LG Hausys

OUT NOW!
FACADES MADE OF HI-MACS®.

Architects: Dipl.-Ing. Volker Wiese, Berlin - Kaden Klingbeil Architekten. Fabricator: Kiebitzberg GmbH & Co.KG - Kloepfer Surfaces. Photographer: Dirk Wilhelmy

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THE NEW GENERATION.

Inspired by Architecture.

HI-MACS®
Natural Acrylic Stone™

LET'S GO OUTSIDE.

If you have worked with HI-MACS® materials before, you will know the effect: your own ideas and the creative material inspire each other producing further, even better ideas. HI-MACS® can give shape and form to virtually any of your design ideas.
New dimensions are opening up now: Just take the countless advantages offered by HI-MACS® outside and use the material of possibilities to design facades as well.

Exposed to the elements for many years, the HI-MACS® facade colour range has withstood humidity and UV radiation without any detrimentral consequences.

The entire load-bearing steel construction is coated with HI-MACS®, creating a light and almost floating visual impression.

Design: 3deluxe, Fabrication: Rosskopf + Partner AG, All images on this page: Photographed by Emanuel Raab

The organic architectural design of the Leonardo Glass Cube requires a material which allows curved, flowing contours without losing any of its functionality and load-bearing capacity.

HI-MACS® offers clear advantages, even when compared with other mineral materials:

Outdoor applications
The HI-MACS®-FR-quality has been tailor-made for outdoor applications and its resistance to UV radiation surpasses that of any other solid surface.

Fire rating test
The HI-MACS®-FR-quality passed the fire rating test with far better results than any of the other mineral materials: The achieved SBI test according to EN-13501-1 is the impressive proof of this.

HI-MACS® facade colour range
The other 15 colours of the outdoor range, too, achieved good results in terms of fire rating. Their excellent results: B1, which allows application in almost every relevant area.

HI-MACS® is ETA certified
Fixed with Keil inserts and a BWM structure, HI-MACS® facade in S 728 – Alpine White successfully passed the ETA (European Technical Agreement) tests.

It is the outdoor applications in particular where HI-MACS® scores with its outstanding properties:

Easy thermoforming
Organic-curved, three-dimensional facade architecture thanks to the thermal moulding capacity of the material.

Translucent qualities
Spectacular light and surface effects are achieved by milling and backlighting.

Advantageous outdoor properties
The HI-MACS® facade colour range withstands humidity, UV radiation or variations in temperature thanks to homogeneous, non-porous material and other advantageous properties.

A durable material
Easy to clean and maintain, the perfect function and visual effect will last for many years (even damage caused by graffiti can be removed without any trace).

HI-MACS® TURNS THE NIGHT INTO DAY.

This impressive gate can be seen at a busy road in the heart of Berlin. The exterior of the gate is entirely cladded with HI-MACS® material. The material is carried on all the way to the interior and is kept in a stylish white throughout.

While the robust and effectively staged surface dominates the facade outside, it is the many small fabrication details inside which offer the arguments in favour of HI-MACS®: both the address and a clear pattern of dots create an impressive effect.

But the special highlight can only be seen at night: the entire gate is fitted with an LED technology which is invisible during the day. Graphic patterns or letters can be projected on the HI-MACS® surface, turning the straight installation into a dynamic stage for lighting design.

Photographed by Andreas Mikutta

During the day, the lighting technology is invisibly hidden and protected by the robust HI-MACS® surface.

Photographed by Volker Mai

Customers of this office complex were enthusiastic about the animated snowflakes visible on its facade.

Photographed by Volker Mai

Design: neo systems architects, Fabrication: Rosskopf + Partner AG, Engineering: 5D Engineering GmbH

Photographed by Andreas Mikutta

Effectively animated outside, inside a clear design of dots and letters milled out by using the CNC technology.

The most important particularity of using HI-MACS® on a facade is its ability to create round corners.

NON-STANDARD FAÇADE. UNLIMITED DESIGN.

ETA certified, thermoformable, polyvalent, ultraresistant, and non-porous, HI-MACS® new-generation acrylic stone has enabled the construction of a non-standard façade that, in all respects, complies with the requirements of the world leader in sailing-boat construction.

In addition to the æsthetic effect with a motif that is inspired by fishing nets, reproducing the Bénéteau logo and recreating a wave, the perforation of the material, which is over 50%, provides the required level of transparency whilst regulating heat from radiation.

Design: PAD Architectes for BERI 21. Fabrication: LCCA. Photos: Mathieu Ducros

SHAPPING THE FUTURE.
IN HARMONY WITH THE ENVIRONMENT.

Countless internationnally recognized certificates attest to the fact that HI-MACS® has a strong focus on ecological aspects. Without exception, all HI-MACS® products are manufactured in accordance with the ISO 14001 environmental standard.

Architect and builder Volker Wiese has realised his personal home design dream with a Bauhaus style residence with exterior HI-MACS® cladding that secures privacy from the outside but encloses a delightful garden with-in a multi-façade, two wing design. For the keen nature lover that Wiese is, using acrylic stone for the exterior wall cladding was an obvious choice as all the materials used in this energy efficient structure are sustainable.

As the connection between nature and living was also an important aspect in the architect's choice of material for structural components, he chose exclusively ecologically sustainable high-quality products such as HI-MACS®.

Architects: Dipl.-Ing. Volker Wiese, Berlin - Kaden Klingbeil Architekten. Fabricator: Kiebitzberg GmbH & Co.KG - Kloepfer Surfaces. Photographer: Dirk Wilhelmy

CONVINCING INSIDE AS WELL AS OUTSIDE.

Design: SchröderArchitekten, Fabrication: Kiebitzberg Möbelwerkstätten – Klöpfer Surfaces,
Photographed by Dipl. Ing. Arch. F. Aussieker

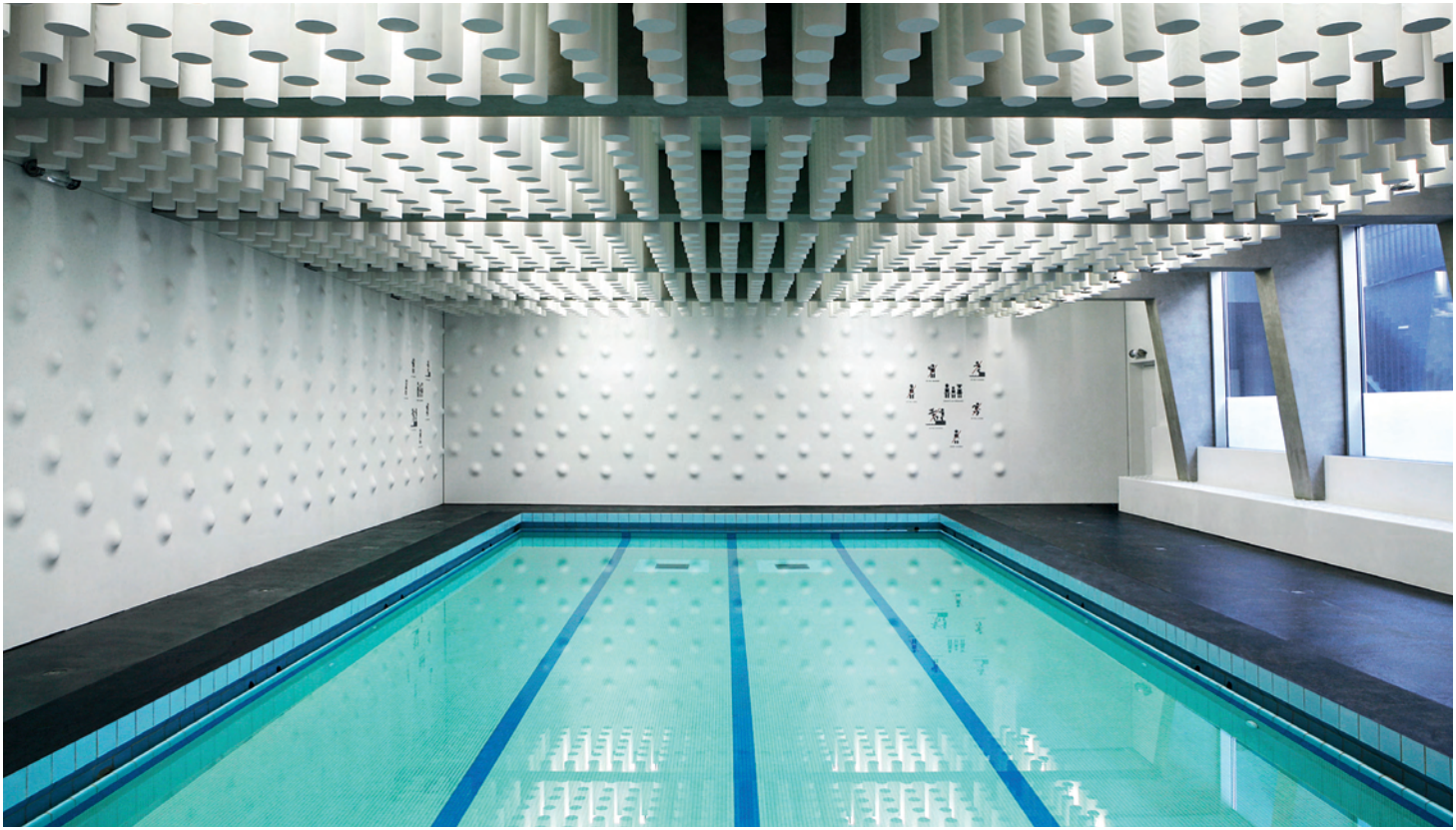
All of a sudden a building has haptic qualities.

These white elements create a uniform impression: all window framings and some wall elements are made from HI-MACS®, increasing the value of the building considerably.
Especially the bottom section of the facade is within reach of passers-by: wonderful if spectators "look with their hands" being able to feel the perfect touch of the material.

Inside public buildings.

The requirements for public spaces are very demanding. In fact these areas are everyone's environment. It's therefore good to know that HI-MACS® regularly undergoes all of the relevant product tests and carries all the required certificates.

The use of HI-MACS®, New Generation Solid Surface by LG Hausys, in this swimming pool in the heart of Paris's 19th arrondissement has achieved a superb finish. The new project provides a further example of the versatility of this new generation of acrylic stone.



Architect: Yoonseux Architectes, Fabrication: ASKA Interior, Photographed by Alexandra Mocanu

CHOOSE THE OUTDOOR EXPERT.

In Europe, for good reason, there are strict regulations regarding material behaviour, especially the fire performance of the materials used. This applies to many areas within a building, however, to its facade, rendering a lot of materials unsuitable for use in safety relevant areas.

The HI-MACS® Outdoor Range offers a choice of fifteen attractive shades and, above all, maximum safety for the planner, the fabricator and the builder – last but not least for the occupants of the building.

Achieving the outstanding fire rating class B 1, HI-MACS® facade colour range passed all relevant tests, particularly fire rating tests, which are conducted by renowned and independent institutes in cooperation with German building authorities and their strict regulations.

Warranty.

HI-MACS® offers a 5 years warranty on colours' UV resistance and loss of gloss over 40%, 10 years on colour leaching and 20 years on colour peeling, swelling or delaminating. The warranty is applicable after the first installation and is only valid for the sheet material; adhesives are excluded.
The conditions for this warranty are based on practical experience and on-going tests. To read more information about HI-MACS® façade warranty, please visit www.himacs.eu.

Low flammability.

HI-MACS®-FR

Alpine White
S 728 [12 mm], Δ E3

Above all, it is the tailor-made FR quality that passed the fire classification according to EN 13501, B-s1-d0 (single burning test – SBI) successfully*. Fixed with Keil inserts and a BWM structure, HI-MACS® facade in S 728 – Alpine White successfully passed the ETA tests (European Technical Agreement).

*tested with subconstruction and insulation.

Best UV resistance of all solid surfaces.

Moreover, the entire outdoor range shows the best UV values of all solid surfaces. Six colours are rated with the UV classification Delta E3 (“negligible fading possible”), the other nine colours are rated Delta E4 (“slight fading possible”) during 5 years.

Colours.

Here are the fifteen shades of the HI-MACS® Outdoor Range. Our applications engineers suggest using 12 mm strong HI-MACS® sheets for facade construction.

HI-MACS®


Diamond White
S 034 [12 mm], Δ E4

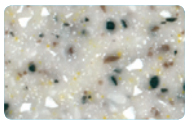

Nordic White
S 033 [12 mm], Δ E4

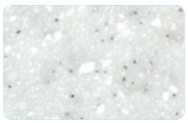

Alpine White
S 28 [12 mm], Δ E3

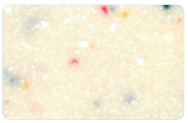
Cream
S 09 [12 mm], Δ E3

Almond
S 02 [12 mm], Δ E3

Arctic Granite
G34 [12 mm], Δ E3

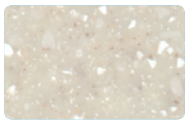

White Granite
G05 [12 mm], Δ E4


White Quartz
G04 [12 mm], Δ E4

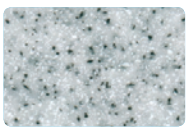

Confetti Quartz
G41 [12 mm], Δ E4

Ivory White S29,
S29 [12 mm], Δ E4


Ivory Quartz
G30 [12 mm], Δ E4


Sea Oat Quartz
G38 [12 mm], Δ E3


Beach Sand
G48 [12 mm], Δ E3


Grey Sand
G02 [12 mm], Δ E4


Opal
S 302 [12 mm], Δ E4

HOW HI-MACS® STANDS UP AGAINST ALL THE ELEMENTS:

Technical Properties:

Specification		Result	Unit	Test methods
Flexural E-modulus	Ef	8900	MPa	DIN EN ISO 178
Flexural strength	σ fm	76,9	MPa	DIN EN ISO 178
Breaking elongation	Є fm	1,01	%	DIN EN ISO 178
Resistance		> 1 x 10^{12}	Ω	EN 61340-5-1
				DIN IEC 61340-4-1
Diffusion resistance coefficient	μ	1807		DIN EN ISO 12572
Density		1,71	g/cm^3	ISO 1183
Heat conductance	λ10tr	0,636	W/mK	DIN EN 12664
Resistance to thermal expansion	R	0,048	m^2K/W	DIN EN 12664
Thermal expansion coefficient	α	0,048	mm/mK	prEN 14581
Linear expansion coefficient		max. 30 x 10^{-6}	m/°C	
Tensile resistance	σ fm	32,7	MPa	DIN EN 527
Water absorption		< 0,1	%	DIN EN 438 - part 12
SBI fire performance*		B - d0 - s1		DIN 13501

*applicable to HI-MACS® FR S728 Alpine White, tested with subconstruction and insulation

HI-MACS® is ETA (European Technical Approval) certified*.

Fire performance:

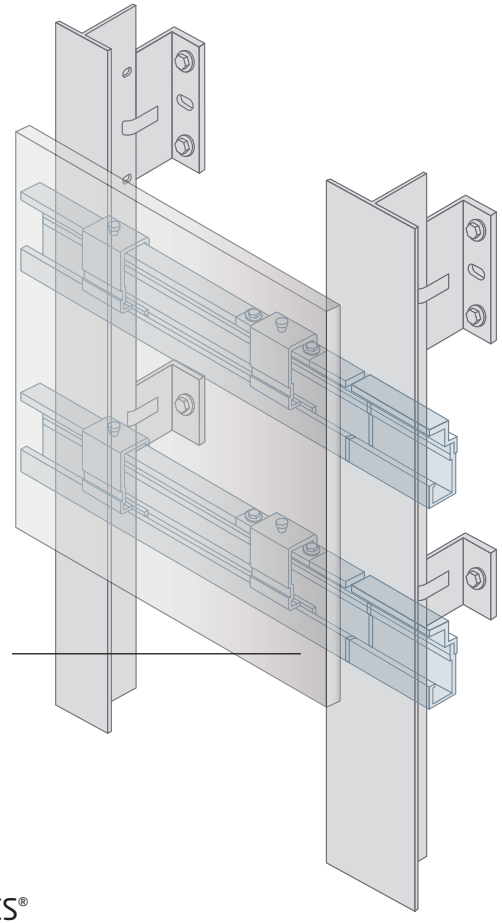
Product concerned	Test method	Results
HI-MACS® FR – 12mm	DIN EN 13501-1, tested with sub-construction and insulation	B-s1, d0
HI-MACS® FR – 12mm	NFP 92-501 1995	M1
HI-MACS® FR – 12mm	DIN 4102-1	B1
	EN 13501-1	B-s1, d0
HI-MACS® FR – 9mm with back up	DIN 4102-1	B1
HI-MACS® FR – 9mm without back up		

* Fixed with Keil inserts and a BWM structure, HI-MACS® facade in S 728 - Alpine White successfully passed the ETA tests (European Technical Agreement).

THE APPROPRIATE TECHNOLOGY: HI-MACS® AS A VENTILATED RAINSCREEN FACADE.

Cross section of a ventilated rainscreen.

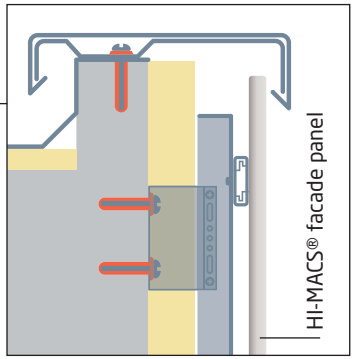
If you would like to benefit from the wonderful design possibilities and functional advantages offered by HI-MACS® and use it as facade material, we suggest planning a ventilated rainscreen facade. This very common system separates the thermal-insulation and weather-protection functions.



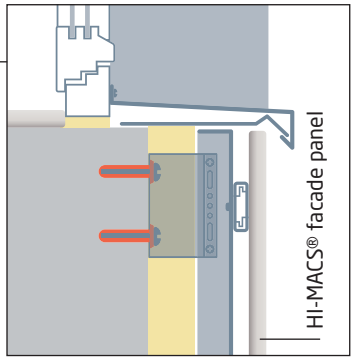
Here HI-MACS® benefits from its special mix of significant properties which render the material virtually predestined for outdoor application.

The subconstruction on the wall.
Through the way panels are anchored to the wall professionally, the cross-section here opposite demonstrates the construction method of a ventilated rainscreen.

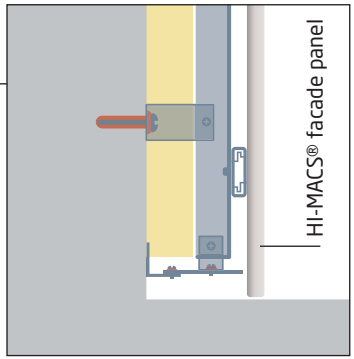
Attic flashing
(upper flashing)



Windowsill

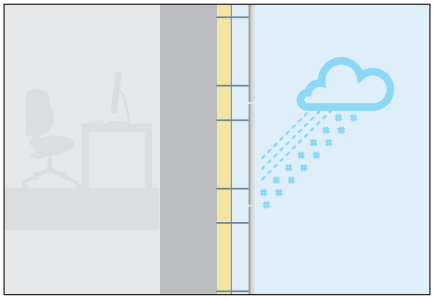


Baset flashing
(lower flashing)



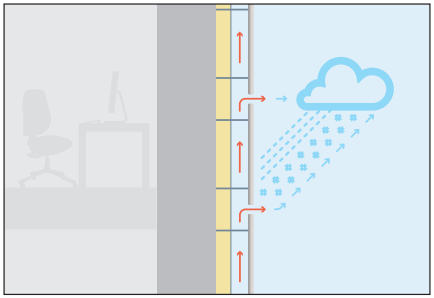
Simple flashing details.
HI-MACS® and the recommended subconstruction also allow the installation of roof and wall flashings or windowsills – easily and without any problems, just like the entire facade.

Perfect protection against all external influences. Thanks to the ventilated facade – and HI-MACS®.



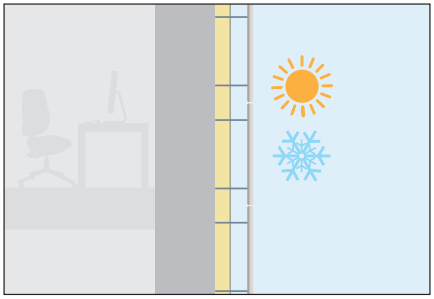
Perfect moisture resistance

HI-MACS® is highly resistant to moisture like rain, snow or condensation, thus providing excellent protection for the insulation layer behind the facade. Furthermore, any moisture is perfectly removed via a gap between the facade panel and the insulation material.

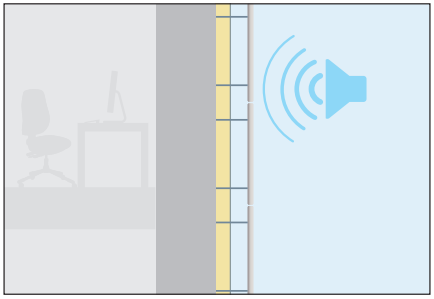


Perfect air circulation

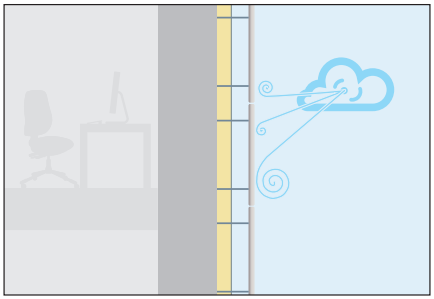
In connection with the ventilated rainscreen technology, HI-MACS® ensures air circulation irrespective of low or high temperatures.This method removes condensation moisture and prevents damage to the insulation layer.



Perfect insulation properties
HI-MACS® withstands cold and heat equally. These insulation properties result in significant energy savings.



Perfect noise insulation
HI-MACS® facade materials provide optimal noise insulation thus reducing the noise level significantly.

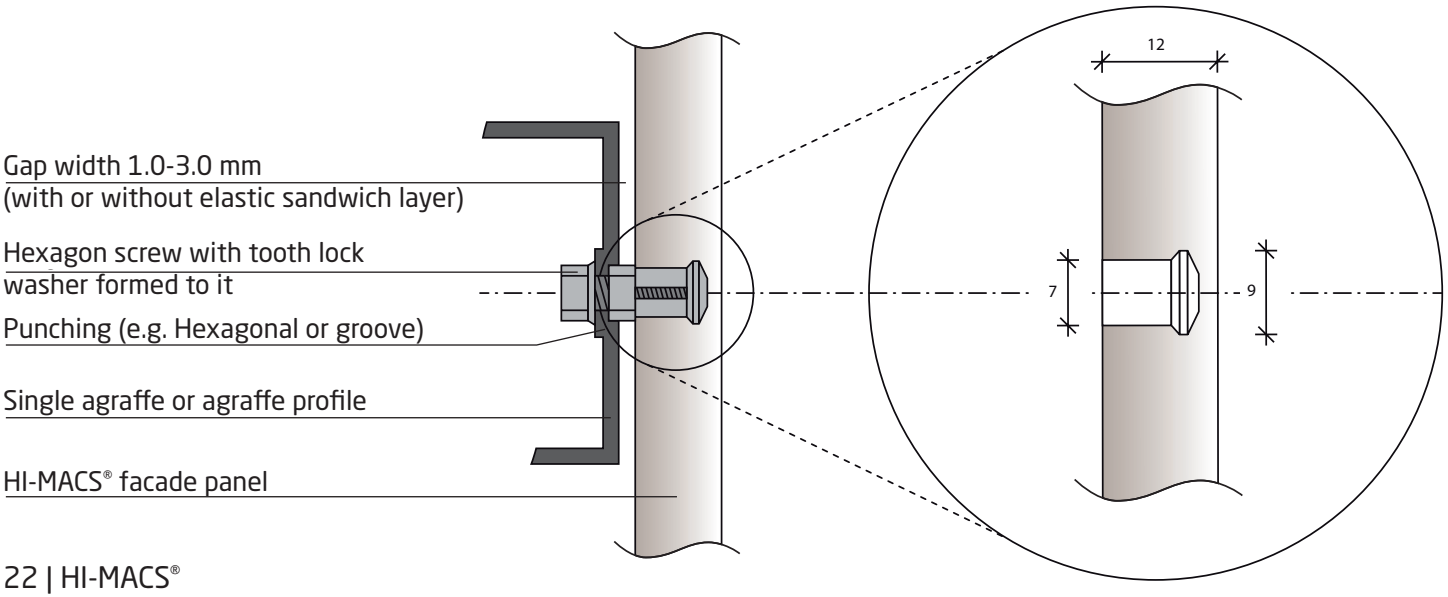


Perfect resistance to wind pressure
With its overproportionally high flexural and axial rigidity, HI-MACS® offers excellent resistance to wind pressure.

The optimal method of mounting HI-MACS® on walls.

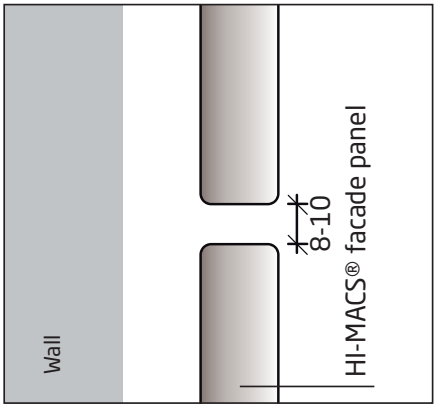
Adjustable aluminium subconstructions are used for the professional mounting of HI-MACS® facade elements. LG Hausys suggests using proven high-quality products such as those offered by BWM installation system.
These elements are used to anchor HI-MACS® slabs on walls leaving a 20 mm gap between the slabs and the insulation material: a perfect space for the vital air circulation. The insulation layer itself is well kept in place between the aluminium sections and the wall. Depending on the state of the building, the subconstruction is aligned to the individual requirements determined by the architect.
HI-MACS® panels are mounted – invisibly from the outside – to the aluminium substructure.
We recommend using an invisible undercut anchor which is offered by Keil attachment technology.

Keil undercut anchor

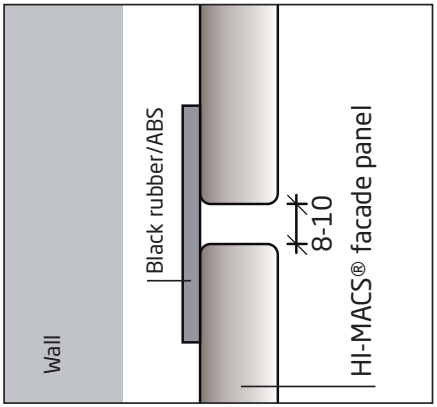


How to join the panels.

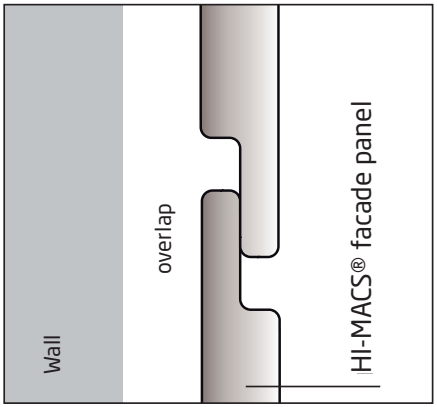
There are different ways of joining two HI-MACS® panels within the ventilated rainscreen. The methods shown here allow for expansion joints of at least 8 to 10 mm.



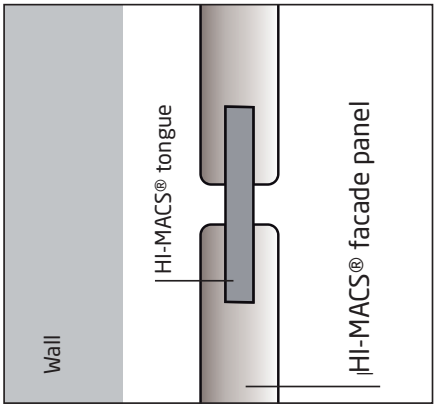
Open joint
without sealing on the reverse side



Open joint
with sealing on the reverse side
(rubber or ABS plastic)



Overlapping panels



Tongue and groove joints
(tongue element made from HI-MACS®)

Watch this video to discover the setting up of this system on a building in Hamburg, Germany.

WE WOULD BE PLEASED TO PROVIDE YOU WITH DETAILS AND MORE INFORMATION.

HI-MACS®. The New Generation

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