Innovation down to the last detail

A distinctive feature of the THERM⁺ aluminium curtain wall system is the innovative T-connection technology. Every single detail in its development has been analysed to provide an abundance of advantages:

- Identical for THERM⁺ A-I/A-V in all system widths
- Easy butt joint with straight profile cuts, no notching required
- Various options for structural requirements and assembly methods
- THERM⁺ A-V is also available with a reinforcement option for high structural requirements
- T-connectors for vertical loads up to 600 kg (verified under German Type Approval)
- Available to produce faceted screens
- Extremely rigid connections due to the spreader-clamp mechanism when screw fixed
- Pre-fabrication of elements suitable for transport in the workshop
- Aesthetically pleasing joints due to the optimum contact between mullion and transom across the entire profile
- The T-connector profiles can be used for structural reinforcement, head and sill fixings as well as expansion joint spigots



Mullion-transom connector



T-connector interior view

THERM⁺ S-I

Steel curtain wall

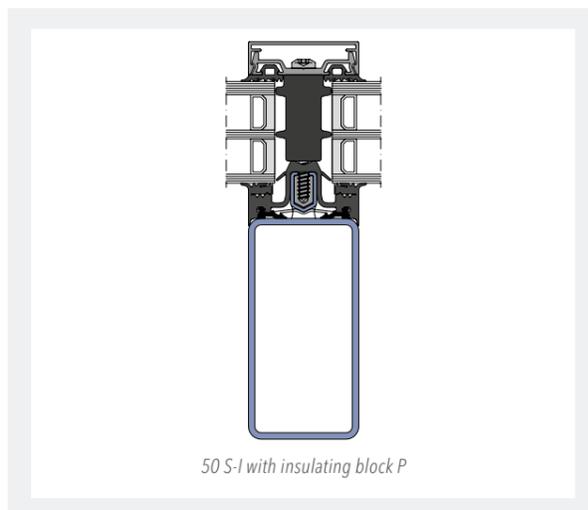


Bürgenstock Hotel - Obbürgen, CH

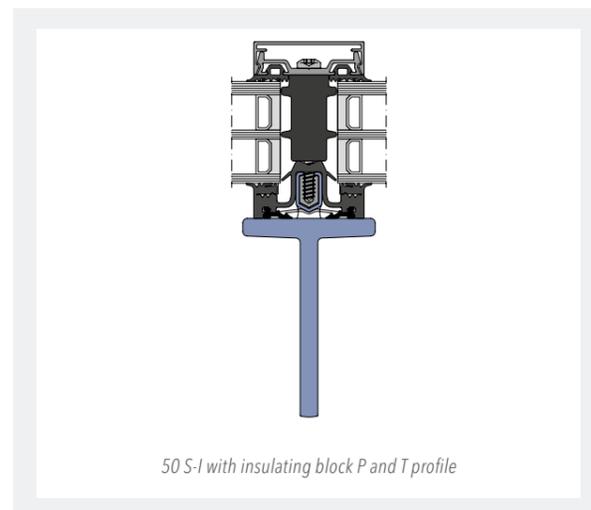
The THERM⁺ mullion-transom curtain wall system using steel combines the advantages of set-on-top construction with those offered by curtain wall systems with integrated screw channel. Additionally, the fixture technique of the steel curtain wall system makes it possible to select from standard steel profiles and the special set-on-top construction guarantees an optimum corrosion protection.

Advantages

- Passive house certified in system widths 50 and 56
- Maximum thermal insulation with insulating block variant down to $U_{m,i} = 0.82 \text{ W/(m}^2\text{K)}$ including screw influence
- Stepless thermal insulation by means of RAICO Insulating Block Technology
- Set-on-top construction for any steel support profile with a width from 50, 56, 76 and 96 mm
- Integrated drainage system in the continuous two or three level hat gasket
- Steel profiles in T-shape with a face width of 60 mm and a depth of 90 or 120 mm; these profiles are ideally suited for sophisticated glass façades
- European Technical Approval (ETA) for total load with welded transom / mullion connections or using RAICO T-connectors and screw fixing of pressure plate profiles
- Safe and easy glass load transfer for heavy panes up to 1,019 kg using RAICO concealed fixing T-Connectors
- Welded T-connections and glass carrier with structural analysis up to 1,500 kg glass weights



50 S-I with insulating block P



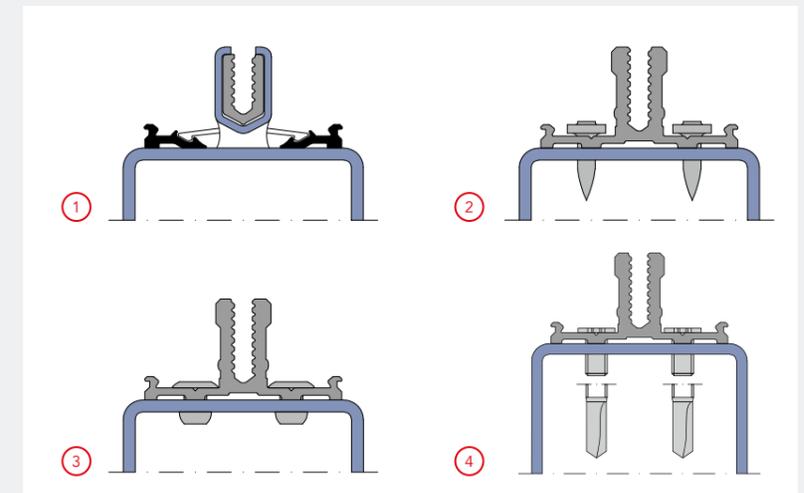
50 S-I with insulating block P and T profile

Mounting variants for base profiles

System variants

The THERM⁺ S-I offers different mounting options for basic profiles.

- Welding with basic profile
- HILTI-actuated fastening technology
- With blind rivet
- With thread-forming screw or special drilling screw



Technical Data

	System width [mm]	For steel profiles from [mm]	Steel profiles in T shape [mm]	Infill thickness [mm]	Glass weight [kg]	Drainage levels	Polygonal assembly	Application glass roofs	Application conservatories
S-I	50/56/76/96	width: 50	width: 60, depth: 90/120	4 to 64	up to 1.500*	2 or 3	up to 45°	up to 2° inclination	yes

* welded T-connections and glass carrier, structural analysis necessary

Perfect corrosion protection thanks to plastic base profile

With its specific material properties, steel offers an extremely rich variety of forms and therefore a diverse range of creative possibilities. The unique patented fixture principle of the THERM⁺ system has been developed from real-life requirements in order to extend those possibilities further without limiting itself to glazed curtain walling, and at the same time to reach a safe but simple assembly as well as providing maximum protection against corrosion.

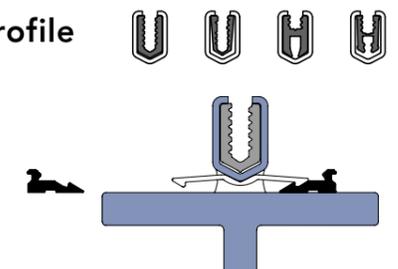


fig. 1: Perfect protection against corrosion

- Perfect protection against corrosion due to distance between structural profile and system base profile, thus no components in direct contact with each other (see fig. 1)
- Patented base profile system with stainless steel clad and aluminium screw channel, for easy fabrication and reliable mounting
- High screw retention values and smooth screw fastening due to the aluminium screw channel
- Option for galvanised structures in coastal areas or within swimming pool environment: the S235JR mild steel shroud with retro fit powder coated aluminium screw channel
- Spot-welding fixation for reduced production times
- Easy and efficient fabrication with practical system tools
- Mounting of the base profile with fastener, blind rivet or thread-forming screw



THERM⁺ FS-I

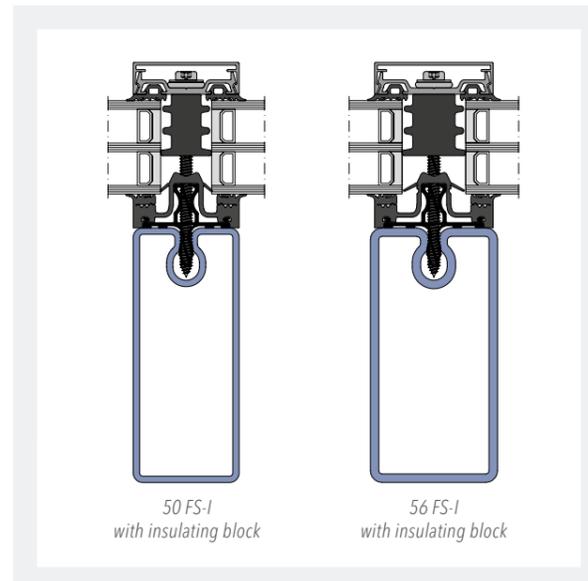
Steel curtain wall



Thanks to the steel façade system THERM⁺ FS-I you can connect the pressure profile of the glass façade directly with the steel substructure – without welding. The integrated screw channel in the profile tube makes it possible.

Advantages

- No welding necessary during manufacturing
- Integrated screw channel in steel tube reduces planning, manufacturing and installation costs
- Separation of screw penetration and water-bearing level by hat gaskets
- Sharp edged profiles due to small radii corners
- Sendzimir galvanised profiles ensure protection against corrosion
- Profiles are all suited for mullion and transom
- Extensive accessories from the THERM⁺ series, e.g. sun protection fixtures
- Passive house certified in all system widths
- Maximum thermal insulation with insulating block option up to $U_{m,t} = 0.75 \text{ W/(m}^2\text{K)}$ including the screw influence
- European Technical Approval (ETA) using RAICO SC/SCL connectors for extremely heavy glass loads.
- Integrated drainage system in the continuous two or three level hat gasket



Technical Data

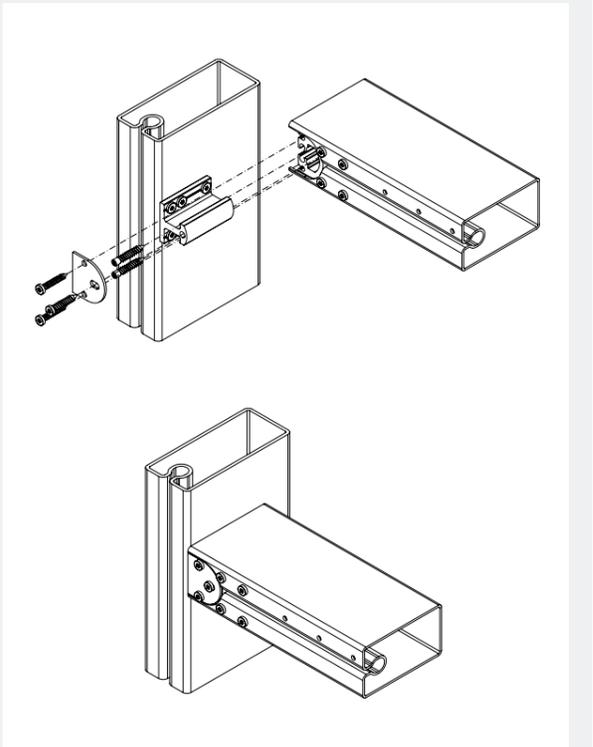
	System width [mm]	For steel profiles from [mm]	Infill thickness [mm]	Glass weight [kg]	Drainage levels	Polygonal assembly	Application glass roofs	Application conservatories
FS-I	50/56	50 and 60 width	4 to 64	up to 1,019	2 or 3	up to 45°	up to 2° inclination	yes

T-connectors

Standard connector SC



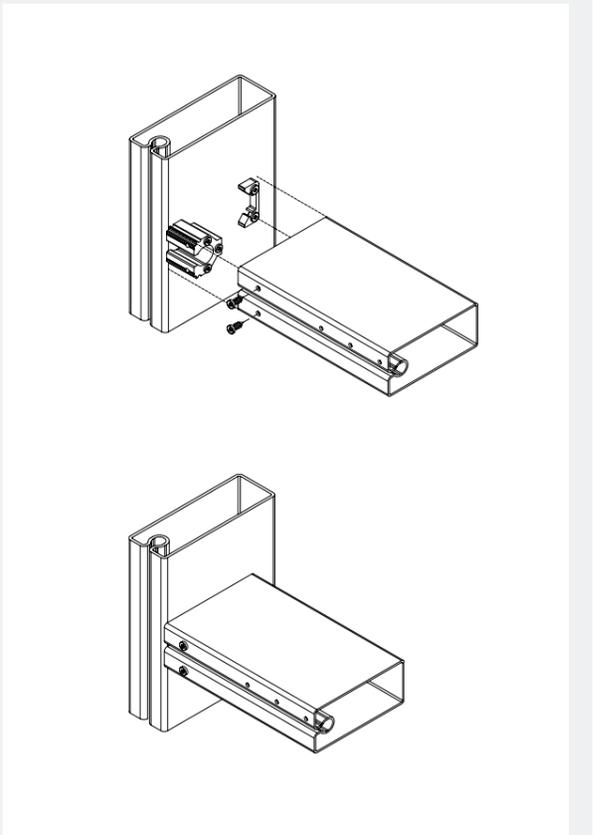
- Connecting element of the mullion and transom profiles
- Variable adjustment component for tolerance compensation of internal dimensions of tube.
- Smart connector concept for façade grid tolerance compensation.
- Threaded tube and RHS profiles with contact pressure and screw fixed twist lock, to provide stability for transportation.
- Suitable for internal transom installation



Ladder connector SCL



- For threaded tubes and custom steel and RHS profiles
- On contact pressure screw fixing
- Can be used in facades and sloped glazing roofs
- Available to produce faceted screens



THERM⁺ H-I/H-V

Timber curtain wall

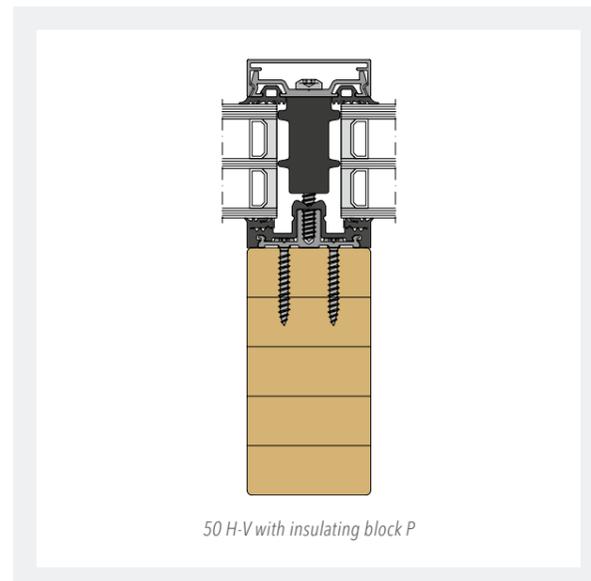
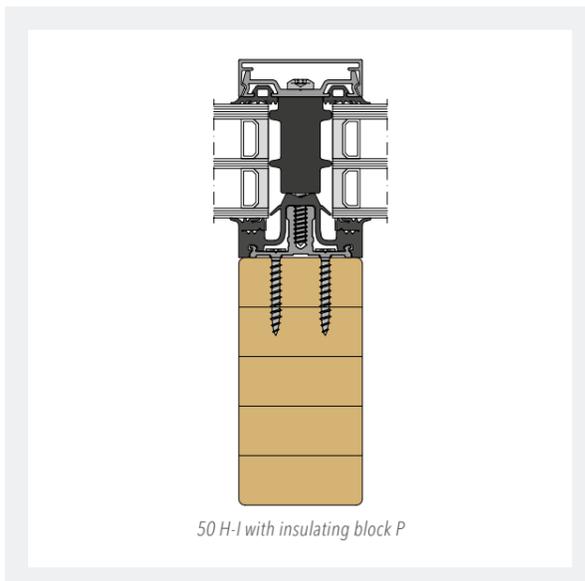


The GlaxoSmithKline Centre for Sustainable Chemistry - Nottingham, UK

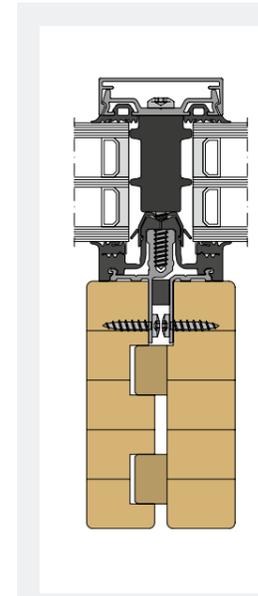
The THERM⁺ timber curtain wall system provides an approved glazing technology application to structural frames made of any timber based material from 50 mm width. For a sustainable and lasting function the consistent system design assures strict separation between the structural elements and the functional components of aluminium profile and gaskets.

Advantages

- Passive house certified in system widths 50, 56 and 76
- Maximum thermal insulation with insulating block variant down to $U_{m,t} = 0.77 \text{ W/(m}^2\text{K)}$ including screw influence
- Two types of screw fixed aluminium base profiles; with or without profile locator
- Screw fixings officially endorsed by European Technical Approval (ETA), for timber product derivatives having widths of 50 mm
- Quick and easy fitting of the base profiles; also suitable for assembly with magazine fed electric screwdrivers
- No external components penetrate through to the timber frame
- Integrated drainage system in the continuous two or three level hat gasket
- Stepless thermal insulation by means of RAICO Insulating Block Technology

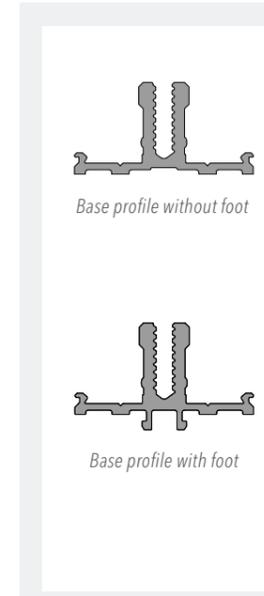


Variants



Coupling mullion

An ideal aid for efficient assembly. Pre-fabricated frames can be finished in the workshop with split coupling mullions, base profiles, interior gaskets and glass supports. On site these frames are simply coupled, glazed and finished with pressure profiles.



Base profiles

Suitable for all system variations. Specific gasket holding fixture for easy fixing of the silicon-free EPDM gasket. Slotted holes for integrated expansion compensation. With or without foot.

Technical Data

	System width [mm]	For timber profiles from [mm]	Infill thickness [mm]	Glass weight [kg]	Drainage levels	Polygonal assembly	Application glass roofs	Application conservatories
H-I	50/56/76/96	width: 50	4 to 64	up to 600	2 or 3	up to 45°	up to 2° inclination	yes
H-V	50/56/76	width: 50	10 to 64	up to 481/600	2 or 3	up to 45°	–	–

The RAICO timber connector TC

The connectors between mullion and transoms on a timber curtain wall must fulfill additional specific requirements. The dead load of the infill units is positioned in front of the timber structure, and the connectors must compensate for this torsional effect in addition to wind pressure and suction forces:

- Two patented RAICO timber connector options: SOLO and KOMBI for glass weights up to 481/600 kg
- For THERM⁺ H-I/H-V
- For transom depth from 60 up to 300 mm
- Minimum preparation: rebated grooves at each end of the transom and drilled holes to both the mullion and transom
- Simplified assembly: fix mullions – insert transom – secure transom with nail screws – finished
- Automatic flush position of the transom due to the integrated stop device
- Option to pre-fabricate into transportable units
- Aesthetically correct joints due to T-connector pressure across the profiles



Timber connector TC SOLO



Timber connector TC KOMBI

COMPONENTS

Combination possibilities down to the finest detail

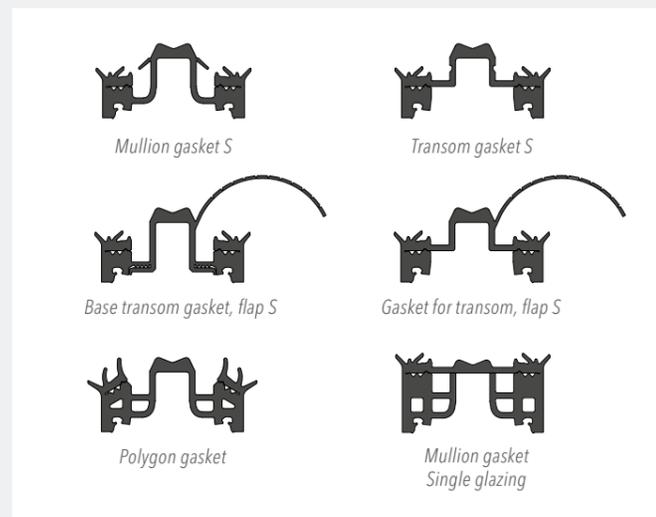


Shopping centre Fischapark – Vienna, AT

With its consistent modular design, the THERM+ system offers almost limitless combination options for the various components. In this way you can achieve the right practical and economical solution for every individual requirement.

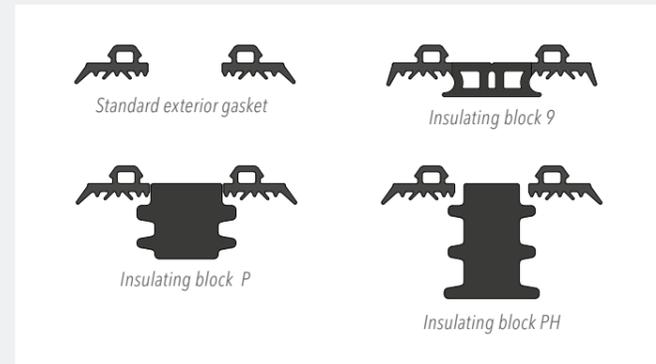
Transom and mullion gaskets

- Optimised shape for maximum thermal insulation and efficient processing
- Complete covering and sealing of the base profile
- Two options of gaskets with flaps for transom and base drainage as well as draining within the continuous gasket at the structural connections
- Reliable drainage in two or three levels by simply notching
- Special accessories for all applications, e.g. transom and mullion sealing elements
- Available in EPDM or silicone materials



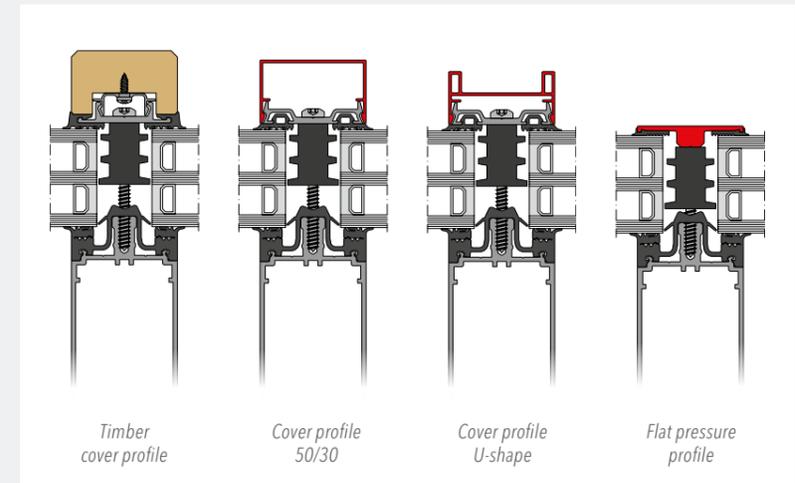
Exterior gasket

- Various exterior gaskets and insulating block options available
- Certified passive house façade
- Gradual adaptation of the insulation value
- Economic solution
- Maximum thermal insulation down to $U_{m,t} = 0.75 \text{ W/(m}^2\text{K)}$ including screw influence

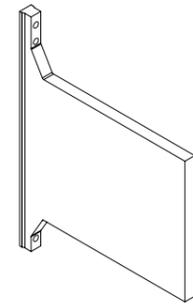
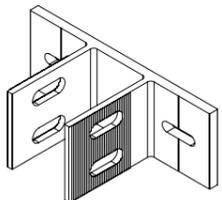
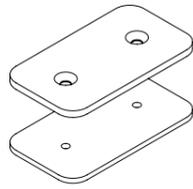


Pressure and cover profiles for curtain wall and roof applications

- A large selection of cover profiles for all system widths
- Bespoke profiles available on a short lead time for specific projects
- Aesthetically pleasing flat pressure profile with only 4 mm glass offset
- Optimal sealing of the cross-point via special accessories
- Find more types in the THERM+ product range



Accessories for façade and roof applications

<p>Solar protection fastening</p>  <p>For all THERM+ systems of the I- and V-series</p>	<p>Fixture unit</p>  <p>For all THERM+ systems in all face widths</p>	<p>Fastening bracket</p>  <p>For all THERM+ systems of the I- and V-series</p>
<p>Scaffolding fixation</p>  <p>For all system widths</p>	<p>Canopy fastening</p>  <p>For all THERM+ aluminium systems in all face widths</p>	<p>Suction disc</p>  <p>For all THERM+ systems of the I- and V-series</p>

PASSIVE HOUSE CURTAIN WALL

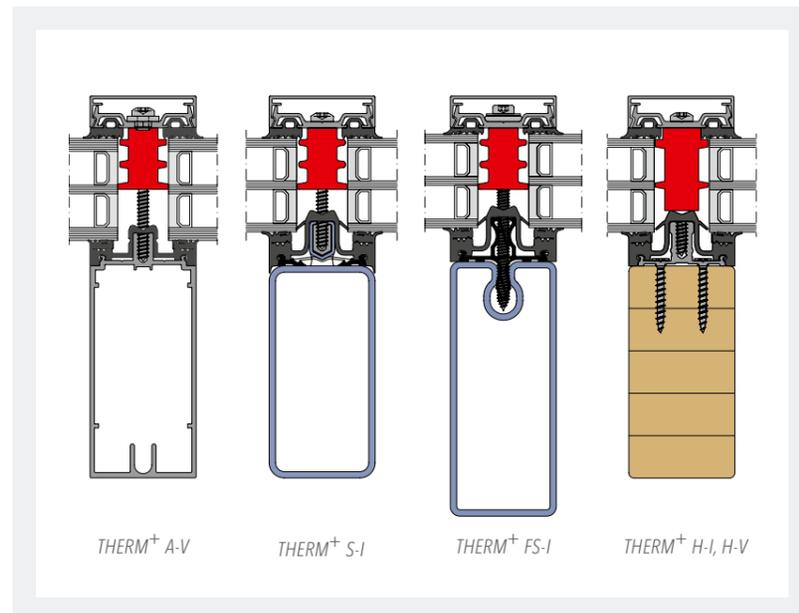
An energy gain for sustainable architecture



The standard THERM⁺ system can easily be upgraded to passive house certified standard with minimal additional components. Passive house projects can therefore be fitted with energy saving glazing in a generous, cost effective way, independent of their supporting projects.

Advantages

- Certified by the European passive house Institute Dr. Feist in Darmstadt for curtain walls and glass roofs
- Installations achieve high levels of air tightness (Blower Door Test)
- Certified with triple glazing, argon gas filling and acrylic spacer
- Specific accessories (sealing membranes and connection panel profiles) maintain integral passive house quality
- All pressure and cover profiles from the standard systems can be applied
- First Passive house certified "opening roof-light" using our FRAME⁺ 100/120 RI vent.



Technical Data

	A-V	S-I	FS-I	H-I	H-V
System width [mm]	50/56	50/56	50/56	50/56/76	50/56/76
U _{m,t} -value in W/(m²K)	down to 0.89	down to 0,82	down to 0.75	down to 0.77	down to 0.80

GLASS ROOF CONSTRUCTION

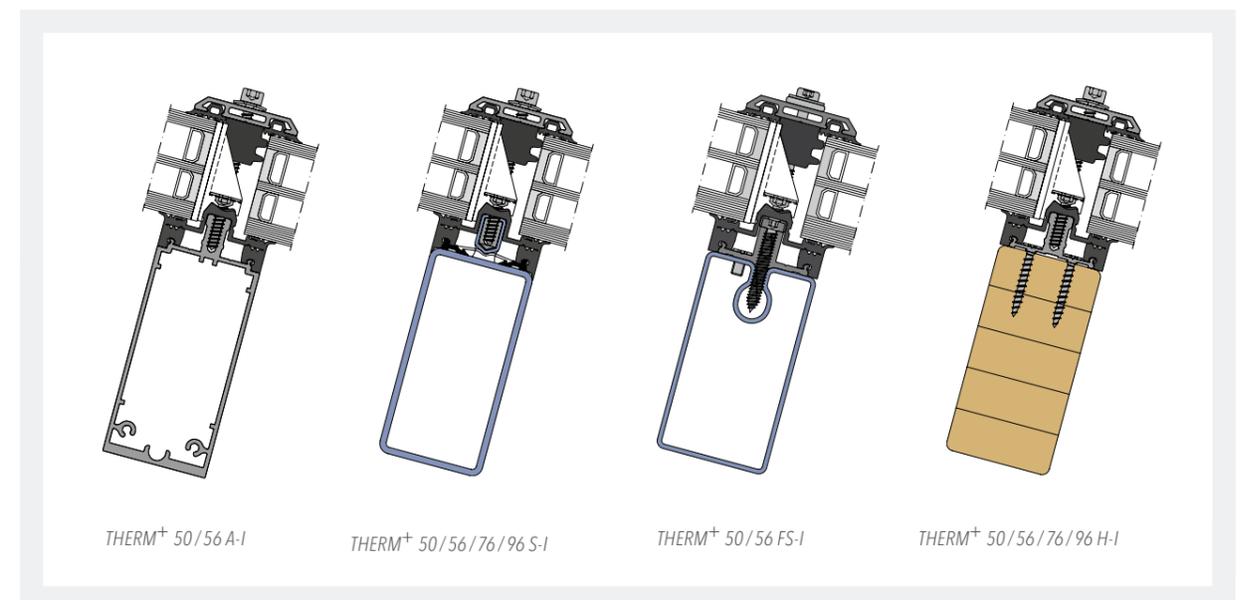
A bright glimpse of roofing heaven



The creation of bright, light-flooded rooms with all-spanning glass roofs is one of the central challenges of modern architecture. In order to be able to realise the most diverse designs into reality, the mullion-transom systems THERM⁺ A-I, S-I, FS-I and H-I are available for architects and planners.

Advantages

- Tested with an inclination of only 2°, with outstanding results and classifications (accessories such as sun protection devices and building connection components were included in the testing)
- The system structure is identical to the THERM⁺ standard systems
- Outlets at the end of the pressure profiles provide efficient drainage and avoid stagnant water
- The low pitch construction is made feasible with bevelled pressure profiles, flat pressure profiles, silicone joints or any combination of these
- Natural and smoke ventilation can be achieved by inserting our aesthetically pleasing WING 105 DI and FRAME⁺ 100/120 RI opening roof-lights which have also been tested down to 2° from horizontal



STRUCTURAL GLAZING SG

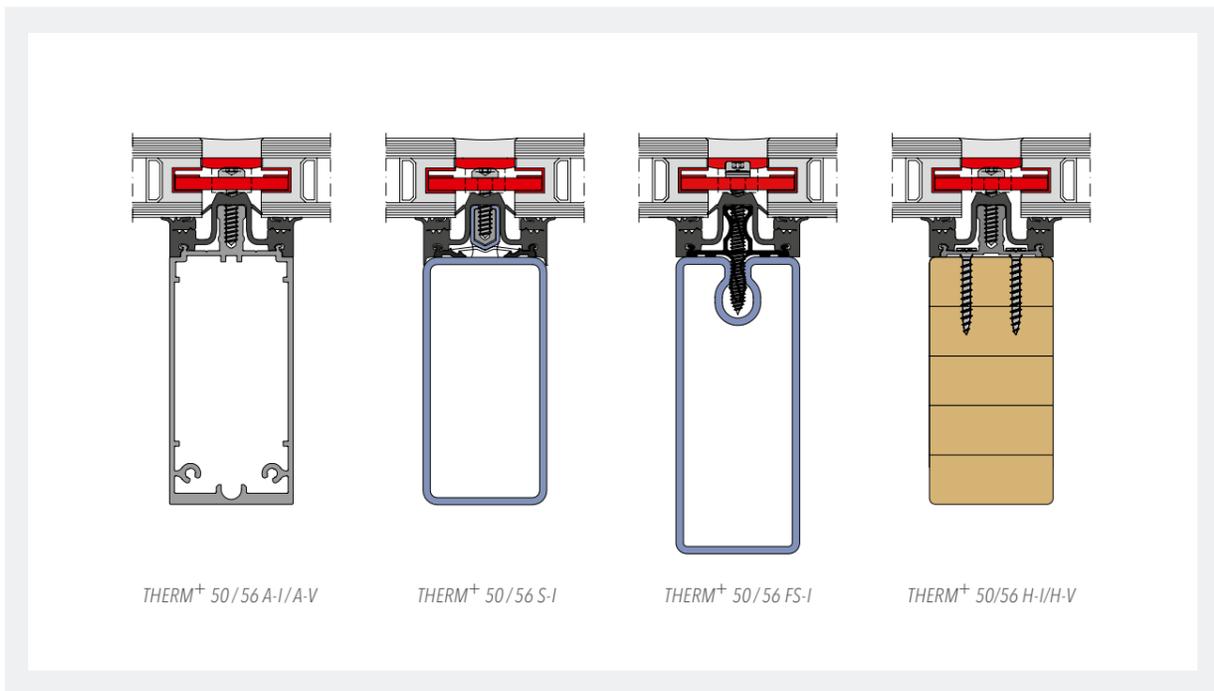
A slimline look with hefty insulation values



The THERM⁺ Structural Glazing SG2 curtain wall systems feature the most intricate glazing technique. A narrow silicone joint is the only visible line between the insulation glass panes. Retention of the internal pane is enabled easily, quickly and securely with the use of SG glazing toggles. By utilising the SG insulating block, curtain walls achieve outstanding thermal insulation values.

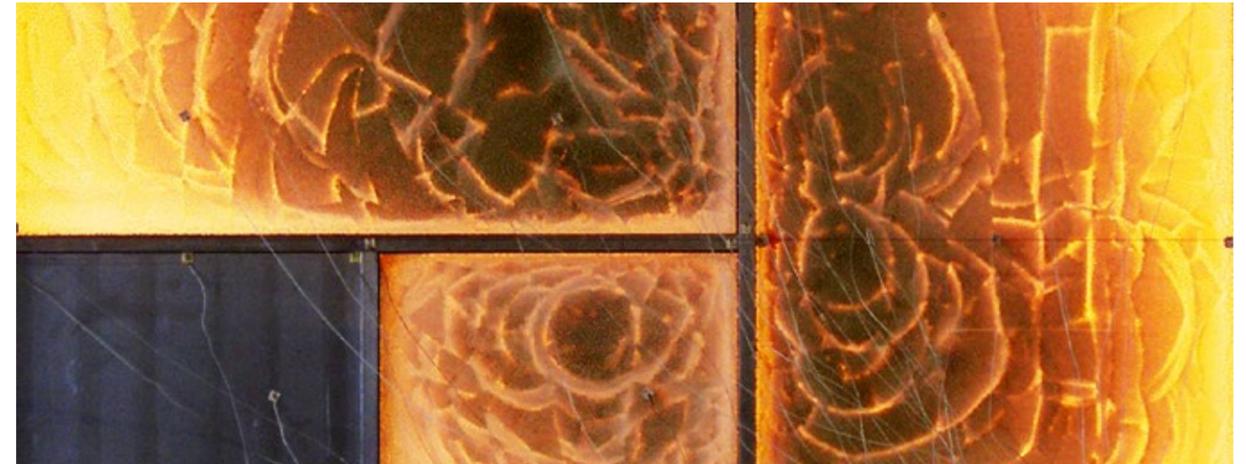
Advantages

- Can be combined with any of our other system variations, with any pressure profiles and also with suction discs
- For double or triple glazing, from 32 to 64 mm thickness
- Efficient and safe glass fixation with structural glazing toggles
- High thermal insulation down to $U_{m,t} = 0.90 \text{ W/(m}^2\text{K)}$ (including screw influence)
- Available in 50 and 56 mm versions of all THERM⁺ systems
- Available in glass curtain wall and sloped glazing



FIRE PROTECTION

Lit up with enthusiasm for invisible fire safety



Minor additions to the standard THERM⁺ system are all that is needed to construct fire resistant curtain wall in a range of protection classes. The maximum size of 1,920 mm x 3,000 mm glazing panels provides a new dimension in fire protection.

Advantages

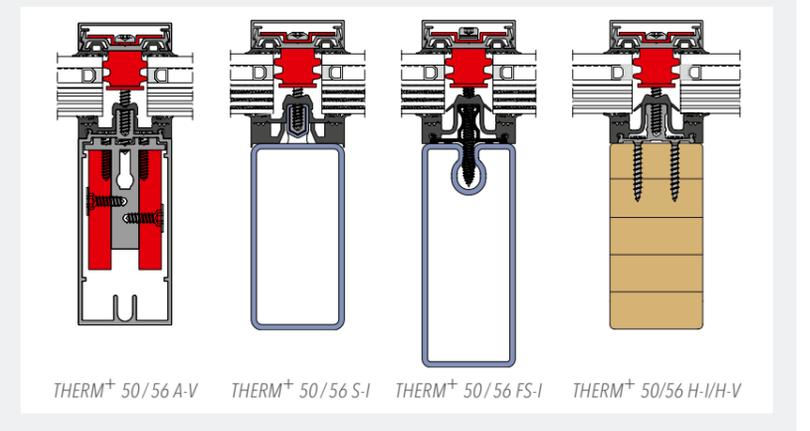
- The design of fire protection curtain wall is identical to the standard systems, thus requiring a minimum of additional cost and fabrication effort
- No visual difference between the variations
- All standard structural profiles can be applied
- Application of standard gaskets
- Only a few additional components necessary
- Maximum freedom of design with storey height screens

Technical Data

	System width 50/56 mm	Fire resistance class	Max. glass formats	General approval
A-V	structural profiles from 50 mm	EI30	1,400 x 3,000 mm	classification report No. 14-002042-PR01 (ift Rosenheim)
S-I	structural profiles from 60 mm	EI30	1,500 x 3,000 mm	classification report No. 17-002326-PR01 (ift Rosenheim)
FS-I	structural profiles from 60 mm	EI30	1,500 x 3,000 mm	classification report No. 17-002326-PR01 (ift Rosenheim)
H-I/H-V	structural profiles from 60 mm	EI30	1,920 x 3,000 mm	classification report No. 19-005056-PR01 (ift Rosenheim)

Technology in detail

- Aluminium glass carrier
- Short length stainless steel reinforcement to pressure plate
- Fire protection block (intumescent strip in glazing rebate)



BURGLAR RESISTANCE

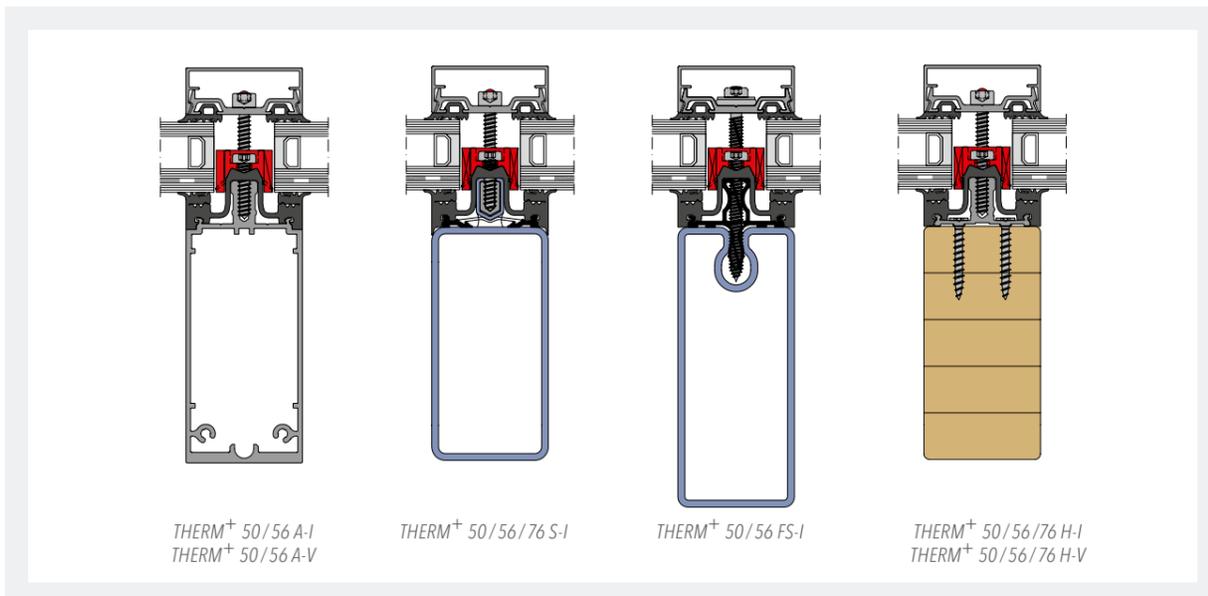
No one can get past these solutions



All THERM⁺ curtain wall variants may be made burglar resistant in accordance with the German resistance categories RC2 and RC3 by adding a few supplementary system components. Providing maximum creative possibilities, all system widths and all types of pressure plates with clip on cover caps, visible screw fixings, as well as flat pressure profile plates (in RC2) may be used.

Advantages

- Extension of the standard systems by using additional shims with pressure-resistant backing and captivated ball bearing screw heads
- For RC3 supplementary reinforcement to the pressure profile, captivated ball bearing screw heads, reduced screw spacing
- No visual difference between the variations
- Wide selection of pressure and cover profiles
- System width and infill thickness as for standard systems
- Manufacture is identical to the standard system, thus production and assembly is rationalised to the standard system
- The production of glass roofs in class RC2 and RC3 is also available
- The following insertion elements can be applied:
Aluminium window system FRAME⁺ (from page 33)
Aluminium door system FRAME⁺ (from page 51)
Aluminium window system WING (from page 61)



Approvals / Certification / CE / UKCA labelling

based on product standard for curtain walling EN 13830

	THERM ⁺ A-I	THERM ⁺ A-V	THERM ⁺ S-I	THERM ⁺ FS-I	THERM ⁺ H-I	THERM ⁺ H-V
Thermal insulation incl. screw influence	down to $U_{m,t} = 0.85 \text{ W/(m}^2\text{K)}$	down to $U_{m,t} = 0.89 \text{ W/(m}^2\text{K)}$	down to $U_{m,t} = 0.82 \text{ W/(m}^2\text{K)}$	down to $U_{m,t} = 0.75 \text{ W/(m}^2\text{K)}$	down to $U_{m,t} = 0.77 \text{ W/(m}^2\text{K)}$	down to $U_{m,t} = 0.80 \text{ W/(m}^2\text{K)}$
Wind resistance	1.875/2.813 kN/m ²	1.875/2.813 kN/m ²	2.5/3.75 kN/m ²	2.5/3.75 kN/m ²	2.5/3.75 kN/m ²	2.5/3.75 kN/m ²
Resistance against impact	interior I5, exterior E5	interior I5, exterior E5	interior I5, exterior E5	-	interior I5, exterior E5	interior I5, exterior E5
Air permeability	AE (> 600)	AE (> 600)	AE (> 600)	AE (> 600)	AE (> 600)	AE (> 600)
Water tightness	RE 1,650	RE 1,650	RE 1,950	RE 1,950	RE 2,100	RE 2,100
Airborne sound insulation	$R_w(C;C_{tr}) = 35(-1;-3) \text{ dB}$ $R_w(C;C_{tr}) = 40(-1;-4) \text{ dB}$ $R_w(C;C_{tr}) = 44(-2;-5) \text{ dB}$	$R_w(C;C_{tr}) = 36(-1;-4) \text{ dB}$ $R_w(C;C_{tr}) = 40(-1;-5) \text{ dB}$ $R_w(C;C_{tr}) = 45(-2;-6) \text{ dB}$	$R_w(C;C_{tr}) = 36(-1;-4) \text{ dB}$ $R_w(C;C_{tr}) = 42(-2;-6) \text{ dB}$ $R_w(C;C_{tr}) = 47(-2;-6) \text{ dB}$	$R_w(C;C_{tr}) = 34(-1;-4) \text{ dB}$ $R_w(C;C_{tr}) = 37(-2;-4) \text{ dB}$ $R_w(C;C_{tr}) = 41(-2;-5) \text{ dB}$ $R_w(C;C_{tr}) = 47(-1;-3) \text{ dB}$	$R_w(C;C_{tr}) = 36(-1;-3) \text{ dB}$ $R_w(C;C_{tr}) = 41(-2;-5) \text{ dB}$ $R_w(C;C_{tr}) = 46(-1;-5) \text{ dB}$	$R_w(C;C_{tr}) = 36(-1;-3) \text{ dB}$ $R_w(C;C_{tr}) = 41(-2;-5) \text{ dB}$ $R_w(C;C_{tr}) = 46(-1;-5) \text{ dB}$
Fall protection (TRAV)	yes, without additional measures					
German general approval	curtain wall system Z-14.4-454 T-connector Z-14.4-461	curtain wall system Z-14.4-504 T-connector Z-14.4-461	curtain wall system Z-14.4-446	-	curtain wall system Z-14.4-455	curtain wall system Z-14.4-516
European Technical Approval	-	-	ETA-19/0554 ETA 19/0555	ETA-19/0554 ETA 19/0555	ETA-13/0765	ETA-13/0765
Fire resistance	-	EI30	E30 / EW30 / EI30	E30 / EW30 / EI30	F30 / G30 / EI30	E30 / EW30 / EI30
Burglar resistance	RC2/RC3	RC2/RC3	RC2/RC3	RC2/RC3	RC2/RC3	RC2/RC3

Product standard for curtain walling EN 13830:

Features and classification for CE / UKCA Labelling (tested with an inclination of 2°)

	Test type/Standard	THERM ⁺ A-I	THERM ⁺ S-I	THERM ⁺ FS-I	THERM ⁺ H-I
No. 4.1	wind resistance (EN 13116)	wind pressure up to 2.6 kN/m ² wind suction up to 2.7 kN/m ²	wind pressure up to 2.6 kN/m ² wind suction up to 2.7 kN/m ²	wind pressure up to 2.6 kN/m ² wind suction up to 2.7 kN/m ²	wind pressure up to 2.6 kN/m ² wind suction up to 2.7 kN/m ²
No. 4.4	air permeability (EN 12152)	class AE (2,100)	class AE (2,100)	class AE (2,100)	class AE (2,100)
No. 4.5	water penetration (EN 12154)	up to class RE 2,550 ¹⁾			

¹⁾ Test deviating from EN 12155 with a water quantity of 3.4 l/(m² min). The standard specifies a water quantity of 2 l/(m² min).



Test tower Thyssenkrupp - Rottweil, DE

FRAME⁺

Window system

With the award winning FRAME⁺ aluminium window system, RAICO meets architectural demands whilst setting bench marks in the industry for thermal performance requirements. FRAME⁺ offers a convenient range of thermal performance levels for opening lights, fixed glazing and roof-lights where thermal transfer coefficients of $U_f = 0.79 \text{ W}/(\text{m}^2\text{K})$ are possible.



B+B Hotel - Ulm, DE



Pariser Höfe - Stuttgart, DE



Lohn-ag.de AG - Baden-Baden, DE



MTZ service centre - Örlenbach, DE



French Consulate - Stuttgart, DE



BIZZZ - Offenburg, DE

FRAME⁺ 75 WI

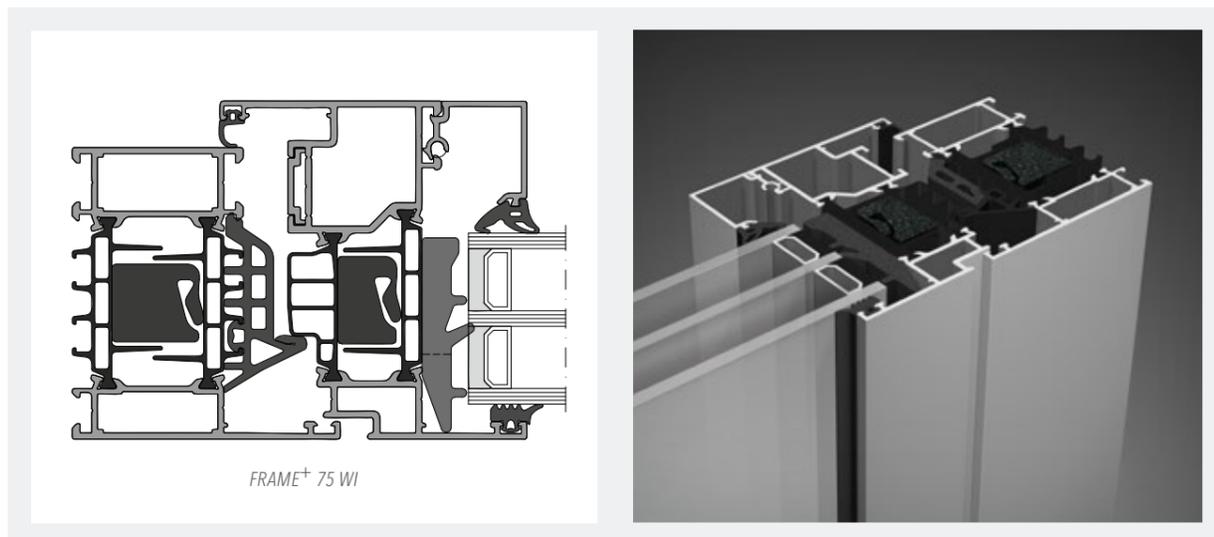
Insert window



The innovative FRAME⁺ system concept with its modular composition: The system profiles consist of identical interior and exterior aluminium extrusions and can be adapted to the required depth and thermal insulation by selection of the THERMORIT insulation bars.

Advantages

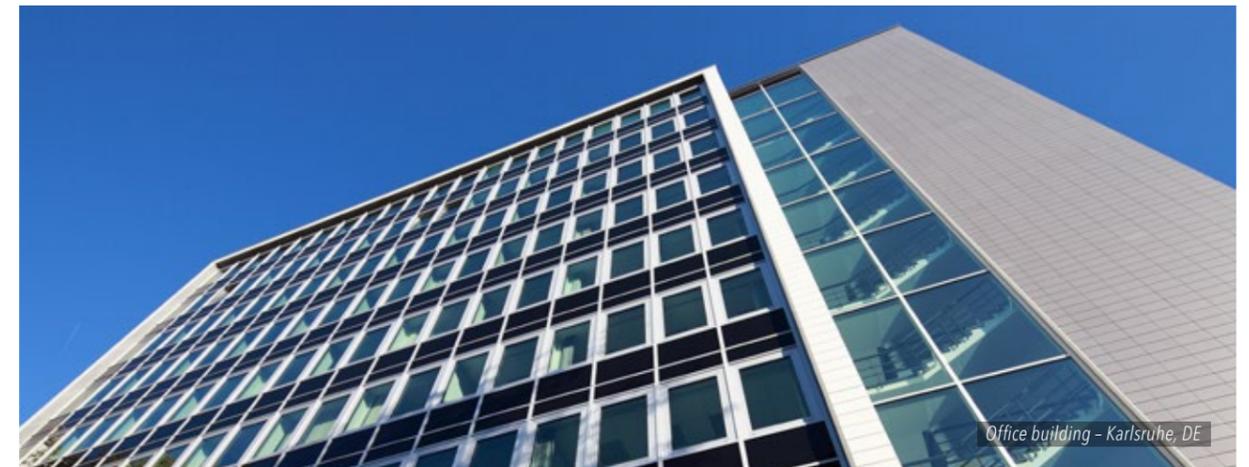
- Maximum energy savings with variable adjustment of the insulation values down to $U_f = 0.81 \text{ W/(m}^2\text{K)}$
- System depth 75 mm
- Stepless thermal insulation
- Innovative system components, such as THERMORIT insulation bars featuring distinctly reduced heat transmission values
- Integration of efficient insulation areas
- A range of opening options is available
- Consistent thermal optimization of the modular system
- Concealed fitting up to 150/180 kg
- Available as system for self-fabrication or as pre-assembled units



FRAME⁺ 75 WI

FRAME⁺ 75 SF

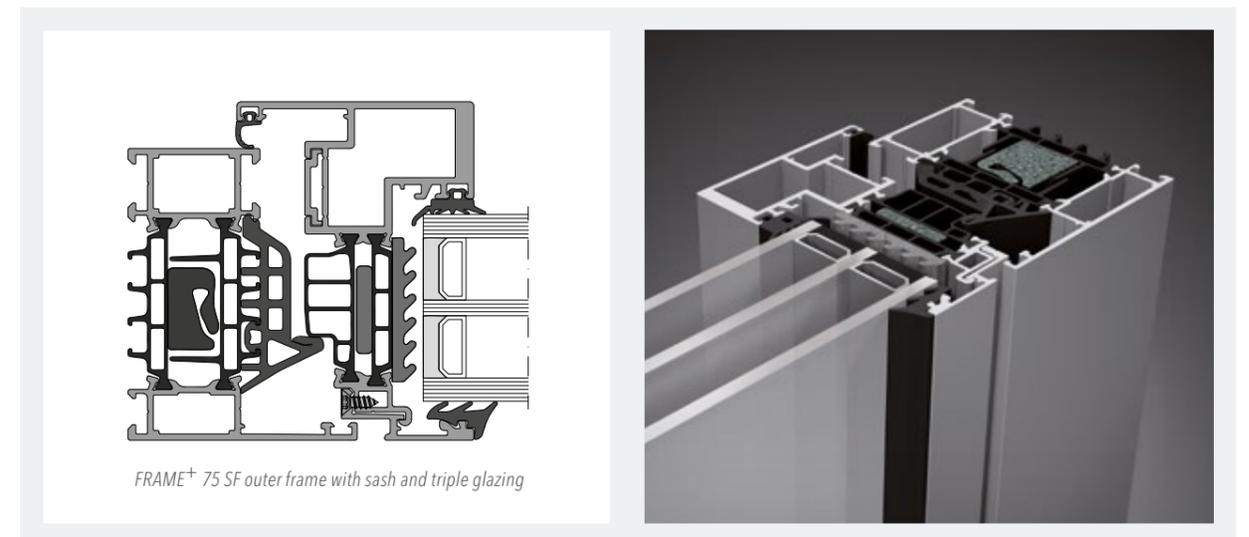
Insert window



FRAME⁺ with filigree slim design: With the FRAME⁺ 75 SF we offer you a window system with extremely slim visual appearance. The face width of the exterior view of the sash of only 23 millimetres enables the realization of timeless elegant architecture with exclusive detailing.

Advantages

- Extremely slim exterior view of the sash with a face width of only 23 mm
- Increased air tightness and cleaner friendly concealed glazing beads to the sash
- Mitre cut external glazing bead with stabilising corner chevrons
- Maximum thermal insulation with U_f -values down to $1.1 \text{ W/(m}^2\text{K)}$
- All sashes are available in two colours without elaborate half-shell coating
- Application of all outer frames of the proven FRAME⁺ 75 WI
- Overlapping and concealed fitting options
- Similarly available as FRAME⁺ 90 SF



FRAME⁺ 75 SF outer frame with sash and triple glazing

FRAME⁺ 75 WB

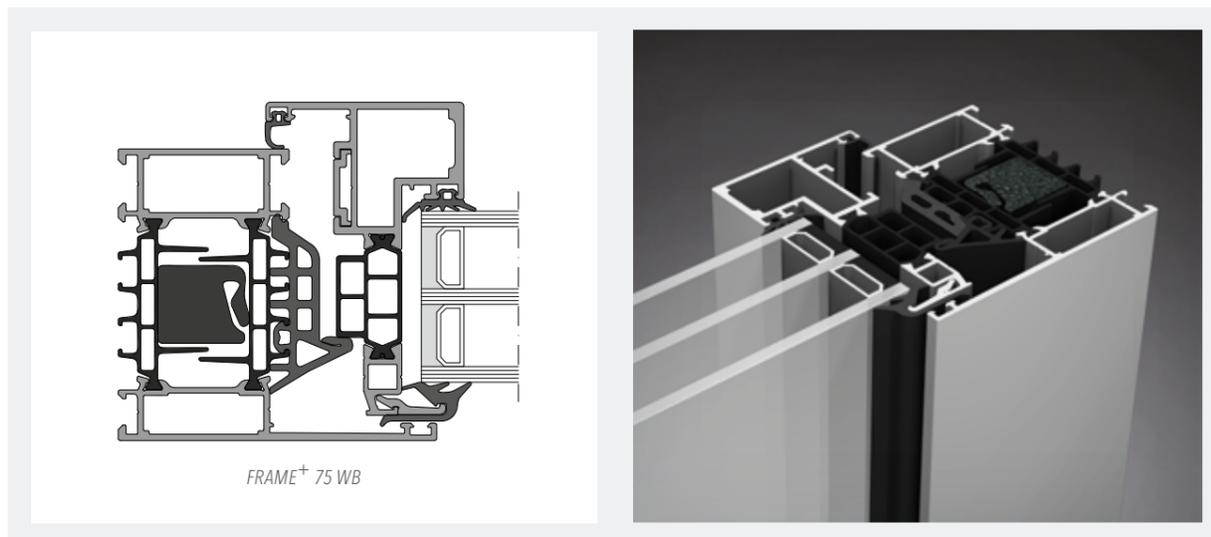
Caseмент sash window



Using FRAME⁺ 75 WB as a concealed sash window offers very filigree elevation widths, not showing any visible window bars. This version is also available as a floating window, with overlapping casement, and with decorative glazing bars. For built-in punched opening windows, the opening elements and window elements have an identical face width.

Advantages

- High-insulation windows with $U_f = 1.1 \text{ W/(m}^2\text{K)}$
- System depth 75 mm
- Application as window for punched openings or, with outer frame extension, for integration into curtain wall
- No visible glazing beads
- Very slim visual appearance
- Available as a dummy mullion sash



FRAME⁺ 75 FF

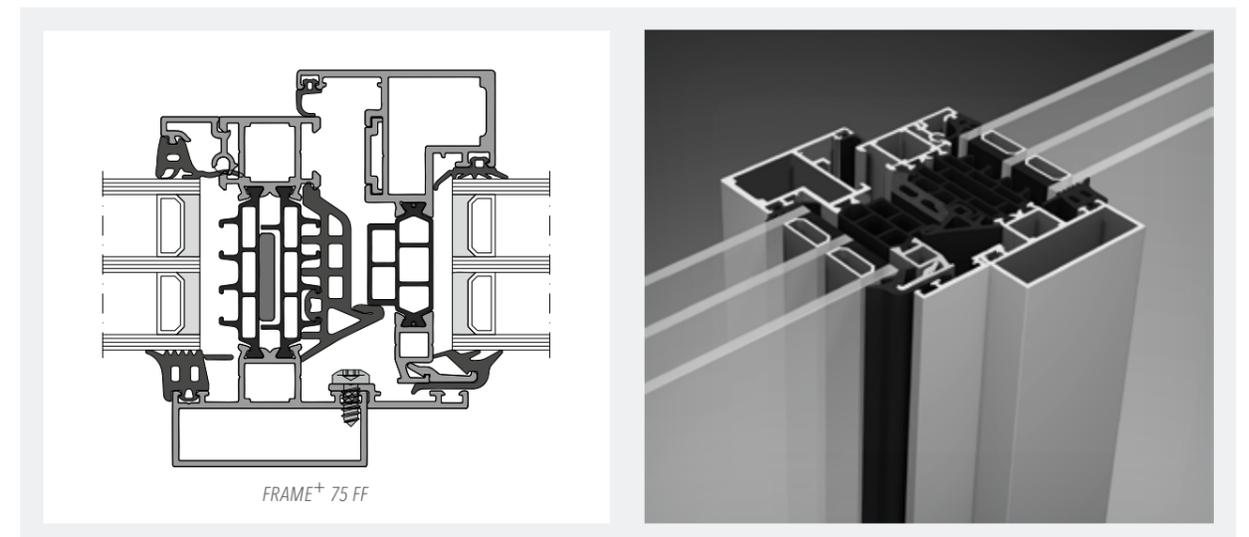
Window curtain wall



The version FRAME⁺ 75 FF offers additional advantages of this trendsetting window technology, such as a slim-line mullion-transom design model featuring elevation widths of only 50 mm.

Advantages

- Window curtain wall system with stick system appearance and an external face width of only 50 mm
- System depth 75 mm
- Ideal for economic ribbon windows up to storey height
- High-insulation windows with U_f down to $0.98 \text{ W/(m}^2\text{K)}$
- Slim curtain wall appearance with sashes or fixed glazing
- Comprehensive diversity of design with various cover profiles from the THERM⁺ curtain wall system
- Available as a dummy mullion sash



FRAME⁺ 75 WA

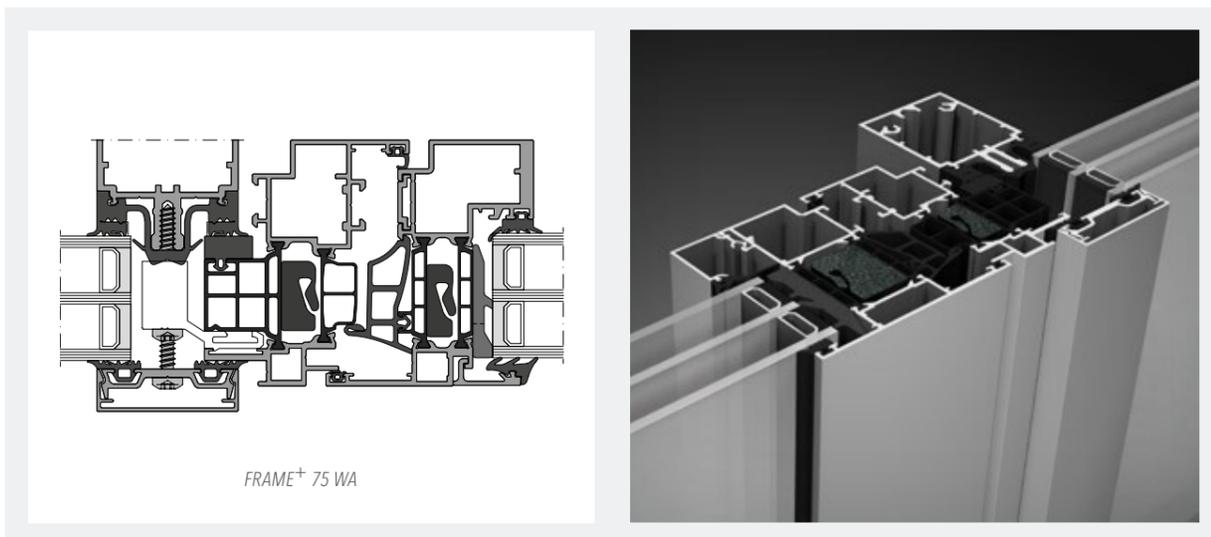
Outward opening



The FRAME⁺ 75 WA version offers several usage as bottom-hung, top-hung, side-hung, top-hung projecting all outward openings.

Advantages

- High-insulation windows with U_f down to 1.4 W/(m²K)
- System depth 75 mm
- Narrow face widths with the casement sash design, no visible glass retaining strips
- Opening options: bottom-hung, top-hung, side-hung, top-hung projecting
- Internal or external glazing options
- Available with curtain wall adapter outer frame profile



FRAME⁺ 75 WA

FRAME⁺ 75 WI PSK

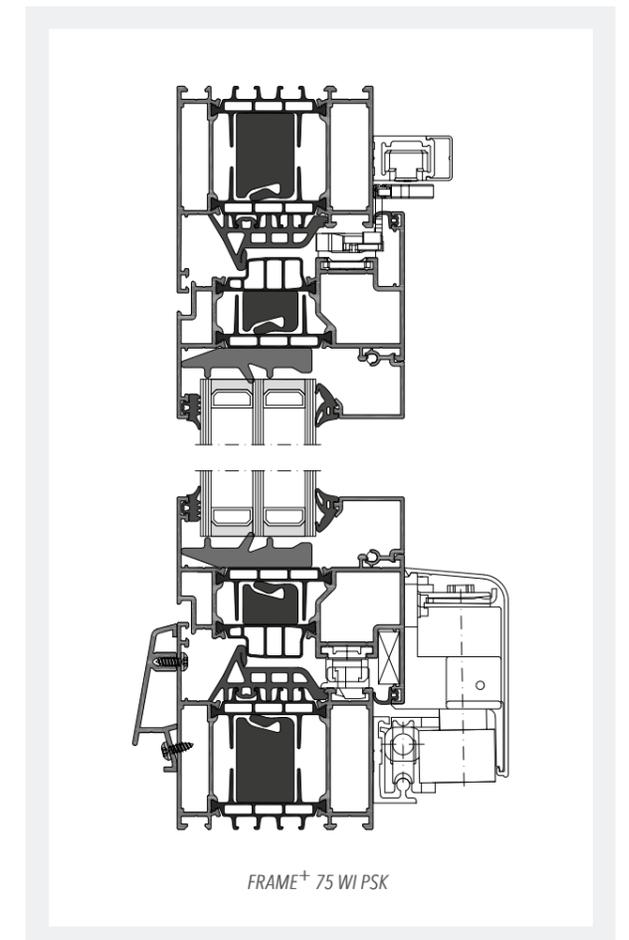
Parallel tilt and slide door



With its choice of space saving opening methods (slide to step through / tilt to provide ventilation) coupled with its outstanding thermal performance and its very high air tightness qualities, the parallel tilt and slide door is ideally suited for use as a terrace or balcony door.

Advantages

- Outstanding insulating properties
- Innovative, space-saving runner technology
- Large openings up to a sash width of 2 m
- High sash weights up to 200 kg
- For sash weights over 150 kg, hardware assisted operation for ease of use
- Excellent ventilating properties using a storm resistant tilting position
- Highly impermeable by circumferential medial gasket technology
- Broad range of applications for extensive terrace and balcony openings in private and commercial buildings
- Various ways of opening:
 - space-saving due to slide position
 - long-term ventilation in tilt position



FRAME⁺ 75 WI PSK

FRAME⁺ 75 WI/90 WI

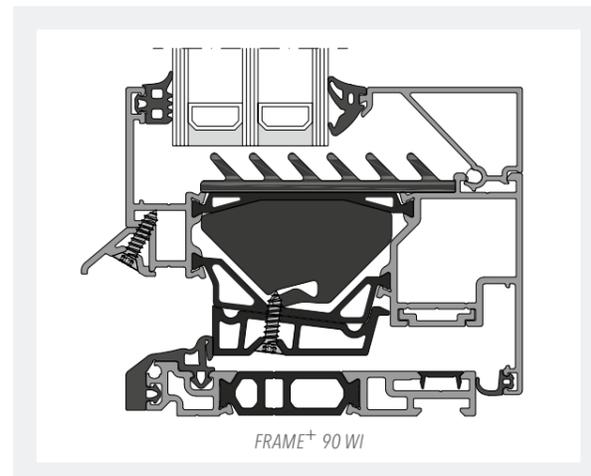
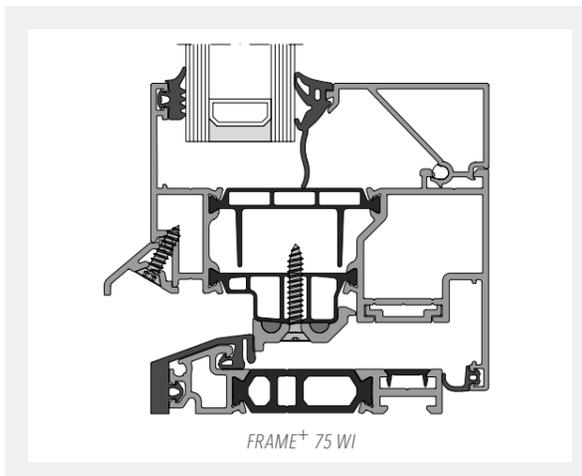
Barrier-free threshold



The threshold belongs to the most sensitive parts of french doors. Especially in the threshold area thermal insulation and air tightness is a real challenge. With our new barrier-free threshold we are offering a product that meets all requirements on modern and safe construction ergonomics.

Advantages

- Thermally broken aluminium threshold with a maximum height of 20 mm
- Increased air-tightness due to unique, horizontal additional locking, making larger sash widths possible
- Visually attractive solution with small face widths
- Standard fittings available as surface mounted or concealed option for an attractive appearance
- Available as window for punched openings or, with outer frame extension, for integration into curtain wall
- Substructure of sill with standard enlargement of FRAME⁺ series
- Opening options:
One-leaf: turn and turn-tilt
Double-leaf: turn-tilt/turn and turn/turn
- Maximum sash dimensions of
1,100 x 2,500 mm / 1,450 x 2,200 mm
- Available as system for self-fabrication or as pre-assembled units
- Tested U_f -values
75 WI: 1.8 W/(m²K)
90 WI: 1.4 W/(m²K)



FRAME⁺ 90 WI

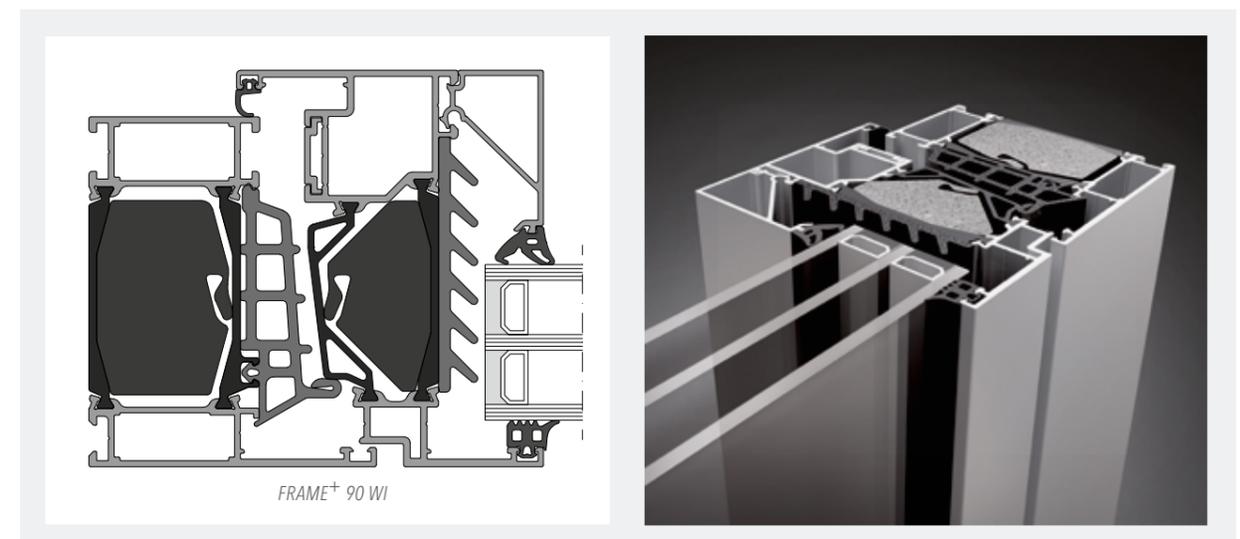
Insert window



The solution's outstanding energy efficiency was one of the reasons for the FRAME⁺ 90 WI aluminum window system being awarded the "Component Award 2014". Additionally it is exceptionally economical and maximizes overall savings at the level of both investment and energy costs compared to standard windows.

Advantages

- Outstanding thermal insulation with a volume fraction of 60 % of the innovative material used for THERMORIT bars:
 $U_w = 0.75 \text{ W/(m}^2\text{K)}$ | $U_f\text{-value} = 0.79 \text{ W/(m}^2\text{K)}$
- Maximum thermal insulation and glass infill thicknesses up to 80 mm (in the sash)
- High performance thermal insulation insert with a depth of 60 mm
- Available as system for self-fabrication or as pre-assembled units
- Simplified, more flexible installation into curtain wall with range of variable system components
- Opening variants: Turn-tilt/Turn/Tilt-turn (tilt first)/Tilt/Parallel tilt and slide door
- Clean and easy corner cleat bonding using innovative adhesive injection method into synthetic distribution channel
- Suitable for composite coating and anodising



FRAME⁺ 90 WB

Caseament sash window

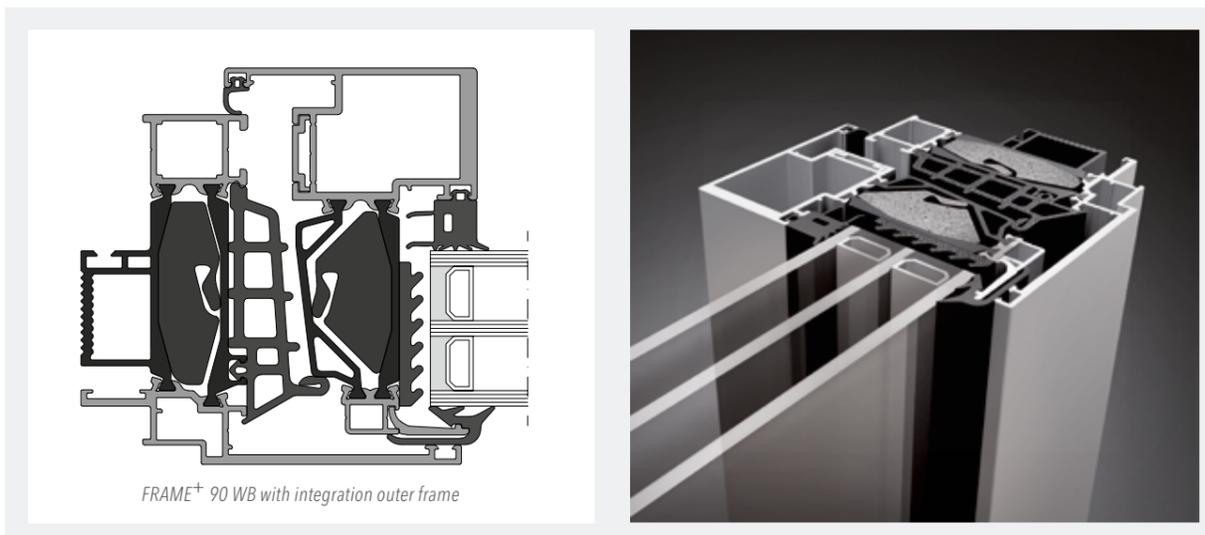


Hangar 108 - Siège Rouen Métropole - Rouen, FR

Using FRAME⁺ 90 WB as a concealed sash window offers very filigree elevation widths, not showing any visible window bars. This version is also available as a floating window, with overlapping casement, and with decorative glazing bars.

Advantages

- Outstanding thermal insulation with a volume fraction of 60 % of the innovative material used for THERMORIT bars: $U_w = 0.76 \text{ W/(m}^2\text{K)}$ | $U_f\text{-value} \geq 0.89 \text{ W/(m}^2\text{K)}$
- Safe glazing technology in conformity with the standards offering large ventilation spaces and an exterior gasket frame with vulcanised corners
- Individual design options for the interior outer frame profile by using colour adaptable cover profiles
- Insulated glazing rebate with large ventilation spaces and hollow profile section insulation inserts.
- Fitting variants:
 - Concealed fitting, thereby invisible parts, low-maintenance
 - Surface-mounted fitting with enhanced version of the standard corner bearing enables higher sash weights and increased stability



FRAME⁺ 90 WB with integration outer frame

FRAME⁺ 90 WB-T

Aluminium timber window

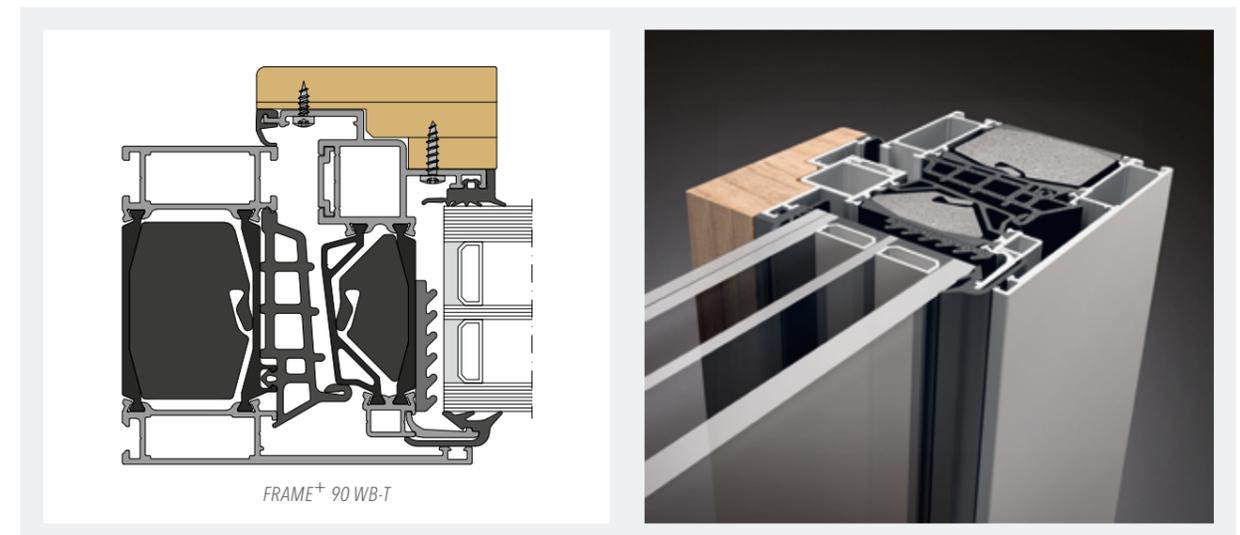


West Buckland School - Devon, UK

In the innovative RAICO aluminium timber window FRAME⁺ 90 WB-T, a warm living ambience meets the most modern composite technology made of highly thermally insulating THERMORIT. Enjoy cosiness in the interior area provided by the use of wood, and classical functionality due to weatherproof aluminium on the outside.

Advantages

- Aluminium timber window with identical processing technology of standard aluminium windows
- Outstanding thermal insulation with a volume fraction of 60 % of the innovative material used for THERMORIT bars: $U_w = 0.77 \text{ W/(m}^2\text{K)}$ | $U_f\text{-value} = 0.89 \text{ W/(m}^2\text{K)}$
- Real wood cladding on the inside as a decorative element, perfectly suited to the optical appearance of the curtain wall. Wide range of different types of wood
- Individual design options for the interior outer frame profile by using colour adaptable cover profiles
- Integral sash made of dimensionally stable aluminium-THERMORIT composite construction without considering the interior timber frame, therefore exchangeable at any time
- Real wood cladding on the inside with simple screw connection technique on production or construction site, exchangeable after installation
- Compensation of glass infill thickness by special clip gaskets
- Opening variants: Tilt and turn/turn/tilt before turn/tilt
- Available as system for self-fabrication or as pre-assembled units



FRAME⁺ 90 WB-T

FRAME⁺ 100/120 RI

Rooflight window



Alnatura Arbeitswelt - Darmstadt, DE

With its new FRAME⁺ 100/120 RI rooflight window, RAICO is once again opening up a range of new possibilities in the field of functional and aesthetic roof design – thanks to their special depth of section, passive house certification and lean, elegant appearance which perfectly matches the proven THERM⁺ roof and curtain wall systems.

Advantages

- Innovative insulating bar material THERMORIT with very low thermal conductivity and suitable for composite coating and anodising
- Stepped glass variant with unilateral design or circumferential glass edge finish set on identical outer and sash frames
- Various glass step variants available for a circumferential glass edge (F-strip, suction disc)
- Two different glazing variants due to the option for the screw connection of the cover profile (visible or concealed)
- Tested with a roof inclination of up to 2° it forms the perfect complement to the THERM⁺ glass roof systems
- High burglar resistance (RC2) due to concealed hinges
- Maximum airflow effect due to an opening angle of up to 90°; Tested for natural ventilation as well as a smoke and heat exhaust ventilator acc. to DIN EN 12101-2
- Various opening possibilities due to mounting options on all four sides, manual or with motor drive; wide selection of linear or chain drives
- Opening variants: Turn, Tilt, Top-hung
- First Passive House certified "opening roof-light" for glazed roofs.
- Available as system for self-fabrication or as pre-assembled units

FRAME⁺ 100/120 RI-T

Timber rooflight window

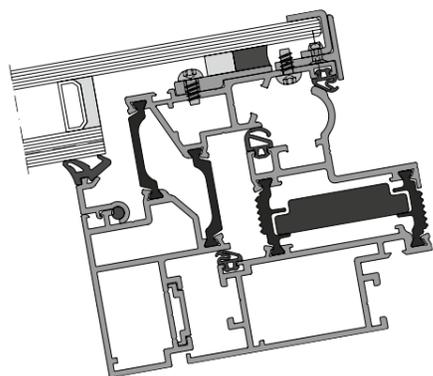
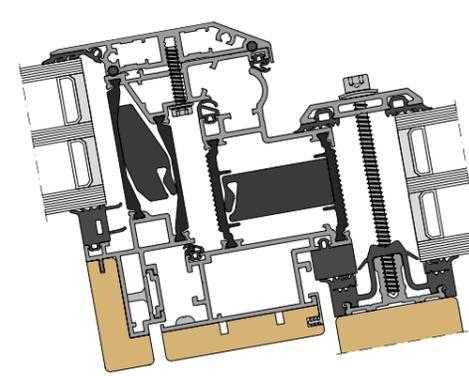
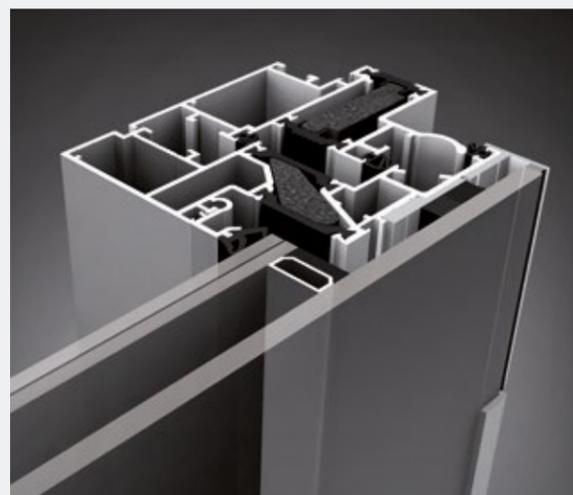
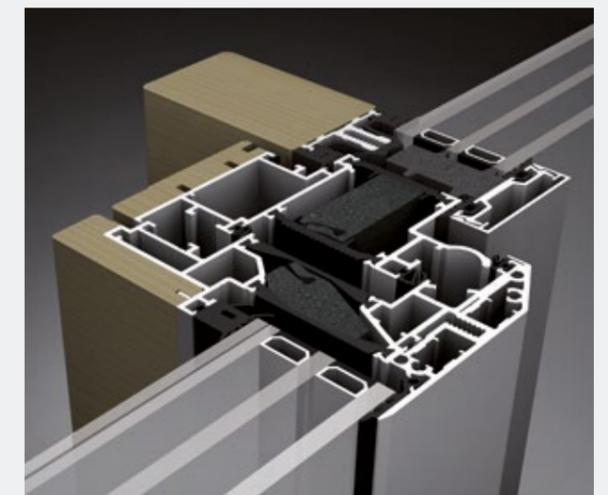


Hotel Silberhorn - Lauterbrunnen, CH

The interior real wood cladding turns the FRAME⁺ 100/120 RI-T into a design highlight that is ideally integrated in the THERM⁺ H-I/H-V timber curtain wall system.

Advantages

- Aluminium timber window with identical processing technology of standard aluminium windows
- Outstanding thermal insulation with a volume fraction of 60 % of the innovative material used for THERMORIT bars: U_f -value = 1.4 W/(m²K)
- Real wood cladding on the inside as a decorative element, perfectly suited to the optical appearance of the curtain wall; wide range of different types of wood
- Real wood cladding on the inside with simple screw connection technique on production or construction site, exchangeable after installation
- Integral sash made of dimensionally stable aluminium-
- THERMORIT composite construction without considering the interior timber frame, therefore exchangeable at any time
- Compensation of glass infill thickness by special clip gaskets
- Tested with a roof inclination of up to 2° it forms the perfect complement to the THERM⁺ glass roof systems
- Tested for natural ventilation as well as a smoke and heat exhaust ventilator
- High degree of tightness by three peripheral seal levels with medial gasket frame
- Available as system for self-fabrication or as pre-assembled units

FRAME⁺ 100 RI - Variant stepped edge glazingFRAME⁺ 120 RI-T - Variant real wood cladding

FRAME⁺ 75 LF

Ventilation flap



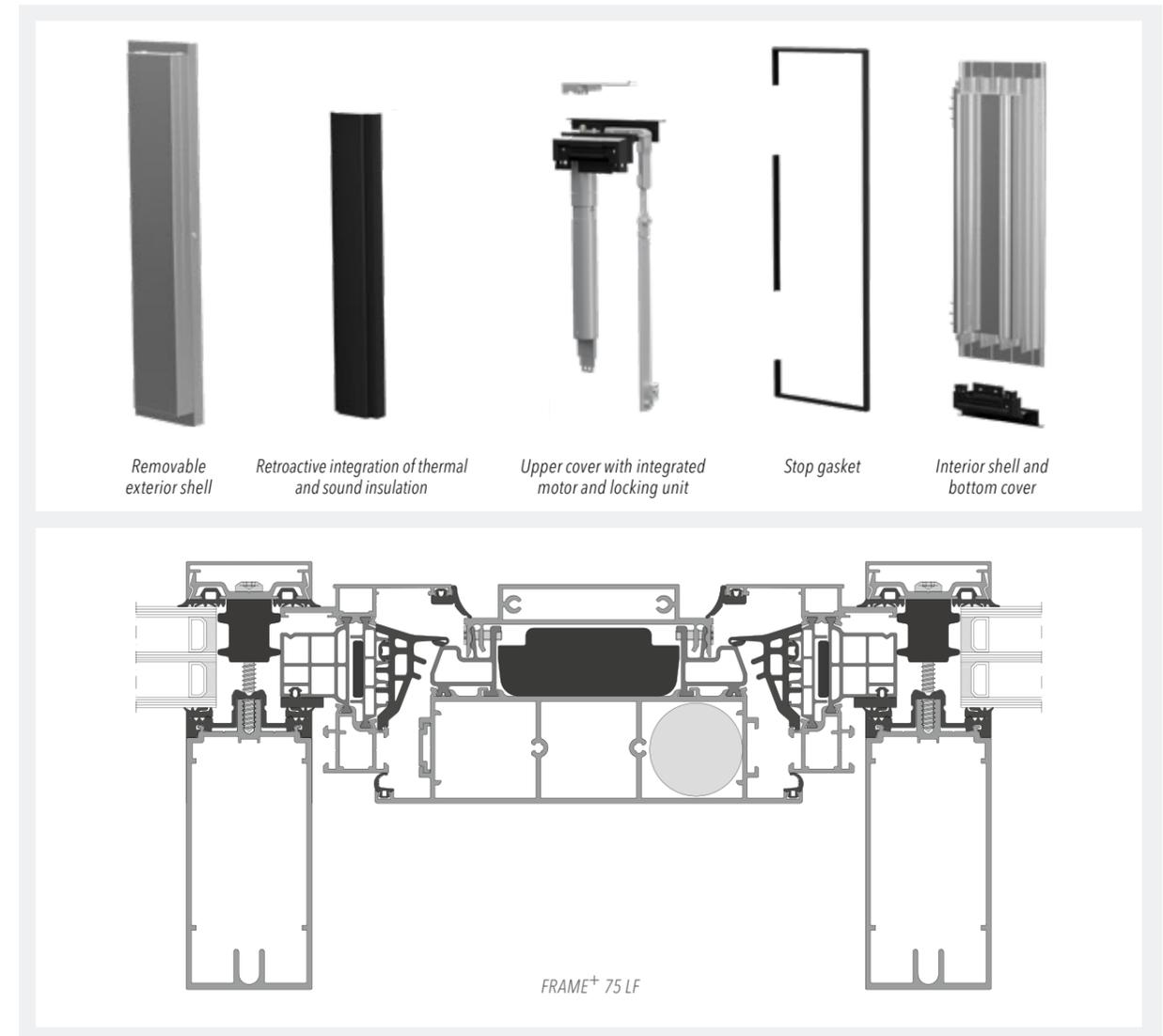
FRAME⁺ 75 LF can be perfectly integrated into the RAICO window and façade family as a side-hung sash with a width of 170 mm or 300 mm. The “decoupled” exterior shell reduces the bi-metal effect. A completely concealed side-hung sash drive with invisible chain is available for motorised opening.

Highlights

- Max. sash height up to 3,000 mm (special sizes on request) manual and motor-driven
- User-independent, hygienic ventilation in accordance with DIN 1946-6 possible
- Optional ModBus interface for direct control via building automation (Smart Building)
- Three levels of complete sealing ensure a tight seal and durable function with low operating forces
- Easy installation of thermal and sound insulation thanks to separate exterior shell that can be fitted retrospectively
- Completely concealed drive with integrated locking mechanism without additional lock motor
- Almost silent operation
- Fulfills the requirements of Protection Class 3 for power operated windows through torque restriction without sensor, with option to upgrade to Protection Level 4
- Opening/closing speed, closing forces etc. can be individually adjusted
- Passive anti-trap protection with torque restriction, autonomous direction reversal when trapped
- Pre-assembled aluminium end caps
- Vulc. medial gasket with sealant injection opening for quick and simple assembly
- Thanks to pre-assembled components, motor drives are installable without extensive cabling
- As insert for mullion-transom construction or as cut-out
- Energy savings through night cooling possible
- Protection from vandalism with electronic torque limiter
- Homogeneous view from inside, without visible strips and operating elements
- Standard face widths of 170 mm and 300 mm standard (further face width possible)
- Flush outer appearance
- Optionally available in RC2
- Opening angle up to 135° if needed, depending on chosen fitting option
- Efficient air exchange for ventilation and heat and smoke vent solutions
- Projected NSHEV approval (DIN EN 12101-2)
- Integration into building management systems
- Option of an insect screen with around 80% open ventilation area
- Available as system for self-fabrication or as pre-assembled units

FRAME⁺ 75 LF

Structure



Technical Data

Test	Classification standard	Class/value
Air permeability	EN 12207:2017-03	up to 4
Wind load	EN 12210:2016-09	up to C5 / B5 / A5
Water tightness	EN 12208:2000-06	up to E 900
Mechanical durability	EN 12400:2002-10	up to 3
Operating forces	EN 13115:2001-07	up to 2
Burglar resistance	EN 1627:2021-11	RC2
Sound insulation R_w (C:C _{tr})	EN ISO 717-1:2020	up to 42 dB (75LF 170)* up to 40 dB (75LF 300)*
Thermal insulation U_{eq}	EN ISO 10077-2:2017-06	up to 1,0 W/m ² K

Technical values (system inspection as basis for CE / UKCA label pursuant to DIN EN 14351-1)

* with additional measures

Quality in detail

The FRAME⁺ window series also guarantees a high degree of design freedom, in addition to a high energy saving thanks to maximized thermal insulation. The following table shows the achieved values and possible applications of the different systems.

	FRAME ⁺ 75 WI Insert window	FRAME ⁺ 75 SF Insert window	FRAME ⁺ 75 WB Casement sash window	FRAME ⁺ 75 FF Window curtain wall	FRAME ⁺ 75 WA Outward opening	FRAME ⁺ 90 WI Insert window	FRAME ⁺ 90 WB Casement sash window	FRAME ⁺ 90 WB-T Al. timber window	FRAME ⁺ 100/120 RI Rooflight window	FRAME ⁺ 100/120 RI-T Timber roof- light window
System values										
U _w -value ¹ passive house in W/(m ² K)	-	-	-	-	-	= 0.79	= 0.75	-	= 1.0	-
U _f -value ² in W/(m ² K)	≥ 1.0	≥ 1.0	≥ 1.5	≥ 1.7	≥ 1.4	≥ 0.70	≥ 0.89	≥ 0.88	≥ 1.40	≥ 1.40
System depth [mm]	75	75	75	75	75	90	90	90	88/100/120	100/120
Applications										
Punched opening window	X	X	X			X	X	X		
Curtain wall insertion element	X	X	X		X	X	X	X		
Casement sash			X	X			X	X		
Window curtain wall				X						
Opening element in the glass roof									X	X
Application limits³										
Max. weight turn-tilt surface-mounted fitting [kg]	130/160/ 200 *	130/160/ 200 *	130/160/ 200 *	130/160/ 200 *	-	130/160/ 200 *	130/160/ 200 *	130/160	225	225
Max. weight turn surface-mounted fitting [kg]	130/160/ 200/300 *	130/160/ 200/300 *	130/160/ 200/300 *	130/160/ 200/300 *	130	130/160/ 200/300 *	130/160/ 200/300 *	130/160	225	225
Max. weight consoled fitting [kg]	150/180	150/180	150/180	150/180	-	150/180	150/180	150/180	-	-
Max. sash dimensions [mm] ⁴	1,600 x 2,100/ 1,600 x 3,000	1,450 x 1,900/ 1,450 x 3,000	1,450 x 1,900/ 1,450 x 3,000	1,450 x 1,900/ 1,450 x 3,000	2,500 x 2,000/ 2,000 x 2,500	1,600 x 2,100/ 1,600 x 3,000	1,450 x 1,900/ 1,450 x 3,000	1,450 x 1,900/ 1,450 x 3,000	3,500 x 1,500/ 2,100 x 2,500	3,500 x 1,500/ 2,100 x 2,500
Infill thickness sash [mm]	22 to 68	28 to 58	24 to 56	24 to 44	22 to 68	34 to 80	40 to 60	40 to 60	10 to 80	10 to 80
Infill thickness fixed glazing [mm]	10 to 56	10 to 56	4 to 50	4 to 56	-	36 to 65	-	-	11 to 68	11 to 68

¹ Determined with glass U_g = 0.7 W/(m²K)

² Thermal insulation based on DIN ISO 10077-2

³ Applications outside these limits, would be subject to an assessment by our Technical Department

⁴ For authorized sash sizes, see fitting diagram in the relevant planning documents

* 130 / 160 kg with standard fitting up to 200 / 300 kg with reinforced fitting

Tests

The FRAME⁺ window system has undergone rigorous testing according to the product standard for windows and exterior doors EN 14351.1 and achieved the following classification. These values are at the same time the base for simplified CE / UKCA marking of windows.

	FRAME ⁺ 75 WI Insert window	FRAME ⁺ 75 SF Insert window	FRAME ⁺ 75 WB Casement sash window	FRAME ⁺ 75 FF Window curtain wall	FRAME ⁺ 75 WA Outward opening	FRAME ⁺ 90 WI Insert window	FRAME ⁺ 90 WB Casement sash window	FRAME ⁺ 90 WB-T Al. timber window	FRAME ⁺ 100/120 RI Rooflight window	FRAME ⁺ 100/120 RI-T Timber roof- light window
Air permeability ¹	class 4	class 4	class 4	class 4	class 4	class 4	class 4	class 4	class 4	class 4
Resistance to wind load ¹	up to class C5	class C5	up to class C5	class C5	class C4	up to class C5	up to class C5	up to class C5	class C3/C4 *	class C3/C4 *
Resistance against impact ¹	class 5	-	class 3	class 3	-	-	-	-	-	-
Water tightness ¹	up to E 900	up to E 750	up to E 900	up to E 900	up to E 900	up to E 1200	up to E 1200	up to E 900	up to E 1500	up to E 1500
Operating forces ¹	class 1 and 2	class 1	class 1 and 2	class 1 and 2	class 1	class 1	class 1	class 1	-	-
Airborne sound insulation ²	R _w (C;C _{tr}) up to 45 dB	R _w (C;C _{tr}) up to 45 dB	R _w (C;C _{tr}) up to 46 dB	R _w (C;C _{tr}) up to 42 dB	-	R _w (C;C _{tr}) up to 43 dB	R _w (C;C _{tr}) up to 43 dB	-	R _w (C;C _{tr}) up to 43 dB	R _w (C;C _{tr}) up to 43 dB
Mechanical strength ¹	class 4	class 4	class 4	class 4	-	class 4	class 4	-	-	-
Burglar resistance	class RC2/RC3	-	class RC2/RC3	class RC2/RC3	-	class RC2/RC3	class RC2/RC3	class RC2/RC3	class RC2	class RC2
Continuous-operational testing EN 12400	class 2	class 2	class 2	class 2	class 2	-	-	-	class 3	class 3

¹ Tested to RAL GZ 695

² The values are referred to the standard size of 1.23 x 1.48 m

* Values are maximum tested/max. classification
The classification must be realized according to the requirements of the specifications.



Kubus Döppersberg - Wuppertal, DE

FRAME⁺

Door system

The FRAME⁺ door system is based on the well proven concept of the FRAME⁺ window series. The door profiles are designed to match the window profiles. In addition, many products from the window range are compatible with the door system.



Grundschule - Neubiberg, DE



Furniture Store Finke - Hamm-Rhynern, DE



medXpert - Eschbach, DE



Umweltarena - Spreitenbach, CH



Peninsula Aquatic Recreation Centre - Frankston, AUS



Private house

FRAME⁺ 75 DI

Aluminium door



FRAME⁺ 75 DI fulfils all the requirements for a high quality entrance door. Special profile contours enable simple installation. The series is characterised by short production times and efficient manufacturing. Smooth rebate geometries enable fast installation of all types of hardware in the rebate. Large internal chambers within the profiles provide acceptance of all fittings, such as electrical door release mechanisms.

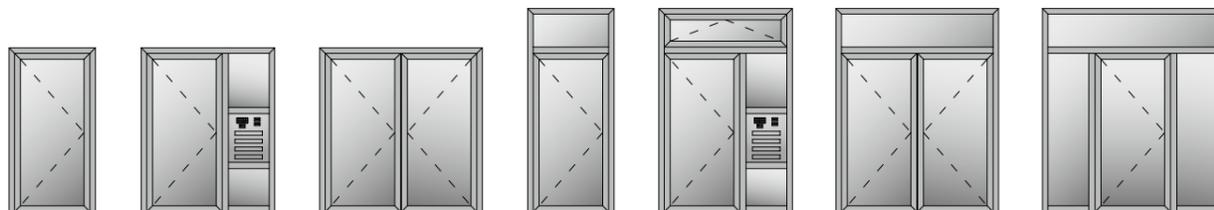
Advantages

- Featuring U_D -values down to 0.69 W/(m²K) to meet passive house standards
- Buildings, curtain wall and residential project installations
- Extensive design options within the series
- Standard fittings
- Ease of manufacture with innovative features
- Sturdy composite profiles ensuring long-lasting functionality
- Inward and outward opening single doors
- Inward and outward opening double doors
- Leaf-enclosing doors on one side, inward/outward opening
- Leaf-enclosing doors on both sides, inward opening
- Tested to EN 12208 for water tightness:
 - Inward opening door to Class 9A (600 Pa)
 - Outward opening door to Class 8A (450 Pa)
- Integral sidelights and fanlights
- Outward opening escape doors to EN 179 / 1125

3D Concept

- High degree of tightness due to innovative sealing concept
- Improved insulation of down to $U_T = 1.4$ W/(m²K)
- Large dimensions, up to 3.0 m height

Selection of door combinations



DESIGN VARIANTS

Welcome to individuality



Individuality and appearance are of high importance when considering the design of entrance doors, to enable symbiosis with the building. The FRAME⁺ door system offers creative options through the large range of profiles that can be perfectly combined with decorative door panels.

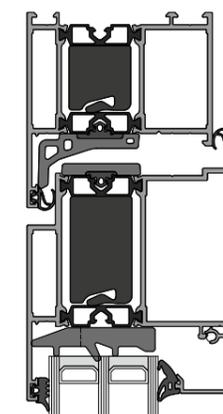
Aluminium front doors with an individual design

Three different design versions offer a wide range of individual design options. Nearly any design – from an expressive linear composition to soft flowing shapes – can be created with the FRAME⁺ door system.

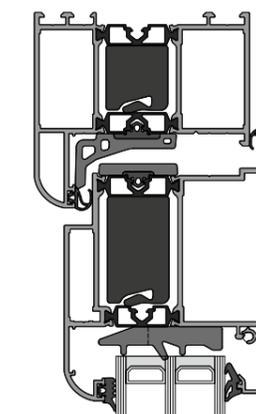
- Three different design types:
 - Basic Style** – lineal profile
 - Modern Style** – softer edges with curved contours
 - Classic Style** – distinguished lines with bevelled contours
- Optional grey gaskets to minimise optical contrasts
- All design variations are compatible in any combination



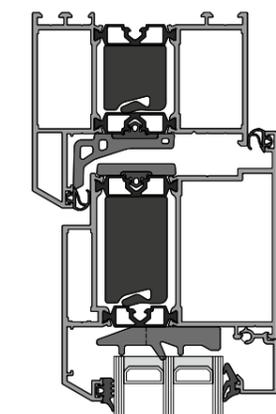
Design variant Basic Style



Basic Style
Clear lines



Modern Style
Rounded contours



Classic Style
Slanted contours

FLOOR CONNECTIONS/DOOR SILLS

Perfect insulation, maximum tightness



The threshold is one of the most vulnerable parts of an entrance door. In particular, the threshold requires high levels of weather tightness and thermal performance. RAICO has chosen a totally new path to address these problems, and has developed a completely new threshold concept, resulting in an even higher level of impermeability.

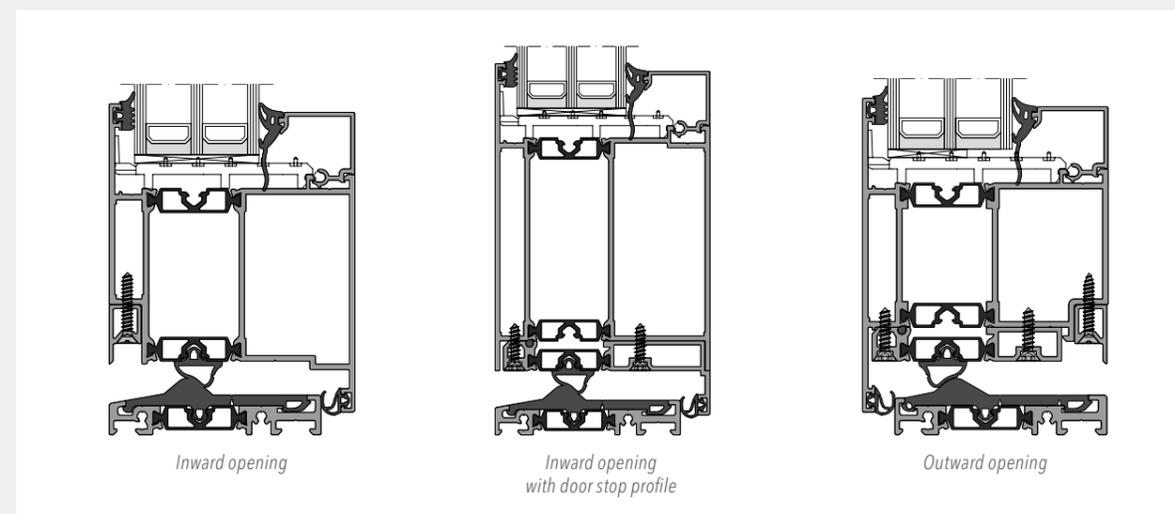
Innovative threshold concept

The door threshold needs to ensure perfect weather tightness. With its excellent insulation within the threshold area, reliable protection against driving rain and draught is guaranteed, reducing expensive heat losses. The low profile ensures comfortable barrier free access.

- Highest degree of weather tightness
- Excellent insulation to threshold areas, down to $U_f 1.6 \text{ W/(m}^2\text{K)}$
- Retro fit exchangeable threshold connector – easy assembly
- Thermally separate aluminium threshold with replaceable gasket
- Threshold base structure options



Basic Style with doorsill



HINGES

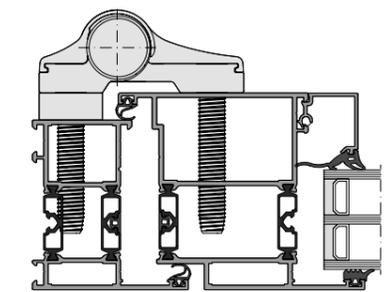
Here, the whole focus is on function and design



Door hinge requirements are highly complex – from both functional and aesthetic perspectives. The FRAME⁺ 75 DI door system fittings fulfil these requirements perfectly. For example, they offer a variety of setting options and can accommodate heavy sash weights as well as provide aesthetically pleasing stainless steel finishes.

Face fixed flag hinges

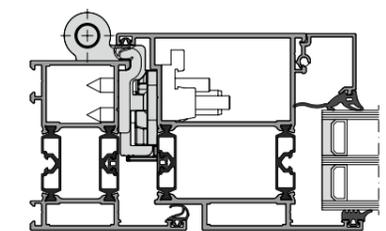
- Intricate shapes through optimised dimensions
- Inward and outward opening options
- Anchor screw or mounting plate fixings
- Large colour range in aluminium or stainless steel finish
- Two and three part hinge options
- Post installation three way adjustment without unHINGING the sash
- Maximum weight of 200 kg



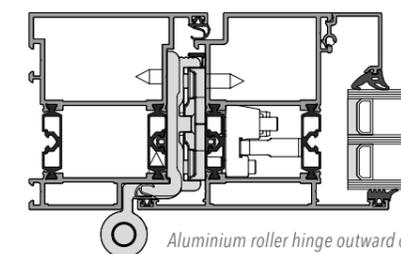
Screw-on hinge, three parts, with fixation, inward opening

Roller Hinge

- Inward or outward opening profile adapted hinges
- Direct screw fixing to outer frame without hinge plates
- Sash fixing utilises a multifunctional hinge body with integral adjustment
- Large colour range in aluminium or stainless steel finish
- Generous post installation multi-directional adjustment without unHINGING the sash (Rebate adjustment $\pm 2 \text{ mm}$, height adjustment $\pm 3 \text{ mm}$)
- Efficient production utilising pre-assembled hinge parts
- Material optimisation in the 7 mm rebate enables a very high load capacity up to 250 kg
- Integrated visual control of hinge adjustment on the sash hinge body
- Stainless steel option with high load bearing capacity up to 250 kg
- Air permeability test to class 3



Roller hinge with fixation inward opening



Aluminium roller hinge outward opening

DOOR LOCKS

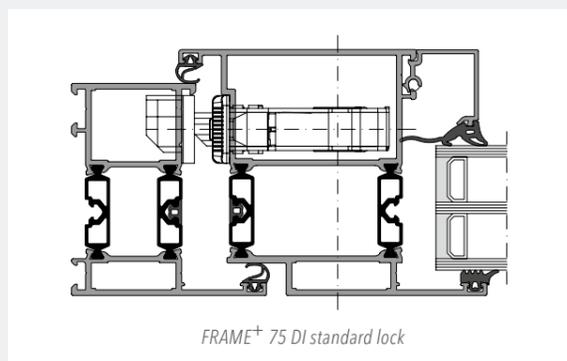
Your key to rational security



FRAME⁺ profiles have been designed to accommodate open market standard fittings. Smooth rebate construction enables fast and easy installation of a wide range of products (i.e. concealed door locks). Using a standard milling template for all lock types provides optimised fabrication as well as offering simple replacement or change of use options. A large range of accessories caters for individual customer requirements.

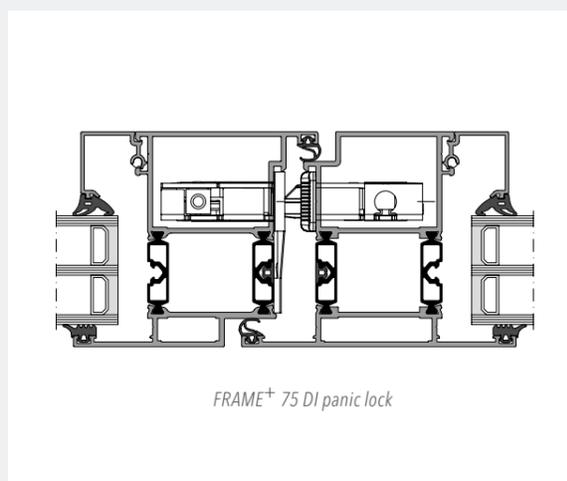
Standard lock for inward or outward opening doors

- Standardised profile processing for locks and strike plates
- Latch lock / dead locks
- Multi-point locking system with shoot or hook bolts
- Automatic locking with or without electrical release mechanism



Emergency exit / panic lock in accordance with EN 179 / 1125

- Emergency exit and panic doors
- Tested in accordance with EN 179 / 1125 for ability to release
- Latch lock / dead locks with shift function E
- Latch lock / dead locks with changeover function B
- Single and multi point locking
- Integral electrical release and monitor options
- Automatic locking to the slave leaf of a pair of doors with full or partial escape mechanism



BURGLAR RESISTANCE

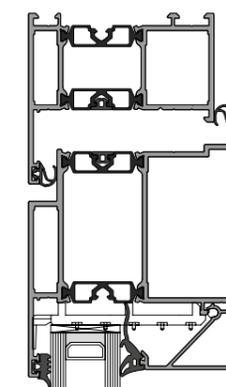
Better safe than sorry



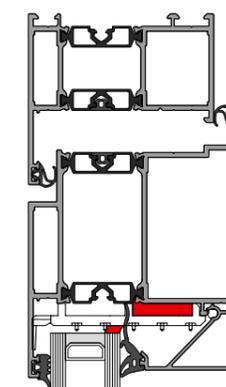
Feel secure by night and day. With innovative technology, the RAICO door system can be individually equipped with burglar resistant components to suit your security requirements. With analogue installation options in all design variations, you don't have to forgo any creative freedom.

Optimum safety based on the latest Know-How

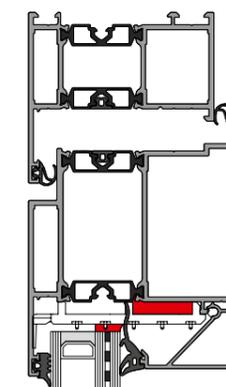
Just by adding a few supplementary system components the RAICO door system can be equipped with burglar resistant properties in resistance classes RC1, RC2 and RC3. Maximum creative freedom is enabled via analogue installation options with Modern Style and Classic Style design variants.



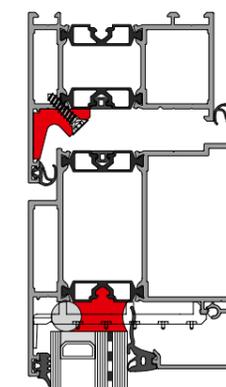
RC1N - Standard glass additional blocking



RC2N - Standard glass additional blocking + bonding



RC2 - Special glass additional blocking + bonding

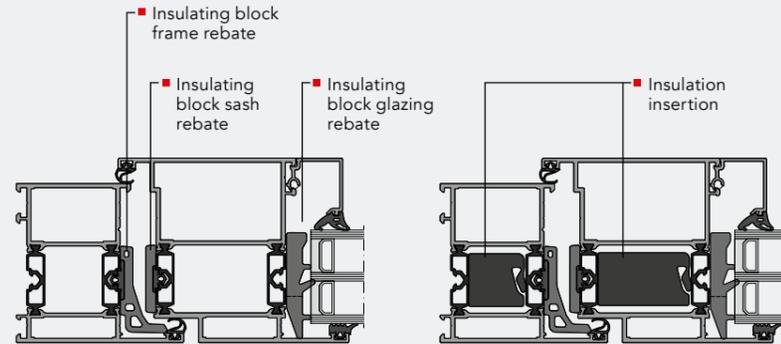


RC3 - Special glass, rebate reinforcement; additional blocking + circular bonding

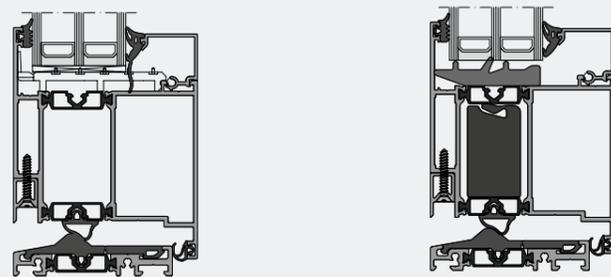
Thermal insulation for door system FRAME⁺ 75 DI

Individual thermal insulation

- Incremental adjustment of insulation values – to meet the project specific requirements
- Featuring U_D values down to 0.69 W/(m²K) for use in passive-houses



	Without insulation insertion down to U_f				With insulation insertion down to U_f			
	Standard W/(m ² K)		Leaf-enclosing W/(m ² K)		Standard W/(m ² K)		Leaf-enclosing W/(m ² K)	
	Inward	Outward	Inward	Outward	Inward	Outward	Inward	Outward
Without insulating block rebates	2.0	2.0	2.1	2.0	1.6	1.6	1.7	1.7
Insulating block glazing rebate	2.0	2.1	2.0	2.0	1.6	1.7	1.6	1.6
Insulating block frame rebate and sash rebate	1.9	1.9	1.8	1.8	1.4	1.5	1.4	1.4
Insulating block frame rebate and sash rebate and glazing rebate	1.8	1.8	1.7	1.8	1.3	1.3	1.3	1.4



	Without insulation insertion down to U_f				With insulation insertion down to U_f			
	Standard W/(m ² K)		Leaf-enclosing W/(m ² K)		Standard W/(m ² K)		Leaf-enclosing W/(m ² K)	
	Inward	Outward	Inward	Outward	Inward	Outward	Inward	Outward
Without insulating block rebates	2.1	2.3	2.2	2.3	1.7	1.9	1.8	2.0
Insulating block glazing rebate	2.0	2.2	2.1	2.2	1.6	1.7	1.7	1.8

Approvals

The FRAME⁺ door system has undergone rigorous testing according to the product standard for windows and exterior doors and achieved the following classifications. These values (regarding to EN 14351-1) are at the same time the base for simplified CE / UKCA marking of windows.

	Inward opening		Outward opening	
	Single sash	Double sash	Single sash	Double sash
Air permeability / EN 14351-1	class 4	class 4/3 *	class 4/3 *	class 4/3 *
Resistance to wind load EN 12210	class C4	class C3	class C4/C3 *	class C3
Water penetration / EN 12208	class 9A	class 7A	class 8A/5A *	class 7A/5A *
Operating forces / EN 12217	class 2	class 1	class 2	class 2
Burglar resistance / EN 1627	class RC3	class RC3	class RC3	class RC3
Sound insulation / EN ISO 717-1	$R_w(C;C_{tr})$ up to 44 dB	$R_w(C;C_{tr})$ up to 43 dB	$R_w(C;C_{tr})$ up to 44 dB	$R_w(C;C_{tr})$ up to 43 dB

* Value is referred to the execution with roller hinge

FRAME ⁺ 75 DI Aluminium door	
System values	
System depth	75 mm
Applications	
Punched opening window	X
Curtain wall insertion element	X
Leaf-enclosing infills	X
Application limits	
Min. width active leaf	310 mm ^{1,5}
Min. width inactive leaf	310 mm ²
Min. height active/inactive leaf	720 mm ³ / 2.010 mm ⁴
Max. width active/inactive leaf	1,400 mm
Max. height active/inactive leaf	2,950 mm
Max. sash weight	250 kg ⁵
Glass infill thickness sash	10 to 68 mm ⁶
Glass infill thickness frame	10 to 56 mm
Leaf-enclosing infill thickness	31 to 77 mm

- ¹ For a clear passage width \geq 800 mm with 90° opening min. width = 940 mm
- ² At EN 179 / EN 1125 as well as standard with closing sequence control min. width = 450 mm
- ³ For a clear passage width \geq 1,800 mm with interlocking catch lock min. height = 1,821 mm
- ⁴ At multipoint locking with pusher height 1,050 mm
- ⁵ Depending on the hinge equipment, see diagram 6000 in the planning manual "FRAME⁺ 75 DI fittings". More specific requirements (oversized dimensions) on request.
- ⁶ Depending on profile, see selection tables glazing beads in the planning manual "FRAME⁺ 75 DI fittings".



SLIFT

Lift-and-slide door

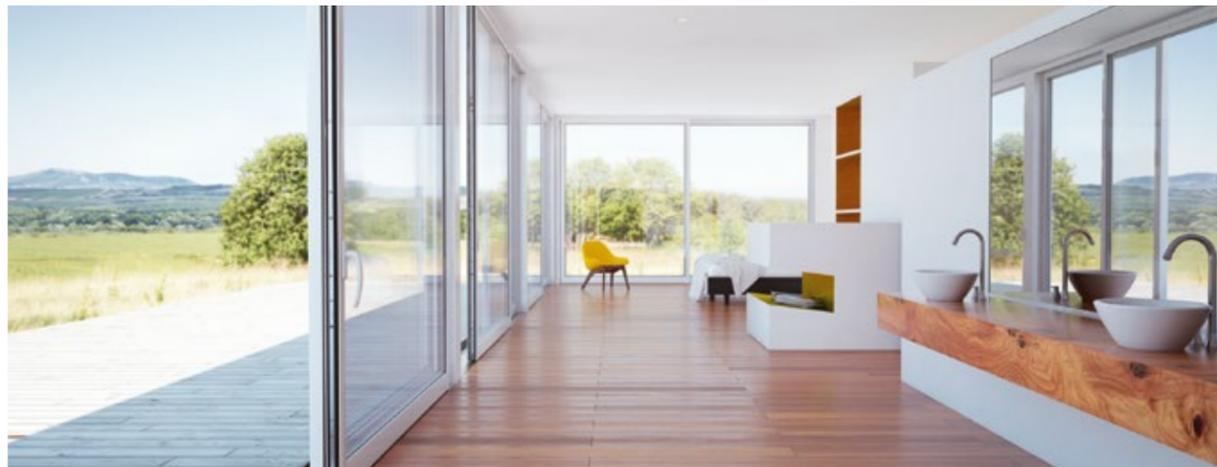
SLIFT opens the door to innovative architectural possibilities: Large glass panels allow maximum transparency and optimal lighting to transform creative visions into reality. Discover the brilliant fusion of elegance, variability and optimal user-friendliness with the new SLIFT 170.

The versatile lift-and-slide door system made from aluminium facilitates designs with extremely narrow profile face widths and fulfils the strictest structural requirements.

Anwendungsbeispiel: Wohnhaus

THE SLIFT SYSTEM

Variety & variability



Discover the brilliant fusion of elegance, variability and optimal user-friendliness with the new SLIFT 170. The versatile lift-and-slide door system made from aluminium facilitates designs with extremely narrow profile face widths and fulfils the strictest structural requirements.

Highlights

- Maximum frame dimensions: 9,100 x 3,300 mm
- Maximum sash dimensions: Width 4,500 mm | Height 3,200 mm | Maximum surface area 10 m²
- Maximum sash weight: 330 kg single roller, 440 kg tandem roller
- When triple glazing with $U_g = 0.5 \text{ W/(m}^2\text{K)}$ is used, $U_w \geq 0.85 \text{ W/(m}^2\text{K)}$ can be achieved depending on the size
- Heat and structurally-optimised
- Roll-formed stainless-steel profile rollers
- Optional thermal insulation of the profiles, incl. attachments: U_f value up to $1.9 \text{ W/(m}^2\text{K)}$ can be achieved (average of all profiles)
- Direct glazing in the frame profiles enables invisible integration into structural attachments. Glass thickness: 10 – 56 mm (GI); 22 – 53 mm (GO)
- No visible glazing beads: High-quality GO variant design of the sash

Customisable to suit your individual design ideas:

Configuration A/A+ Configuration C/C+ Configuration G+ Configuration K/K+

Legend

- Variant +: Variant with direct glazing in the fixed panel (e.g. configuration A+).
- Lift-and-slide sash
- Fixed glazed panel

FITTINGS & ACCESSORIES

Suitable for every requirement

Perfectly combined for individual requirements:

We use customised, high-quality fittings components provided by our partner Hautau for our SLIFT 170 system. In addition to the standard fitting, the lift-and-slide sashes are also available with the following additional components:

- Dual-sided operation:** From inside and outside
- Security door lock:** With profile cylinder or round cylinder (Swiss)
- Recessed handle:** For a pleasant feel when opening the door
- Comfort close:** Smooth, secure closing of the door sash
- Comfort stop:** Timely and safely dampens the opening push
- Safety stop:** Finger-trap protection for maximum safety
- Torsional dampers:** Facilitate gentle closing of even the heaviest sashes
- Softlift:** Enables heavy sashes to open easily and effortlessly
- Available with lock/condition monitoring with switching contacts if required



For that extra level of comfort:

We are also happy to facilitate easy opening and closing of larger elements upon request. **Good to know:** Other fittings can also be used with the SLIFT 170, providing you with maximum design freedom for every project.

Technical data

CE / UKCA performance characteristics*

Air permeability	class 4
Wind resistance	class B4/C4
Water penetration	class E 750
Long-term functionality	class 2
Operating forces	class 1
Sound insulation	R_w up to 44 dB
Thermal insulation	U_w Value $\geq 0.85 \text{ W/(m}^2\text{K)}$

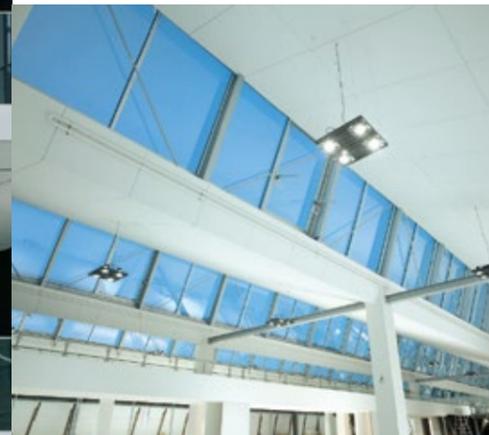
* The maximum values of the test samples are provided as values, these may vary depending on the configuration and size.



WING

Window system

The WING window system provides you a comprehensive range of window types which allows you to make the best choice for every individual application. All WING window variants meet the aesthetic requirements of modern architecture and thus become a creative element for your façade design.



Th. Willy car centre - Bern, CH



Ozeaneum - Stralsund, DE



SchattDecor AG - Thansau, DE



Swinhay - Gloucestershire, UK



Office building - Bad Sankt Leonhard, AT



University library - Freiburg, DE

WING 50 A

Top-hung / Side-hung / Bottom-hung window



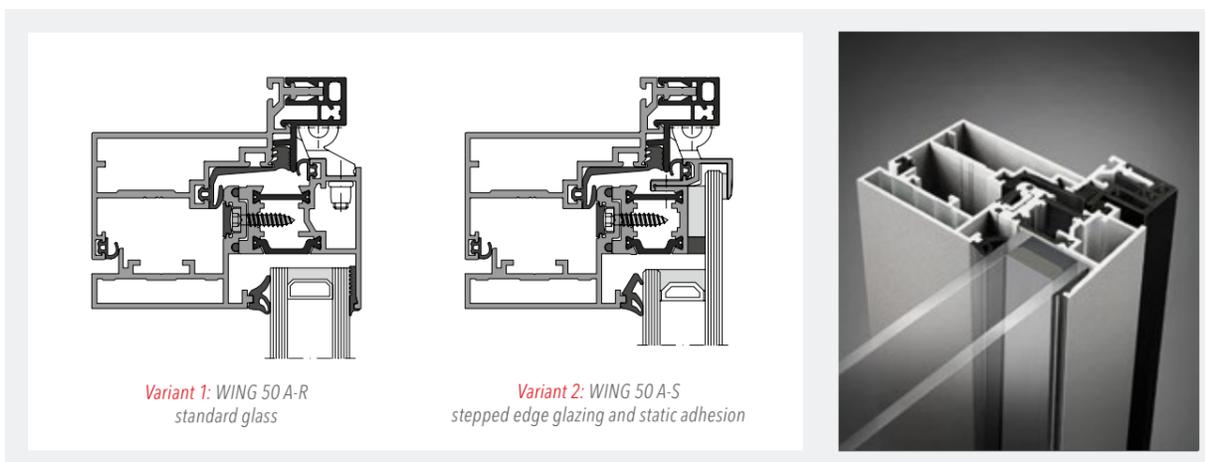
Thanks to its narrow sight line widths and patented concealed fittings, the WING 50 A window meets the requirements of modern architecture for natural ventilation as well as a smoke exhaust ventilator.

Advantages

- Outward opening window in its most attractive design with stepped edge glazing option
- Economic alternative with standard glass and slim profile design
- Maximum airflow effect due to an opening angle of 60°
- Ideal for very large sash formats
- Concealed hinges, mountable on any side
- No visible screws or glazing beads
- Advantages in production and logistics due to SG bonding of WING 50 A-S with split sash frame
- Various motor drives
- Available as system for self-fabrication or as pre-assembled units
- Available for natural ventilation as well as a smoke and heat exhaust ventilator in large sash sizes up to 5.2 m²

Variants: WING 50 A

- **Variant 1:** WING 50 A-R with standard sealed units and low profile sash frame without glazing beads – the cost saving alternative
- **Variant 2:** WING 50 A-S with stepped edge glazing



WING 50 SK

Top-hung projecting window



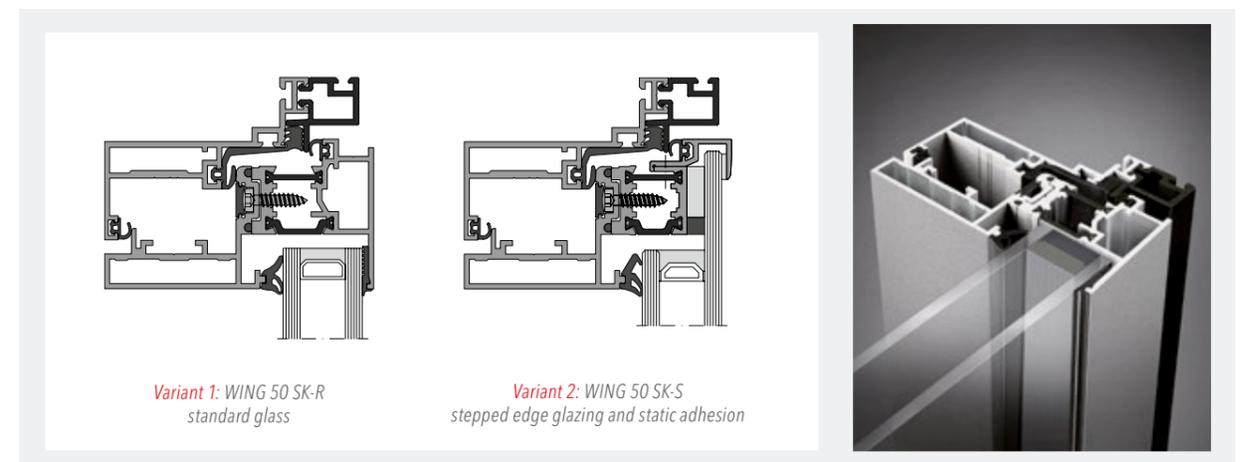
The innovative glazing technology of WING 50 SK features the option of a glass surface on the outside using structurally bonded stepped edge glazing, or a low profile frame with standard sealed units.

Advantages

- Outward opening projecting window with stepped edge glazing
- Economic alternative with standard glass and slim profile design
- For large sashes up to 150 kg
- No visible screws or glazing beads
- Very slim design: inside 52 mm, outside 50 mm
- Various motor drives and handles available
- Available as system for self-fabrication or as pre-assembled units
- Advantages in production and logistics due to SG bonding of WING 50 SK-S with split sash frame
- Available for natural ventilation as well as a smoke and heat exhaust ventilator in large sash sizes up to 3.5 m²

Variants: WING 50 SK

- **Variant 1:** WING 50 SK-R with standard sealed units and low profile sash frame without glazing beads or visible screws
- **Variant 2:** WING 50 SK-S with stepped edge glazing



WING 105 DI

Rooflight window



Höfe am Brühl – Leipzig, DE

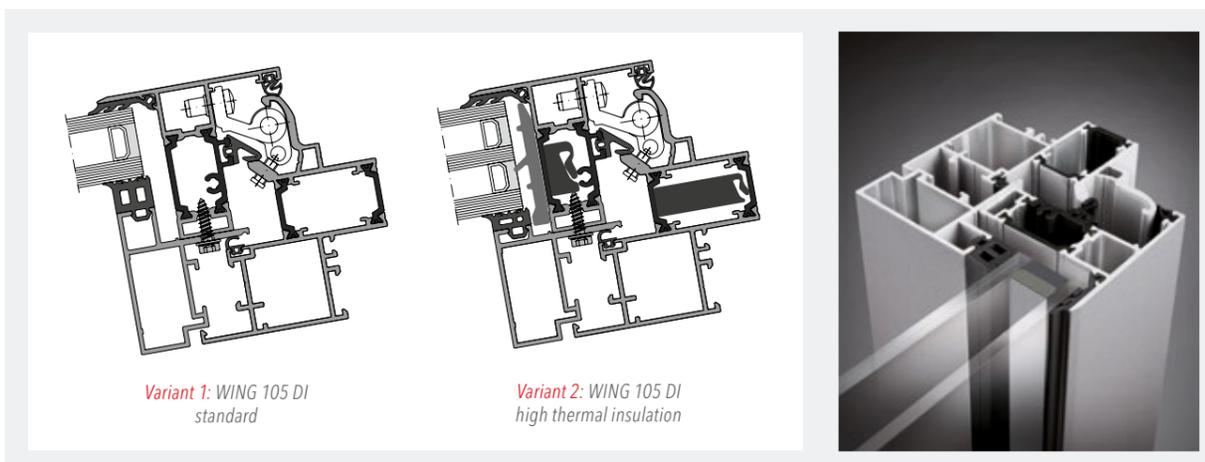
With its low profile height, its large sash dimensions and its specific sealing technique, the WING 105 DI skylight is the perfect solution for almost any application with an inclination down to 2° from horizontal.

Advantages

- Two-frame sash design without any visible screws or glazing beads on the outside
- Reliable drainage due to a special profile design and triple sealing system for safe water tightness
- Completely concealed hinges, mountable on any side
- Infill thickness 9 to 48 mm
- Maximum airflow effect due to an opening angle of 65° (90° available)
- Available for natural ventilation as well as a smoke and heat exhaust ventilator in large sash sizes up to 4.0 m²
- Designed to complement the THERM⁺ glass roof systems, even down to 2° inclination
- Only 37 mm of glass offset between the glass roof and the rooflight window
- Available as system for self-fabrication or as pre-assembled units

Variants: WING 105 DI

- **Variant 1:** Standard with double glazing
- **Variant 2:** High thermal insulation with triple glazing and insulation insertion



Variant 1: WING 105 DI standard

Variant 2: WING 105 DI high thermal insulation

Quality in detail

	WING 50 A	WING 50 SK	WING 105 DI*
Technical Data			
Max. width [mm]	2,700	2,700	2,500
Max. height [mm]	2,500	2,700	2,500
Max. sash weight [kg]	150 kg (60 kg side hung)	180 kg	165 kg (110 kg side hung)
Opening types	60°	20°/30°/45°/50°	65° (90°)
Infill thickness [mm]	24 to 46 mm	24 to 46 mm	9 to 48 mm
Approvals based on product standard for window EN 14351-1			
Wind resistance	class C4	class C4	class C4
Air permeability	class 4	class 4	class 4
Water penetration	E 1,800	E 1,800	E 1,500
Airborne sound insulation	R _w = 43 dB	R _w = 43 dB	–
Burglar resistance	RC2	RC2	–
Continuous-operational testing	class 2	class 2	–
Thermal insulation	–	–	U _t = 2.7 W/(m ² K) up to 3.2 W/(m ² K)

* tested with 2° inclination

The NRWG-System

- Efficient natural and smoke ventilation due to wide opening angles of 60° in curtain walls and up to 90° in glass roofs
- WING 50 A and WING 50 SK available in framed and stepped edge structurally bonded options
- Available for self-fabrication or as pre-assembled units
- Top hung / projecting top hung / side hung / bottom hung outward opening options within curtain walls and glass roofs
- Large window formats possible, up to 3.5 m² in the curtain wall and 4 m² in the glass roof
- Range of actuator and motor options for high performance requirements

NRWG — Technical Data according to EN 12101-2 smoke and heat control systems

Opening variant	WING 50 A Single flap		WING 50 SK Single flap	WING 105 DI Single flap	WING 105 DI Two-fold single flap		
	tilt/top-hung	turn	top-hung projecting	tilt	tilt/top-hung		
Installation situation	–		–	–	roof/barrel roof		saddleback roof
Position	90°	90°	90°	25 to 60°	2 to 15°	16 to 30°	2 to 30°
Max. width [mm]	2,700	1,400	2,700	2,500	2,500 *	2,500 *	2,500 *
Max. height [mm]	2,500	2,400	2,700	2,500	5,000 *	2,500 *	5,000 *
Max. sash surface in m ²	3.5	1.89	3.5	4 (inst. position 25-30°) 3.75 (inst. position 30-60°)	4 **	4 **	4 **
Max. A _v in m ²	–	–	–	–	7.35 *	5.76 *	7.35 *
Max. sash weight [kg]	150	60	136	165	165 **	165 **	165 **
Max. opening angle	60°	60°	50°	65° (90°)	65° (90°)	65° (90°)	65° (90°)

* Specifications refer to the complete element (two-fold single flap)

** Specifications refer to the wing of the single flap

PHOTO CREDITS

and project information



Below you will find the reference projects presented in this brochure with detailed information. Further references can be found on raico.de/en/projects/

PAGE 1

Waldkliniken Eisenberg, DE

BUILDER:: Waldkliniken Eisenberg GmbH
ARCHITECT:: Matteo Thun & Partners, HDR Germany
FABRICATOR: Tischlerei Barth
BUILD DATE: 2020
RAICO SYSTEM: THERM⁺ 50 + 56 H-I
PHOTOGRAPHY: Gionata Xerra Studio

PAGE 14

University library – Freiburg, DE

BUILDER: State Baden-Württemberg
ARCHITECT: I.F.F Dreising, Messing
FABRICATOR: Zimmerei Sieveke, Lohne
BUILD DATE: 2016-2019

ARCHITECT: Degelo Architekten
FABRICATOR: Früh Umkirch
BUILD DATE: 2013 - 2015
RAICO SYSTEM: THERM⁺ S-I, WING 105 DI
PHOTOGRAPHY: Daniel Wieser

PAGE 15

Alnatura Arbeitswelt – Darmstadt, DE

BUILDER: Alnatura
ARCHITECT: haascookzemmrich STUDIO2050, Stuttgart
PLANNING: I.F.F Dreising, Messing
FABRICATOR: Zimmerei Sieveke, Lohne
BUILD DATE: 2016-2019

RAICO SYSTEMS: THERM⁺ H-I
 Facade and Glass roofs, FRAME⁺ 120 RI
PHOTOGRAPHY: Lars Gruber

Exhibition hall 3A – Nuremberg, DE

BUILDER: Messe Nuremberg
ARCHITECT: Zaha Hadid Büro Hamburg
FABRICATOR: Roschmann Konstruktionen aus Stahl und Glas GmbH
BUILD DATE: 2012 - 2013
RAICO SYSTEM: THERM⁺ S-I
PHOTOGRAPHY: Fair Nuremberg / Heiko Stahl

Teamtechnik – Freiberg am Neckar, DE

BUILDER: Teamtechnik
ARCHITECT: I.F.F Dreising, Messing
FABRICATOR: Zimmerei Sieveke, Lohne
BUILD DATE: 2016-2019

BUILDER: Teamtechnik Maschinen und Anlagen GmbH
ARCHITECT: KMB PLAN I WERK I STADT I GmbH
FABRICATOR: Freyler Metallbau GmbH
BUILD DATE: 2016
RAICO SYSTEM: THERM⁺ A-V
PHOTOGRAPHY: Teamtechnik

Flexhouse – Meilen, CH

BUILDER: Evolution Design
ARCHITECT: Stefan Camenzind
FABRICATOR: Hammer Metallbau
BUILD DATE: 2016
RAICO SYSTEM: THERM⁺ S-I
PHOTOGRAPHY: © Peter Würmli

NEST – Dübendorf, CH

BUILDER: Empa Dübendorf
ARCHITECT: Fabio Gramazio & Matthias Kohler Architekten ETH SIA BSA
FABRICATOR: Surber Metallbau AG, Krapf, Ernst Schweizer AG
BUILD DATE: 2014
RAICO SYSTEM: THERM⁺ S-I, H-I
PHOTOGRAPHY: Zooey Braun/ Stuttgart

La Seine Musicale – Paris, FR

BUILDER: Bouygues Construction
ARCHITECT: Shigeru Ban Architects Europe + Jean de Gastines Architects

FABRICATOR: MTECH
BUILD DATE: 2013 - 2016
RAICO SYSTEM: THERM⁺ A-I
PHOTOGRAPHY: Laurent Blossier

PAGE 16

Hotel Störes – St. Kassian, IT

FABRICATOR: METEK
BUILD DATE: 2017
RAICO SYSTEM: THERM⁺ A-V
PHOTOGRAPHY: © Florian Andergassen

PAGE 18

Bürgenstock Hotel – Obbürgen, CH

BUILDER: Pacegrade Ltd
BUILD DATE: 2016

BUILDER: The Bürgenstock Selection, Zug Kawara Hospitality Switzerland AG
ARCHITECT: Rüssli Architekten AG
FABRICATOR: Ruch AG
BUILD DATE: 2017
RAICO SYSTEM: THERM⁺ S-I
PHOTOGRAPHY: AURA Fotografie

PAGE 20

Civic centre – Böheimkirchen, AT

BUILDER: Community Böheimkirchen
ARCHITECT: NMPB Architekten
FABRICATOR: Ing. A. Sauritschnig GmbH
BUILD DATE: 2017
RAICO SYSTEM: THERM⁺ FS-I
PHOTOGRAPHY: Hertha Hurnaus

PAGE 22

GlaxoSmithKline Centre for Sustainable Chemistry – Nottingham, UK

BUILDER: Morgan Sindall
ARCHITECT: Fairhursts Design Group
FABRICATOR: Pacegrade Ltd
BUILD DATE: 2016

RAICO SYSTEM: THERM⁺ H-I
PHOTOGRAPHY: Martine Hamilton-Knight

PAGE 24

Shopping centre Fischpark – Vienna, AT

BUILDER: Fischpark Errichtungsgesellschaft m.b.H.
ARCHITECT: Fairhursts Design Group
FABRICATOR: Architektur Consult ZT GmbH
BUILD DATE: 2012 - 2015
RAICO SYSTEM: THERM⁺ S-I, H-I, FRAME⁺ 75 WB, WING 105DI, 50 SK
PHOTOGRAPHY: RAICO

PAGE 26

Private house – Schwabmünchen, DE

ARCHITECT: Oberbeck & Weiher
BUILD DATE: 2011
RAICO SYSTEM: THERM⁺ H-I
PHOTOGRAPHY: Oberbeck & Weiher

PAGE 27

Badewelt – Sinsheim, DE

BUILDER: Unternehmensegruppe Wund
ARCHITECT: Architekturbüro Josef Wund
FABRICATOR: Stahlbau Pichler, Bozen
BUILD DATE: 2011-2012
RAICO SYSTEM: THERM⁺ S-I, H-I
PHOTOGRAPHY: Badewelt Sinsheim

BUILDER: Unternehmensegruppe Wund
ARCHITECT: Architekturbüro Josef Wund
FABRICATOR: Stahlbau Pichler, Bozen
BUILD DATE: 2011-2012
RAICO SYSTEM: THERM⁺ S-I, H-I
PHOTOGRAPHY: Badewelt Sinsheim

PAGE 28

R&M – Wetzikon, CH

BUILDER: Reichle & De Massari
ARCHITECT: Designfunktion AG
FABRICATOR: Scheidegger Metallbau AG
BUILD DATE: 2009
RAICO SYSTEM: THERM⁺ S-I
PHOTOGRAPHY: RAICO Swiss

PAGE 30

© Depositphotos.com/stokkete

PAGE 32

Test tower Thyssenkrupp – Rottweil, DE

BUILDER: Thyssenkrupp
ARCHITECT: Helmut Jahn & Werner Sobek
FABRICATOR: Strabag Metallica

BUILD DATE: 2017
RAICO SYSTEM: THERM⁺ S-I, FRAME⁺ 75 WI, WING 105 DI
PHOTOGRAPHY: Qube's Pictures

PAGE 33

B+B Hotel – Ulm, DE

BUILDER: Matthäus Schmid, Baltringen
ARCHITECT: Mühlich, Fink & Partner
FABRICATOR: Dodel, Ulm
BUILD DATE: 2013
RAICO SYSTEM: FRAME⁺ 75 WI
PHOTOGRAPHY: Matthäus Schmid GmbH & Co. KG

Pariser Höfe – Stuttgart, DE

BUILDER: Bayerische Versorgungskammer
ARCHITECT: KSP Engel und Zimmermann GmbH
FABRICATOR: Wölz Siegfried Stahl- und Metallbau GmbH & Co. KG
BUILD DATE: 2010-2012
RAICO SYSTEM: FRAME⁺ 75 WB
PHOTOGRAPHY: Reiß & Co. Real Estate Munich GmbH

French Consulate – Stuttgart, DE

BUILDER: Bruchteilstgemeinschaft: Stiftung Institut Français, Stuttgart; Landeshauptstadt Stuttgart, Amt für

lohn-ag.de AG – Baden-Baden, DE
BUILDER: lohn-ag.de Verwaltungs-GmbH
ARCHITECT: Kühnl + Schmidt; Dipl.-Ing. Freie Architekten BDA Karlsruhe
FABRICATOR: Freyler Metallbau GmbH
BUILD DATE: 2013-2014
RAICO SYSTEM: THERM⁺ S-I, A-V, FRAME⁺ 75 WI, DI
PHOTOGRAPHY: Heinz Heister

MTZ service centre – Örlenbach, DE

BUILDER: MTZ Metalltechnik Zitzmann GmbH
ARCHITECT: Rudloff, Wild & Partner Architekten; Diplom-Ingenieure GbR
FABRICATOR: MTZ Metalltechnik Zitzmann GmbH
BUILD DATE: 2013-2014
RAICO SYSTEM: THERM⁺ A-V, FRAME⁺ 75 WB, WING 105 DI
PHOTOGRAPHY: MTZ service centre

Police Department – Mönchengladbach, DE

BUILDER: Bau- u. Liegenschaftsbetrieb NRW
ARCHITECT: fps - Funke Popal Storm
FABRICATOR: Hunsrücker Glasveredelung Wagener
BUILD DATE: 2017
RAICO SYSTEM: FRAME⁺ 75/90 WI

Liegenschaften und Wohnen
ARCHITECT: Kyra Bullert and Arthur Hagen, Stuttgart
FABRICATOR: Trumpf Metallbau
BUILD DATE: 2013
RAICO SYSTEM: FRAME⁺ 75 WB
PHOTOGRAPHY: RAICO

BIZZ – Offenburger, DE

ARCHITECT: Architekturbüro Müller + Huber
FABRICATOR: Freyler Metallbau GmbH
BUILD DATE: 2013
RAICO SYSTEM: THERM⁺ A-V, FRAME⁺ 75 WI
PHOTOGRAPHY: Echomar

PAGE 34

Police Department – Mönchengladbach, DE

BUILDER: Bau- u. Liegenschaftsbetrieb NRW
ARCHITECT: fps - Funke Popal Storm
FABRICATOR: Hunsrücker Glasveredelung Wagener
BUILD DATE: 2017
RAICO SYSTEM: FRAME⁺ 75/90 WI

PHOTOGRAPHY:
BLB Nordrhein-
Westfalen/Arnold
Glas

PAGE 35

**Office building –
Karlsruhe, DE**

PLANNING:
Freyler Metallbau
GmbH

FABRICATOR:
Freyler Metallbau
GmbH

BUILD DATE
2012

RAICO SYSTEM:
THERM⁺ A-V,
FRAME⁺ 75 WI

PHOTOGRAPHY:
Johannes
Hopermann

PAGE 36

**Children's
hospital/
Mother-child-
centre Swabia –
Augsburg, DE**

BUILDER:
Hospital Augsburg

ARCHITECT:
Ludes Architekten-
Ingenieure GmbH

FABRICATOR:
Hackenbuchner
Fassadenbau
GmbH & Co. KG

BUILD DATE
2014

RAICO SYSTEM:
THERM⁺ S-I, H-V
FRAME⁺ 75 WI, 75
WB, 75 DI

PHOTOGRAPHY:
Mark Wohlrab

PAGE 37

**Material Arts –
Frankfurt, DE**

BUILDER:
Material Arts
GmbH, Herr Ardi
Goldman

ARCHITECT:
hgp. Architekten

BUILD DATE
2012

RAICO SYSTEM:
THERM⁺ S-I, A-I
FRAME⁺ 75 WB,
FF

PHOTOGRAPHY:
hgp. Architekten

PAGE 38

**Siemens
Headquarter –
Forchheim, DE**

BUILDER:
Siemens Real Esta-
te GmbH & Co. KG

ARCHITECT:
Henn Architekten

BUILD DATE
2015 - 2016

RAICO SYSTEM:
THERM⁺ A-I,
FRAME⁺ 75 WB,
WA, WING 50SK,
105 DI

PHOTOGRAPHY:
RAICO

PAGE 39

**IsarBelle –
Munich, DE**

BUILDER:
PANDION IsarBel-
le GmbH & Co. KG

ARCHITECT:
Hierl Architekten,
Munich

FABRICATOR:
Alukonstrukt Kft.

BUILD DATE
2011-2014

RAICO SYSTEM:
THERM⁺ A-I
FRAME⁺ 75 WI

PHOTOGRAPHY:
RAICO

PAGE 41

**Secondary school
– Fully-Saxon, CH**

ARCHITECT:
Architektenbüro
Lemanarc,
Lausanne

FAÇADE

PLANNER:
Préface Sàrl,
Le Landeron

FABRICATOR:
Progin Sa Metal,
Bulle

BUILD DATE
2015

RAICO SYSTEM:
FRAME⁺ 90 WI,
WB

PHOTOGRAPHY:
Préface Sàrl,
Le Landeron

PAGE 42

**Hangar 108 -
Siège Rouen
Métropole –
Rouen, FR**

BUILDER:
Métropole Rouen
Normandie

ARCHITECT:
Jacques Ferrier
Architecture

FABRICATOR:
CTI BAT

BUILD DATE
2017

RAICO SYSTEM:
THERM⁺ H-I,
WING 105 DI

PHOTOGRAPHY:
HP Gasser AG

BUILDER:
finke - Das
Erlebnis-Einrichten
GmbH & Co. KG

ARCHITECT:
Chapman Taylor
– Architektur und
Städtebau Pla-
nungsgesellschaft
GmbH / GKKK
Gössler Kinz Ker-
ber Kreienbaum
Architekten BDA

FABRICATOR:
Rupert App

BUILD DATE
2016 – 2018

RAICO SYSTEM:
FRAME⁺ 75 DI,WA,
THERM⁺ S-I, A-I

PHOTOGRAPHY:
Carola Kohler

PAGE 43

**West Buckland
School –
Devon, UK**

BUILDER:
Pearce Construc-
tion Ltd

ARCHITECT:
MRJ Rundell &
Associates

FABRICATOR:
Ridlands Ltd

BUILD DATE
2011

RAICO SYSTEM:
THERM⁺ H-I

PHOTOGRAPHY:
MRJ Rundell

PAGE 44

**Alnatura
Arbeitswelt –
Darmstadt, DE**

BUILD DATE
2011-2012

RAICO SYSTEM:
THERM⁺ A-I
FRAME⁺ 75 WI, DI

PHOTOGRAPHY:
Johannes
Hopermann

PAGE 45

**Hotel Silberhorn
– Lauterbrunnen,
CH**

ARCHITECT:
Schild Architekten
AG

FABRICATOR:
HP Gasser

BUILD DATE
2015

RAICO SYSTEM:
THERM⁺ H-I,
WING 105 DI

PHOTOGRAPHY:
HP Gasser AG

PAGE 50

**Kubus
Döppersberg –
Wuppertal, DE**

BUILDER:
NEUWUP 1 S.a.r.L.

ARCHITECT:
Chapman Taylor
– Architektur und
Städtebau Pla-
nungsgesellschaft
GmbH / GKKK
Gössler Kinz Ker-
ber Kreienbaum
Architekten BDA

FABRICATOR:
Rupert App

BUILD DATE
2016 – 2018

RAICO SYSTEM:
FRAME⁺ 75 DI,WA,
THERM⁺ S-I, A-I

PHOTOGRAPHY:
Carola Kohler

PAGE 51

**Primary school –
Neubiberg, DE**

BUILDER:
Community
Neubiberg

ARCHITECT:
Krug & Gross-
mann Architekten,
Munich

Fabricator:
Pazdera GmbH,
Metallbautechnik

BUILD DATE
2007-2008

RAICO SYSTEM:
THERM⁺ H-I

PHOTOGRAPHY:
Peter Franck

**Furniture Store
Finke – Hamm-
Rhyern, DE**

BUILDER:
finke - Das
Erlebnis-Einrichten
GmbH & Co. KG

ARCHITECT:
Blocher Blocher
Partners

FABRICATOR:
Freyler
Metallbau GmbH

BUILD DATE
2015

RAICO SYSTEM:
THERM⁺ S-I, A-I,
A-V, FRAME⁺ 75 DI

PHOTOGRAPHY:
BREMER AG

**medXpert –
Eschbach, DE**

BUILDER:
Claudia Reisberg,
Eschbach

ARCHITECT:
a plus Architekten,
Kirchzarten

FABRICATOR:
Freyler Metallbau
GmbH, Kenzingen

BUILD DATE
2011-2012

RAICO SYSTEM:
THERM⁺ A-I
FRAME⁺ 75 WI, DI

PHOTOGRAPHY:
Johannes
Hopermann

**Umweltarena –
Spreitenbach, CH**

BUILDER:
W. Schmid AG,
Glattbrugg

ARCHITECT:
rené schmid archi-
tekten ag, Zürich

BUILD DATE
2012

RAICO SYSTEM:
THERM⁺ S-I
FRAME⁺ 75 WI

PHOTOGRAPHY:
Bruno Helbling

**PARC / Peninsula
Aquatic Recreati-
on Centre –
Frankston, AUS**

BUILDER:
Frankston City
Council

ARCHITECT:
Williams Ross
Architects

Fassadenplaner:
LAROS Techno-
logies Pty Ltd.,
Canberra

FABRICATOR:
Mercury Industry
Pty Ltd. (über
Laros)

BUILD DATE
2012-2014

RAICO SYSTEM:
THERM⁺ A-I
FRAME⁺ 75 DI

PHOTOGRAPHY:
RAICO

Private house

© adeco

PAGE 52

**lohn-ag.de AG –
Baden-Baden, DE**

BUILD DATE
see p. 33

PAGE 54

© Fotolia

PAGE 55

© adeco

PAGE 56

© Assa Abloy

PAGE 57

© Fotolia

PAGE 60

**Flexhouse –
Meilen, CH**

© Peter Würmli

PAGE 62

**Application
example**

© Hautau GmbH

PAGE 63

**Example images
Photos 1 - 2**

© FSB GmbH +
Co KG

**Example images
Photos 3 - 6**

© Hautau GmbH

PAGE 64

**Landessparkasse
– Oldenburg, DE**

BUILDER:
Landessparkasse
zu Oldenburg

ARCHITECT:
RKW Architek-
turbüro Rhode,
Kellermann,
Wawrowsky

FABRICATOR:
Roschmann

**Konstruktionen
aus Stahl und Glas
GmbH,
Oltmanns Metall-
bau GmbH**

BUILD DATE:
2007-2009

RAICO SYSTEM:
THERM⁺ S-I, A-I
WING 105 DI,
WING 50 A-S

PHOTOGRAPHY:
Roschmann
Konstruktionen
aus Stahl und Glas
GmbH

**Th. Willy car
centre –
Bern, CH**

BUILDER:
Th. Willy AG Auto-
Zentrum, Schlieren

FABRICATOR:
Scheidegger
Metallbau AG

BUILD DATE:
2011

RAICO SYSTEM:
THERM⁺ A-I
WING 105 DI

PHOTOGRAPHY:
RAICO

**Ozeaneum –
Stralsund, DE**

BUILDER:
Stiftung Deutsches
Meeresmuseum,
Stralsund

ARCHITECT:
Behnisch Architek-
ten, Stuttgart

PLANNING:
EURO-Fassaden-
technik GmbH,
Bad Hersfeld

FABRICATOR:
Trube & Kings
Fassadentechnik
GmbH

BUILD DATE:
2005-2008

RAICO SYSTEM:
THERM⁺ S-I
WING 105 DI

PHOTOGRAPHY:
Johannes-Maria
Schlorke

**Office building –
Bad Sankt
Leonhard, AT**

BUILDER:
Geislinger GmbH

ARCHITECT:
Atelier Volkmar
Burgstaller ZT
Partners

FABRICATOR:
Lindner Fassaden
GmbH

BUILD DATE:
2017

PHOTOGRAPHY:
face of buildings
planning stimako-
vits GmbH

**SchattDecor AG –
Thansau, DE**

BUILDER:
Schattdecor AG,
Thansau

ARCHITECT:
Bernd Oberstei-
ner, Munich

FABRICATOR:
Thierron Fassaden-
systeme GmbH,
2007

RAICO SYSTEM:
THERM⁺ S-I
WING 105 DI,
50 SK-S

PHOTOGRAPHY:
RAICO

**Swinhay –
Gloucestershire,
UK**

BUILDER:
Privat

ARCHITECT:
Roberts Limbrick
Architects

FABRICATOR:
MERO-Schmidlin
(UK) plc

BUILD DATE:
2006

RAICO SYSTEM:
THERM⁺ S-I

PHOTOGRAPHY:
Roberts Limbrick
Architects

**Centre Point –
London, UK**

BUILDER:
Almacantar

ARCHITECT:
Conrad and
Partners

FABRICATOR:
Lindner Fassaden
GmbH

BUILD DATE:
2017

PHOTOGRAPHY:
see p. 14

**Unibibliothek –
Freiburg, DE**

BUILDER:
mfi management
für immobilien AG

ARCHITECT:
Grüntuch Ernst
Architekten, Berlin

FABRICATOR:
Roschmann Stahl
und Glas GmbH

BUILD DATE:
2011-2012

RAICO SYSTEM:
WING 105 DI

PHOTOGRAPHY:
D+H
Mechatronic AG

FABRICATOR:
SFL Technologies
GmbH, Stallhofen

BUILD DATE:
2016

RAICO SYSTEM:
THERM⁺ S-I, H-I

PHOTOGRAPHY:
RAICO

**Unibibliothek –
Freiburg, DE**

BUILDER:
mfi management
für immobilien AG

ARCHITECT:
Grüntuch Ernst
Architekten, Berlin

FABRICATOR:
Roschmann Stahl
und Glas GmbH

BUILD DATE:
2011-2012

RAICO SYSTEM:
WING 105 DI

PHOTOGRAPHY:
D+H
Mechatronic AG

**Dorotheen-
quartier –
Stuttgart, DE**

BUILDER:
DOQU

ARCHITECT:
Behnisch
Architectes

PLANNING:
PBI Planungsbüro,
Wertingen

FABRICATOR:
Roschmann GmbH

RAICO SYSTEM:
THERM⁺ S-I,
WING 50 A

WHO IS ACTUALLY BEHIND OUR FAÇADE?

Architects and planners appreciate the versatility and reliability of the RAICO solutions. Innovative facade, window and door systems that turn functional building envelopes into sophisticated architecture.

Like these systems, the RAICO Team is also made up of many perfectly coordinated components. First and foremost – motivated, dedicated staff. Add to this extraordinary team spirit and cohesion, plus knowledge and experience.

The different characters and talents give RAICO its unique profile – and enable our solutions to give an individual face to buildings all over the world.

*Find out more about
working at RAICO at the
Career Portal on our
homepage!*

RAICO Bautechnik GmbH
info@raico.com
Pfaffenhausen, DE

RAICO Austria
info.at@raico.com

RAICO Swiss GmbH
info.ch@raico.com
Aarau, CH

RAICO France S.à.r.l.
info.fr@raico.com
Entzheim, FR

RAICO UK
info.uk@raico.com
Gosport, UK

RAICO East OOO
info.ru@raico.com
Moskau, RU

RAICO Pacific Ltd.
info.au@raico.com
Canberra, AU

**RAICO Building
Technology Co. Ltd.**
info.cn@raico.com
Kunshan, CN