larcore® A2

Aluminium Honeycomb Panels for Lightweight Architectural Envelopes

Alucoil®
Grupo Alibérico

INDEX

Victoria University Sunshine Hub. Australia
WOODS BAGOT Architects

Alucoil is a Spanish multinational headquartered in Miranda de Ebro (Burgos), specialist in the production of technologically advanced materials for the **building, transportation and Industrial sectors.**

About us

Since 1996, **Alucoil®** has been manufacturing and transforming the most innovative aluminum solutions under its prestigious brands, becoming a global benchmark in **technology, innovation, and professionalism**.

Alucoil® operates multiple manufacturing facilities, providing service and exporting its high-quality, innovative products worldwide.

The company produces high-value-added products for its customers and is structured into three main production areas:

- Composite
- Honeycomb
- Solar thermal energy

SUSTAINABILITY

Alucoil® considers sustainability a fundamental pillar of its business strategy. The company is committed to environmental responsibility through efficient and responsible processes, backed by the most stringent certifications. Its quality management system is certified under **ISO 9001,** while its environmental commitment is validated by **ISO 14001**, ensuring proper management of environmental risks associated with its activities.

Alucoil® is a benchmark for sustainability in the aluminum sector. The company holds **Carbon Neutral** and **Zero Waste** certifications, achieving a 98.83% waste recovery rate. This means that **nearly all of its waste is recycled or reused**, reducing the environmental impact of its production to zero.

The manufacturing process of **Iarcore® A2** panels is continuous, optimizing raw material usage without creating large surpluses. All **production waste is carefully managed and recycled, allowing it to be reintegrated into the supply chain as raw materials.**

At the end of their lifecycle, **Iarcore® A2** panels can be melted down and reintroduced into the **Circular Economy,** ensuring a sustainable and efficient material lifecycle.

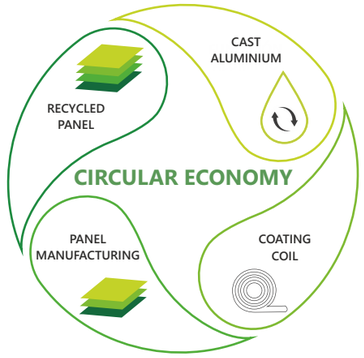
Iarcore® A2 holds an **Environmental Product Declaration (EPD) under the international EPD System**, providing detailed insights into its environmental performance, reinforcing **Alucoil**'s commitment to transparency and sustainability.

AENOR CARBON NEUTRALITY

AENOR ZERO WASTE

GlobalEPD A VERIFIED ENVIRONMENTAL DECLARATION

ECO PLATFORM EPD EN 15804 VERIFIED



EI8HT South Esplanade. Glenelg, Australia.
Chasecrown Architects.

Iarcore® A2

Aluminium honeycomb panels

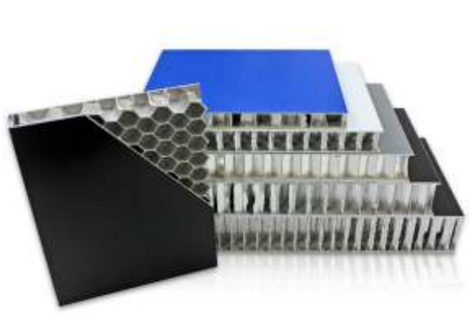
The industrial sectors tirelessly seek new technologies, products and building solutions with which to tackle projects more sustainably, optimising efficiency, improving output and raising performance.

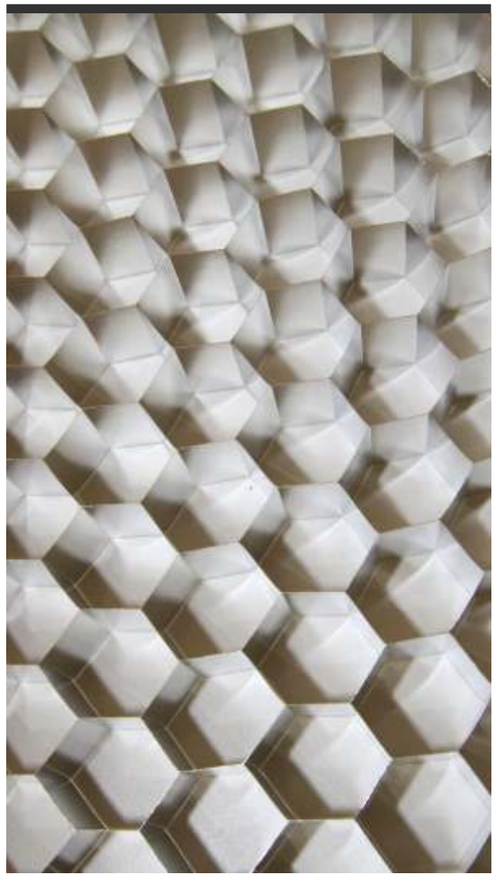
After an exhaustive research and development (R&D) process, at **Alucoil®** we have been able to unite the properties inherent in "honeycomb" type structures with our industrial experience in the production of metal structural panels.

The result is the **Iarcore® A2** panel, an innovative aluminium honeycomb panel manufactured by advanced continuous industrial processing.

This product represents an integral solution for various architectural requirements, notable for its suitability for cladding architectural enclosures. It brings significant improvements in terms of rigidity, lightness, fire resistance, recyclability, insulation and energy efficiency.

Iarcore® A2 panel is supplied in **thicknesses of 6 to 20 mm**, with **interior and exterior aluminium skins of 0.5 to 1.0 mm.**





MAIN CHARACTERISTICS:

- **Fire class A2-s1, d0 according to EN 13501-1.**
- **Rigidity.**
- **Flatness.**
- **Lightness.**
- **100% recyclable.**
- **Manufactured in width up to 2 metres.**

Alucoil® has developed two proprietary installation systems, marketed under the **Hidetech® LIGHT** and **Hidetech® PRO** brands. These systems are designed for the installation of panels and trays in ventilated façades, raised floors, false ceilings, and sunshades. **Iarcore® A2** panels must be installed in buildings in compliance with the regulations, technical guidelines, and building codes related to fire classification and protection in each country where they are used.
Alucoil® offers a wide range of products to meet the specific requirements of each country. However, it is the customer's responsibility to ensure compliance with the final use of the product and with the relevant building regulations or technical approvals applicable to the installation site.

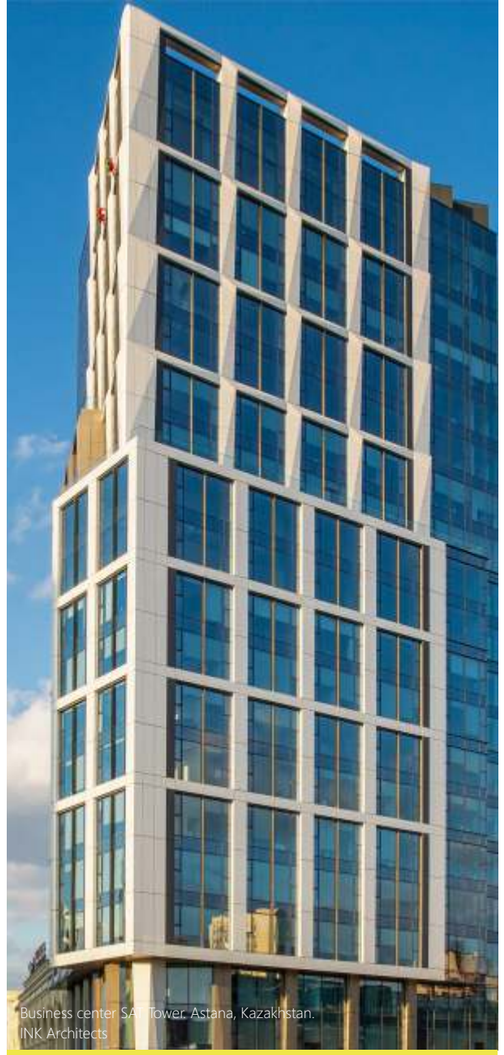
Tribunal de grande instancia (TGI). Paris, France.
Renzo Piano Architects - Photo © SERGIO GRAZIA.

larcore® A2 6 mm

Aluminium honeycomb panel for light architectural enclosures with a cassette installation system.

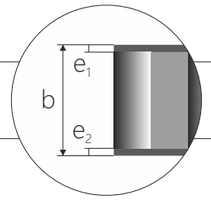
EPD® Environmental Product Declaration certification.
Tests successfully passed: Full-scale test **BS 8414-1 & BS 8414-2**.

Protective film
0,7 mm coated aluminium 5005 EN 573-3
Bonding layer
Aluminium honeycomb core
Bonding layer
0,5 aluminium 5005 EN 573-3


Business center SAT Tower, Astana, Kazakhstan.
INK Architects

DIMENSIONAL CHARACTERISTICS

Total thickness "b" Width tolerance ≤ 1600 mm: ±0,2 mm Width tolerance > 1600 mm: -0,1 / +0,5 mm	b= 6 (mm)
External skin thickness "e_1"	e_1= 0,7 (mm)
Internal skin thickness "e_2"	e_2=0,5 (mm)
Weight	4,19 (kg/m^2)
Length min. / max.	2000^{+6}_{+1} - 14000^{+6}_{+1} (mm)
Standard width Panels of 2000 mm width the aluminium sheets are of 0,7 mm thickness.	1250^{+2}_{-0} - 1500^{+2}_{-0} - 1575^{+2}_{-0} - 2000^{+2}_{-0} (mm)



MECHANICAL PROPERTIES OF THE PANEL

The purpose of the mechanical values is to be able to compare different product configurations. Specific calculations for each project must be requested to **Alucoil**'s technical department.

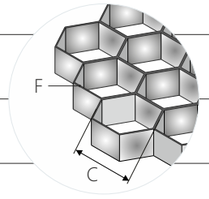
	Transversal axis	Longitudinal axis
Rigidity (EI)	2825 (kNcm^2/m) DIN 53293	2386 (kNcm^2/m) DIN 53293
Acoustic insulation ($R_{(A)}$)	19,54 (dBa) ISO 10140-2	
Thermal resistance (R)	0,0068 (m^{2}K/W)	

COATED ALUMINIUM SKIN PROPERTIES

Modulus of elasticity (E)	7000 (N/mm^2)
Ultimate tensile strength (R_m)	125<R_m<185 (N/mm^2)
Yield strength ($R_{p0,2}$)	>80 (N/mm^2)
Elongation (A)	>4 (%)
Standard aluminium alloy	5005[1] EN 573-3 [1]*Other alloy availables*
Aluminium thermal expansion	2,3 mm/m Δ 100ºC

ALUMINIUM HONEYCOMB CORE PROPERTIES

Aluminium alloy	3005[1] EN 573-3 [1]*Other alloy availables*
Cell size (C)	1/4 "≈ 6,35 mm
Foil thickness (F)	50µ
Compressive strength	2,20 Mpa DIN 53291
Density (ρ)	56 kg/m^3



Hidetech® LIGHT

Forming of the cassette through cutting, milling, and perimeter profiles

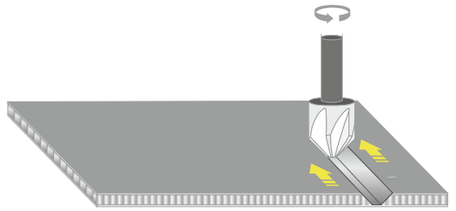
Hidetech® LIGHT system for architectural ceilings and façades.

Brackets, vertical profiles (mullions), clips and perimeter profile are extruded in aluminum EN AW 6106 T6 alloy, one of the most resistant. System support is based on vertical profiles (mullions) with an asymmetric T-shaped section, connected to the building by L-shaped section brackets.

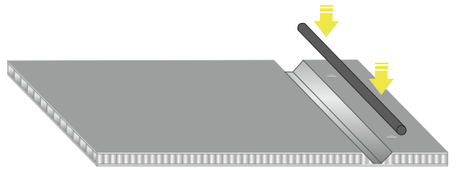
Iarcore® A2 6 mm panel is folded in cassettes. Exposed edges are closed on the perimeter by a profile used for waterproofing the core and for fixing cassettes to mullions. Perimeter profile is connected to cassettes edges using rivets. Those same rivets will also be placed at corners for assuring cassette forming. This perimeter profile has a guide rail for sliding in it special fixing clips. Clips will be placed and screwed against vertical profiles. System movement availability is assured by slotted-holes performed in clips and brackets too, and through the sliding possibility of clips inside the guide rail.

Recommended for use on architectural façades. The installation of the Iarcore® A2 panel must guarantee its watertightness.

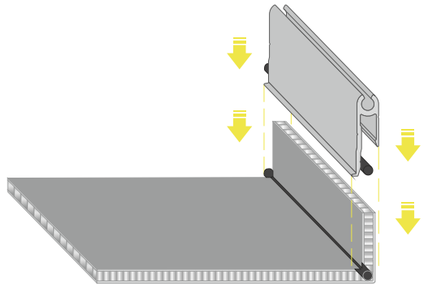
01 **Machining of the panel**



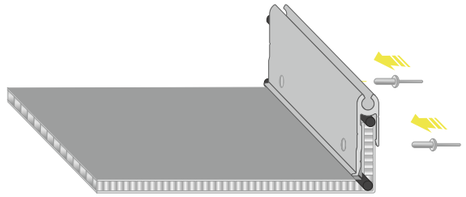
02 **Sealing the panel with cellular cord.**



03 **Placement to the LT-4 profile with cellular cords.**

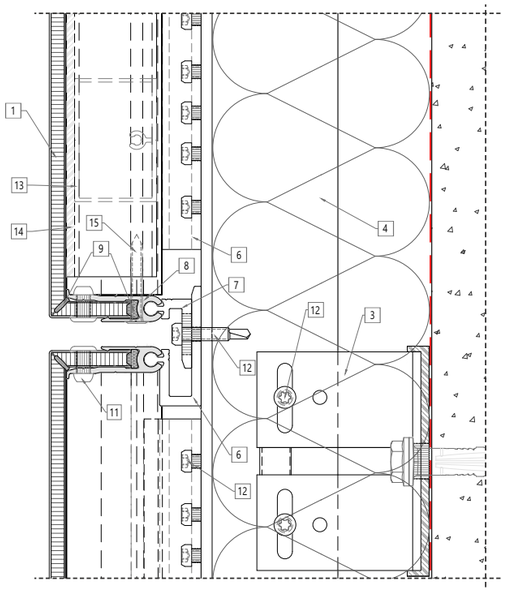


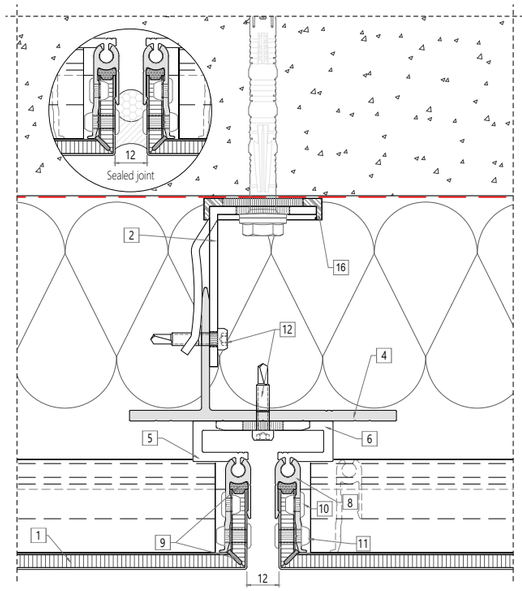
04 **Fixing of the rivets.**



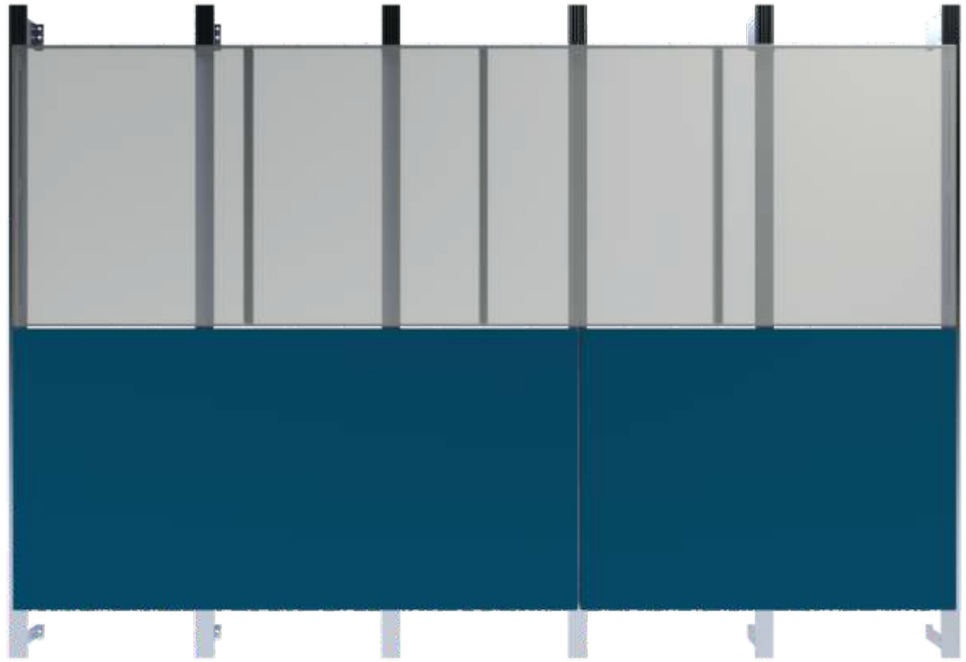
Alban Tower. Tirana, Albania - Archea Associati Architects.

CONSTRUCTION DETAILS



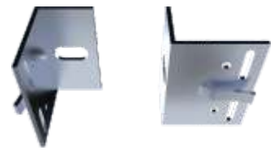


1. **Iarcore® A2 6 mm**
2. **LT-1A** wind weight bracket
3. **LT-1B** wind bracket
4. **LT-2** vertical profile
5. **LT-31M** mobile clip
6. **LT-31F** fixed clip (top/left)
7. **LT-32M** short mobile clip
8. **LT-4** perimetral profile
9. Celular cord
10. Waterproofing rivet Ø4.8x8mm Alu/A2
11. Waterproofing rivet Ø4.8x16mm Alu/A2
12. EJOT TORX T25 special screw
13. **LC-RH** stiffener
14. Sika Tack Panel 50
15. INDEX flat head screw



ACCESSORIES OF THE SYSTEM

LT-1A Wind weight bracket



LT-1B Wind bracket

LT-2 Vertical profile

LC-RH Stiffener

LT-31M Mobile clip (right/bottom)

LT-31F Fixed clip (top/left)

LT-32M Short mobile clip

LT-4 Perimetral profile

Iarcore® A2 14 mm

Aluminium honeycomb panels for light architectural enclosures with a panel installation system.

For those who demand a perfect flat panel solution with a very high rigidity, **Alucoil®** has developed the **Hidetech® PRO** system from **Iarcore® A2** panels with a total thickness of 14 mm. A proposal based on clips that fix the edged panels to a very reduced substructure. A new concept that is extraordinarily light, non-combustible and with perfect flatness.

Panel with EPD® certificate (Environmental Product Declaration).

- **Fire classification A2-s1, d0 EN 13501-1**
- **BS 8414-1 & 2 full scale tests passed under BR 135 criteria**
- **NFPA 285 procedure test and failure criteria passed**.

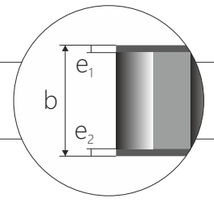
(consult technical sheet to know all the certificates)

Protective film
1,0 mm coated aluminium 5005 EN 573-3
Bonding layer
Aluminium honeycomb core
Bonding layer
1,0 mm aluminium 5754 EN 573-3


Viviendas Zafiro Valdebebas. Madrid, Spain.
Estudio de Arquitectura Morph

DIMENSIONAL CHARACTERISTICS

Total thickness "b" Tolerance ±0,2 mm	b= 14 (mm)
External skin thickness "e_1"	e_1= 1,0 (mm)
Internal skin thickness "e_2"	e_2=1,0 (mm)
Weight	6,75 (kg/m^2)
Length min. / max.	2000^{+6}_{-1} - 14000^{+6}_{-1} (mm)
Standard width	1250^{+2}_{-6} - 1500^{+2}_{-6} - 1575^{+2}_{-6} - 2000^{+2}_{-6} (mm)



MECHANICAL PROPERTIES OF THE PANEL

The purpose of the mechanical values is to be able to compare different product configurations.
Specific calculations for each project must be requested to **Alucoil**'s technical department.

Rigidity (EI)	Extra rigid premium panel for use with **Hidetech® PRO** system. All necessary calculations are provided by our technical department.
Acoustic insulation ($R_{(A)}$)	21,56 (dBa) ISO 10140-2
Thermal resistance (R)	0,0086 (m^{2}K/W)

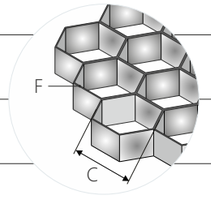
COATED ALUMINIUM SKIN PROPERTIES

Aluminium alloy a) External skin b) Internal skin	a) 5005[1] EN 573-3 b) 5754[1] EN 573-3
Modulus of elasticity (E) External and internal skin	7000 (N/mm^2)
Ultimate tensile strength (R_m) a) External skin b) Internal skin	a) 125<R_m<185 (N/mm^2) b) >280 (N/mm^2)
Yield strength ($R_{p0,2}$) a) External skin b) Internal skin	a) >80 (N/mm^2) b) >220 (N/mm^2)
Elongation (A) External and internal skin	>4 (%)

[1]*Other alloy availables*

ALUMINIUM HONEYCOMB CORE PROPERTIES

Aluminium alloy	3005[1] EN 573-3 [1]*Other alloy availables*
Cell size ©	1/4 "≈ 6,35 mm
Foil thickness (F)	50µ
Compressive strength	2,20 Mpa DIN 53291
Density (ρ)	56 kg/m^3



Hidetech® PRO

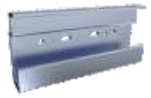
LT-1A Wind weight bracket

LT-1B Wind bracket

LT-2 Vertical profile

LT-1A + LT-2 + PRO-5

PRO-5A Long hanger



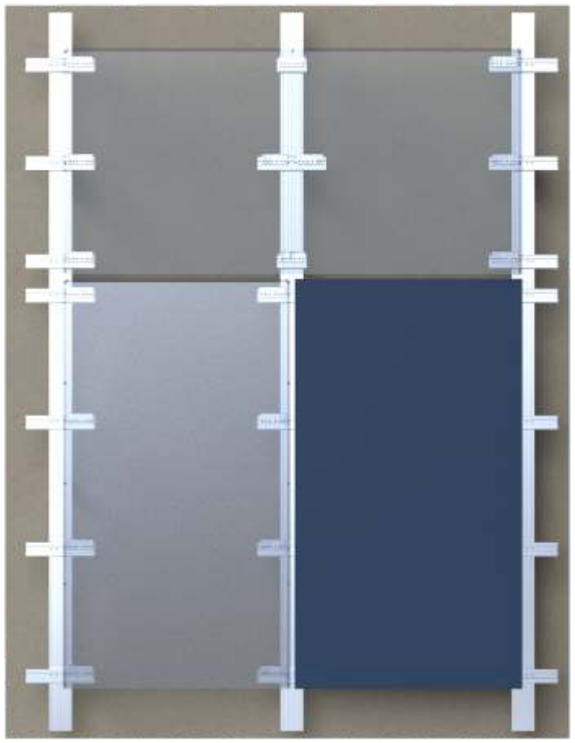
PRO-5B Short hanger

PRO-6R Clip (regulation)

PRO-6 Clip

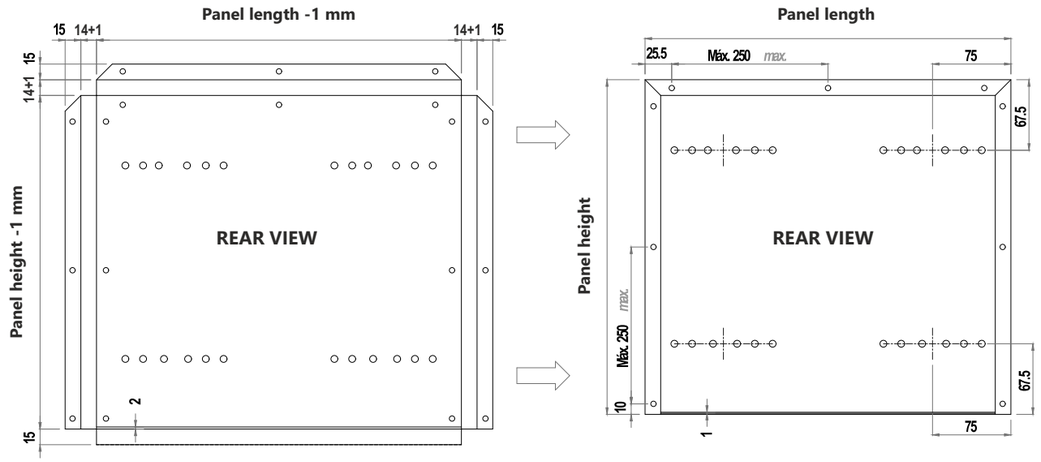
PRO-6 Clip riveted in the panel

Recommended for use on architectural façades. The installation of the Iarcore® A2 panel must guarantee its watertightness.



DIFFERENT TYPES OF EDGING PANELS

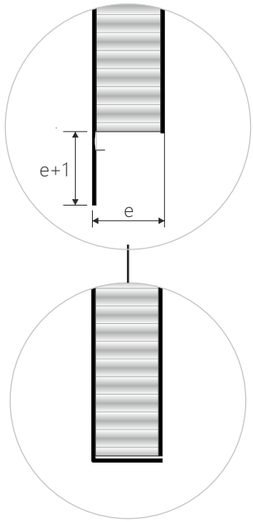
Example: **Iarcore® A2 14 mm** (double edging WITHOUT slope)



LOWER EDGE

Simple edging

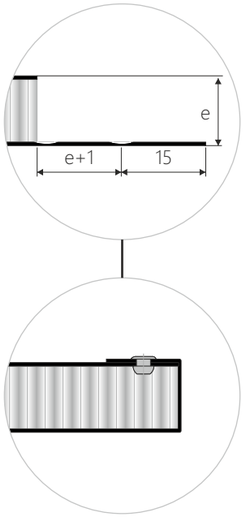
01



LATERAL AND UPPER EDGINGS

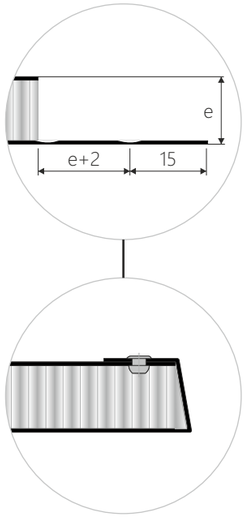
Option 1:
Double edging without slope

02

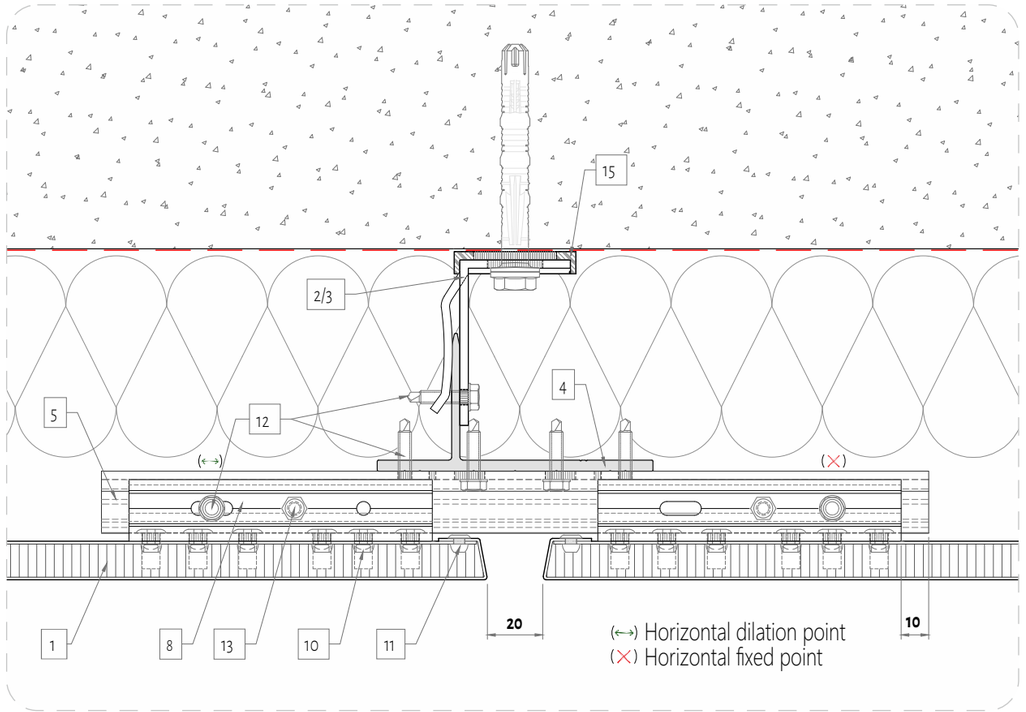


Option 2:
Double edging with slope

03

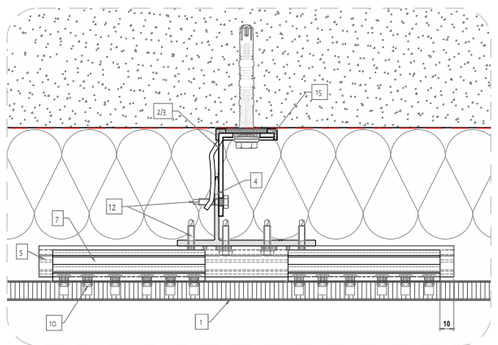


CONSTRUCTION DETAILS

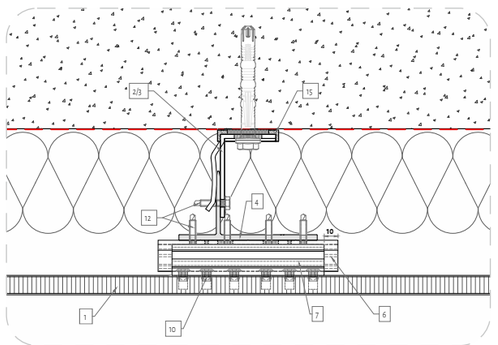


Vertical joint

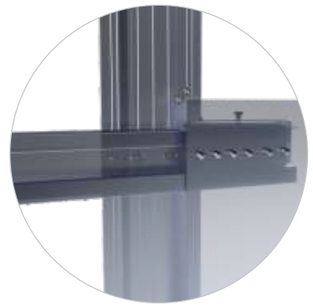
1. **larcore® A2 14 mm**
2. **LT-1A** wind weight bracket
3. **LT-1B** wind bracket
4. **LT-2** vertical profile
5. **PRO-5A** long hanger
6. **PRO-5B** short hanger
7. **PRO-6** standard clip
8. **PRO-6R** regulation clip
9. DOWSIL™ 7092 silicone
10. Hidefix 64090 rivet
11. NeoSpeed Ø4.8x5.8mm (ref. 57121-14805) rivet
12. DIN 7504-K Ø4.8x22mm A2/50
13. DIN 933 M5x12mm A2/50
14. SikaTack Panel 50
15. **LT-0A/B** thermal break
16. Aluminium plate 2-3 mm

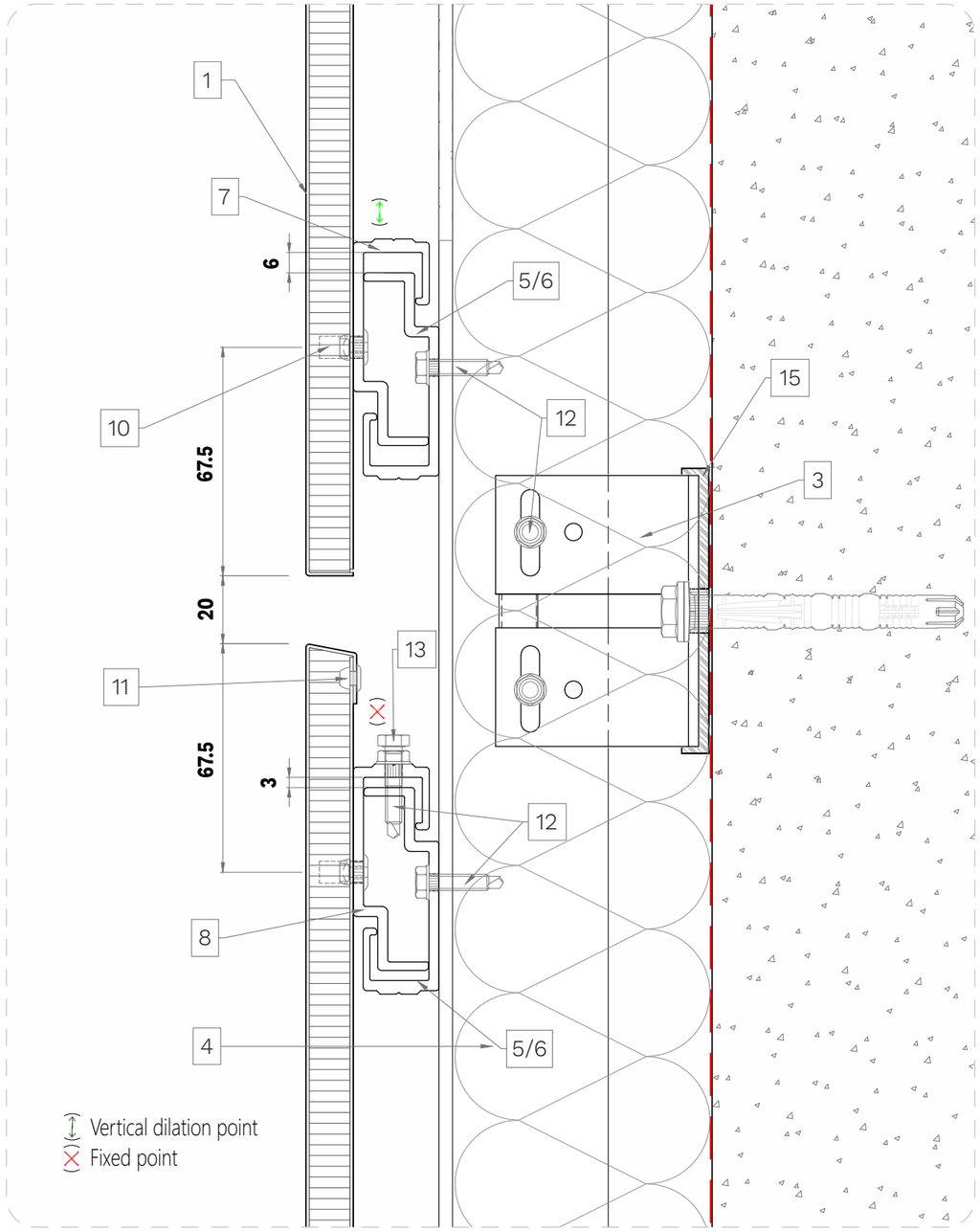


Intermediate long hanger



Intermediate short hanger



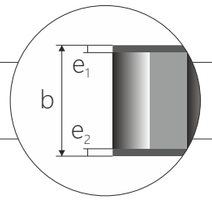


Horizontal joint

OTHER PANELS

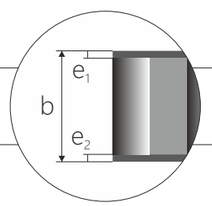
Aluminium honeycomb panels developed for systems present in the market.

larcore® A2 8 mm - 10 mm - 14 mm

Total thickness "b" Tolerances ±0,2 mm		b= 6 mm - 8 mm - 10 mm
External skin thickness "e_1"		e_1= 0,7 (mm)
Internal skin thickness "e_2"		e_2=0,7 (mm)
Weight		4,83 (kg/m^2) - 4,94 (kg/m^2) - 5,19 (kg/m^2)
Length min. / max.		2000^{+5} - 14000^{+5} (mm)
Standard width		1250$^{+2}_{-5}$ - 1500$^{+2}_{-5}$ - 1575$^{+2}_{-5}$ - 2000$^{+2}_{-5}$ (mm)

International Airport. Zurich, Switzerland
© Burckhardt+Partner AG.

larcore® A2 20 mm

Total thickness "b" Tolerances ±0,2 mm		b= 20 (mm)
External skin thickness "e_1"		e_1= 1,0 (mm)
Internal skin thickness "e_2"		e_2=1,0 (mm)
Weight		7,05 (kg/m^2)
Length min. / max.		2000^{+5} - 14000^{+5} (mm)
Standard width		1250$^{+2}_{-5}$ - 1500$^{+2}_{-5}$ - 1575$^{+2}_{-5}$ - 2000$^{+2}_{-5}$ (mm)

MECHANICAL PROPERTIES

The purpose of the mechanical values is to be able to compare different product configurations. Specific calculations for each project must be requested to the **Alucoil®** technical department.

The properties of the coated aluminium and the aluminium honeycomb core are the same as those of the **larcore® A2 6 mm**

To access further details, please request the product technical datasheet or visit **www.alucoil.com.**

	Rigidity (EI) DIN 53293	
	Transversal axis	**Longitudinal axis**
larcore® A2 8 mm Aluminium thickness: 0,7 mm	9421 (kNcm^2/m)	7217 (kNcm^2/m)
larcore® A2 10 mm Aluminium thickness: 0,7 mm	24458 (kNcm^2/m)	22519 (kNcm^2/m)
larcore® A2 14 mm Aluminium thickness: 0,7 mm	49915 (kNcm^2/m)	45958 (kNcm^2/m)
larcore® A2 20 mm Aluminium thickness: 1,0 mm	143868 (kNcm^2/m)	121726 (kNcm^2/m)

FINISHES

COATING POSSIBILITIES

PVDF
(Polyvinylidene Fluoride)

Based on PVDF resins with extraordinary performance. Nominal paint thicknesses:

a) PVDF 2L Coastal: approx.31µ

- Gloss from 20G to 40G.
- Excellent colour stability, minimal chalking and very good chemical resistance.
- Extraordinary protection against weathering, radiation and atmospheric contaminants.
- Outstanding flexibility when profiled, folded and coiled.

Durability in coastal areas
UV resistance
Warranty
Gloss level
Cleaning

DG5
(High Durable Polyester)

Based on HDP resins with nominal paint thicknesses (depending on the colour):

a) DG5 2L Coastal: approx. 35µ.
a) DG5 3L Coastal: approx. 55µ.
a) DG5 2L: approx. 25µ.

- Gloss from 10G to 90G.
- Excellent protection against weathering, UV radiation, and atmospheric contaminants.
- Outstanding hardness and flexibility when profiled, folded, and coiled.

Durability in coastal areas
UV resistance
Warranty
Gloss level
Cleaning

fluorlac®
(Feve LUMIFLON™ 2 Layers)

Paint based on fluoropolymer resins with a nominal thickness of 30µ (depending on the colour).

- RAL & NCS colour chart available in matte, satin, and gloss finishes.
- Possibility of matching specific colours.
- Very small quantities available, orders starting from 100sqm with immediate delivery within 3-4 weeks.
- Weathering, ageing and abrasion resistance for outdoor use.
- **NEW fluorlac® Antigraffiti**

Durability in coastal areas
UV resistance
Warranty
Gloss level
Cleaning

QUALITY

CERTIFICATIONS

TYPE OF CERTIFICATE	AREA OF APPLICATION	CERTIFICATE
Company	International	Carbon neutrality - **Alucoil®**
	International	Zero waste - **Alucoil®**
Environmental	International	**EPD®** Environmental product declaration: **Iarcore® A2** 6 mm (0,7/0,5) **Iarcore® A2** 14 mm (0,7/0,7) **Iarcore® A2** 14 mm (1,0/1,0)
Product with installation system	Australia	CODEMARK **Iarcore® A2** 6 mm (0,7/0,5) **"Cm40198"**
	USA	INTERTEK **Iarcore® A2** 14 mm (0,7/0,7)/(1,0/1,0) **"SDReport 46046"**
	Ukraine	UA-TR Building reglament Ukraine **Iarcore® A2** 8 mm **(0,7/0,7)** "UA-TR.042.17.18"

MVM Dome Stadium, Budapest, Hungary - © György Skardelli.

FULL-SCALE FIRE TESTING

Building fires are potentially dangerous events. Although they usually begin locally (rooms, apartments), if propagation is quick the fire can extend rapidly throughout the whole building. This propagation **is very much affected by the façade**: if it is well designed, it will prevent the fire from spreading rapidly and enable users to evacuate the building and the emergency services to reach the site to extinguish the fire.

This good performance of the façade cladding requires an in-depth study prior to its installation on the building. For this purpose, a multitude of tests are conducted under different standards, and on different scales. Generally small-scale tests, with weaker fires, are used to CLASSIFY how the different components of a façade react to fire. That is, they measure the contribution these products have to the fire. **But it is the large-scale tests that more accurately simulate the behaviour a façade will have against a real fire.**

A large-scale fire test consists of using a prototype of a complete façade (inner face, insulation, air cavity, outer face, cavity barriers, etc.) with large dimensions (3-5 metres wide x 6-10 metres high) to apply a real-life fire scenario (3-5.5 MW). The propagation of the fire is monitored visually and using thermocouples (sensors that measure temperature) installed in the prototype. The test usually lasts 30 minutes for the fire itself and a further 30 minutes of observation.

If after the standard time the façade has passed all the fault criteria indicated in the corresponding procedure, we can be certain that its performance in a real fire will be very good and the fire will propagate slowly.

Depending on the country and the regulations, there are different large-scale tests. For the products **Iarcore® A2**, **Alucoil®** has successfully passed the following:

- **BS 8414-1 and BS 8414-2** (under the classification criterion of the standard BRE 135 (United Kingdom).
- **NFPA 285** (USA.
- **LEPIR 2** (France).
- **CAN ULC S134** (Canada).

Infinity Park, Sofia, Bulgaria - © Starh Architects

FULL-SCALE FIRE TEST	CLASIFICATIONS
European Union	Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame. **Iarcore® A2 6 mm** with **Hidetech® LIGHT** system has passed the BR 135 criteria tested according to BS 8414-2. Fire classification of construction products and building elements. **Iarcore® A2** range, from 8 mm till 20 mm thickness, **Hidetech® PRO** system, A2-s1, d0 according to EN 13501-1. **Iarcore® A2 6 mm** with **Hidetech® LIGHT** system, A2-s1, d0 according to EN 13501-1
USA	Full-scale fire test. Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components. **Iarcore® A2 14 mm** with **Hidetech® PRO** system. **PASSED** according to **NFPA 285.**
Canada	Standard Method of Fire Test of Exterior Wall Assemblies. **Iarcore® A2 14 mm PASSED** according to **CANULC S134.** **Iarcore® A2 14 mm** 0.7/0.7 is ULC-S135 compliant to be used in noncombustible construction as defined by theNational Building Code of Canada.

FIRE TEST	CLASIFICATIONS
Australia New Zealand	Methods for fire tests on building materials, components and structures. Part 1: Combustibility test for materials. **Iarcore® A2 6 mm NOT COMBUSTIBLE** according to **AS 1530.1.** Methods for fire tests on building materials, components and structures simultaneous determination of ignitability, flame propagation, heat release and smoke release. **Iarcore® A2 6 mm** according to **ASNZS 1530.3.**
USA Canada	Standard Test Method for Determining Ignition Temperature of Plastics. **Iarcore® A2 14 mm** according to **ASTM D1929.** Standard test method for the determination of combustility parameters of building materials using an oxygen consumption calorimeter (CONE CALORIMETER). **Iarcore® A2 14 mm** according to **ASTM E84.** **Iarcore® A2 14 mm** according to **CANULC S135.**

Alucoil® Design
Grupo Albérico
Endless Architectural Design Possibilities

Alucoil® has a website where the client can find out about the main projects completed. It is a showroom for projects and the available finishes, where you can consult the material, colour, year of construction and the architect of the project, as well as the exact location. In addition, it offers the client a virtual introduction to the range of finishes and colours available from **Alucoil®**, as well as the new developments that are constantly being made in the different paint qualities available.

Woodwork. Saint-Denis, France.
Nicolas Laisné Architectes - © Cyrille Weiner

SUNSHADES

Integrating sun shades into architectural projects.

The **Iarcore® A2** panel is the ideal product for making sun shades of buildings, as it is lightweight, rigid and slim. Large elements can be made with panels of thicknesses between 20 and 40 mm.

Sun shades add a touch of sophistication to a building's façade, creating a dynamic interaction between light and shade that completely transforms the perception of space.
Installing sun shades on the buildings is not just about aesthetics, they also improve the comfort and well-being of those who live in or use the spaces.

As they provide shade and reduce excessive heat, they help keep the interior environment cooler and more comfortable, boosting the productivity and enjoyment of the users.

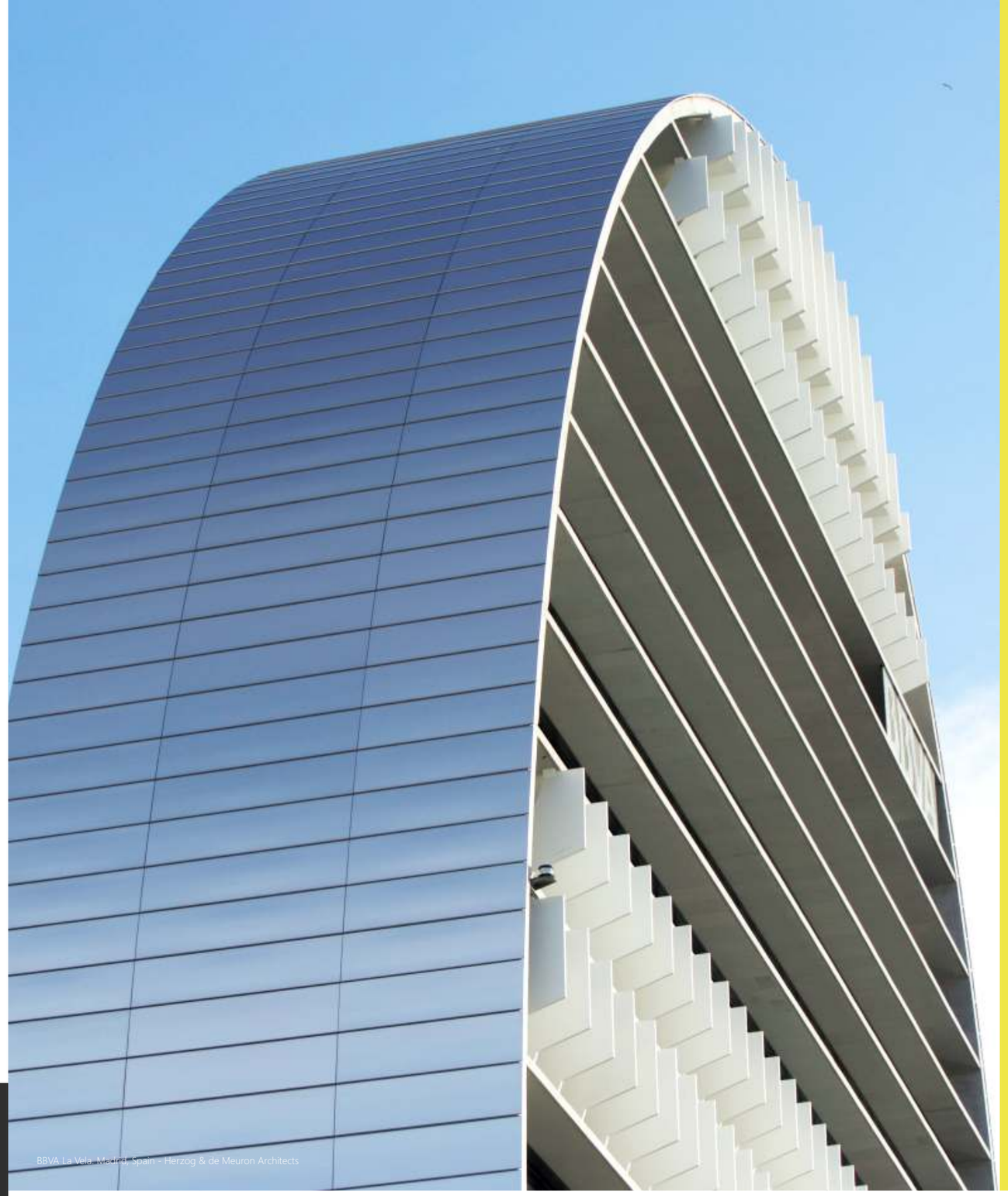
K Tower. Lisboa, Portugal.
Saraiva + Associados Architects.

Alucoil®, as a company committed to sustainability, is constantly seeking solutions that minimise the environmental impact of its projects. Sun shades are powerful allies in this mission, as they reduce the thermal load on buildings and reduce the need for artificial cooling.

One of the benefits of using the **Iarcore® A2** panel in sun shades is the versatility it provides in terms of design and functionality. From fixed sun shades, which add a sculptural element to the façade, to mobile sun shade systems* that are adjusted automatically to adapt to the changing weather conditions, the possibilities are infinite. The integration of sun shades in architectural projects is more than an aesthetic choice; it is a strategic decision that improves the comfort, efficiency and sustainability of the building.

*System motorization outside **Alucoil®**.

SUNSHA DES
FAÇA



BBVA La Vela. Madrid. Spain - Herzog & de Meuron Architects

Marriott Courtyard. Batumi, Georgia - © Alliance Group.

Alucoil®
Grupo Alibérico

Polígono Industrial de Bayas
Calle Ircio, Parcelas R68 - R74
09200 Miranda de Ebro (SPAIN)
+34 947 333 320
info@alucoil.com

www.alucoil.com

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