

A decorative graphic element consisting of a thick red curved line on the left that transitions into a thick black curved line on the right, arching over the text.

## **KALZIP® SYSTEMS**

Products and applications





# INNOVATIVE PERFORMANCE & PROVEN SYSTEM SOLUTIONS FOR CREATIVE ARCHITECTURAL DESIGN

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KALZIP -

## YOU INSPIRE, WE DELIVER

Creative individuals worldwide choose Kalzip to implement visionary high-tech architecture. Roofs and facades are impressively set in scene through puristically elegant restraint or as a design element - Kalzip creates unique architectural statements, giving each building its own character. The result is buildings that set new standards and are trend-setting in form and function.

Perfect system solutions and state-of-the-art production technology, highest product quality and innovative material symbioses as well as the harmony of form, colour and surface merge into a new architectural dimension - as functional and economical as the task requires.

Kalzip building systems meet the highest construction physical and design requirements for the realisation of roofs and facades that are functionally inspiring and visually appealing, fascinate.

Building with Kalzip also means being able to draw on many years of know-how. For 50 years Kalzip has been the model for creative feasibility, guarantees well-founded technological experience and provides architects and contractors with comprehensive planning aids. The aim is to relieve the building contractor so that he is left with what determines the value of his work - space for the essential.

Discover the innovative and creative possibilities of Kalzip building envelopes and be inspired by the versatile, durable system solutions that Kalzip offers.

## SUSTAINABLE BUILDINGS

## WITH INNOVATIVE ROOFING SYSTEMS

Kalzip is constantly developing new solutions with sustainability in mind. Reliability, safety, consistency and innovation are the guiding principles in every phase of product development. As a result, buildings are no longer designed as energy consumers but as certified 'green buildings,' actively contributing to climate targets.

The demand for environmentally friendly buildings with sustainability certificates and quality seals is constantly increasing. This seal of approval evaluates the ecological, economic and socio-cultural aspects of building. In addition, technology, processes, site quality and life cycle costs are also included in the evaluation criteria.

With the BRE, ECO\* and FDES Environmental Declarations, Kalzip offers the relevant European programmes which support certification of the construction project. You make a Type III

environmental product declaration in accordance with ISO 14025 and are recognized and verified by independent auditors.

The trend in international construction is moving even further in the direction of intelligent buildings. The further development of the "green building"; aims to create high-tech buildings with the greatest possible claim to sustainability - the use of building materials such as Kalzip is more than obvious.

The future belongs to the "blue technologies". Together with all involved companies in the construction process, Kalzip buildings is striving to develop new international building technologies. Not only meet national sustainability standards, but also set global standards themselves. The Kalzip material is the perfect choice to achieve this goal.

# ALUMINIUM - FUNCTIONAL & DURABLE

Kalzip sustainability focuses on aluminium itself - a material that can be recycled as often as required and which can be recycled over a long period of time as abundant deposits. It contributes significantly to protecting buildings effectively and for decades against external influences and to maintaining their value.

Thanks to its durability and excellent recycling properties, three-quarters of the aluminium produced worldwide remains in use today



One of the outstanding properties of the material is its resistance to weathering and the associated durability. This creates security, especially when there are high demands on the use of buildings, e. g. B. at airports, or in aggressive Environment, as near the coast.

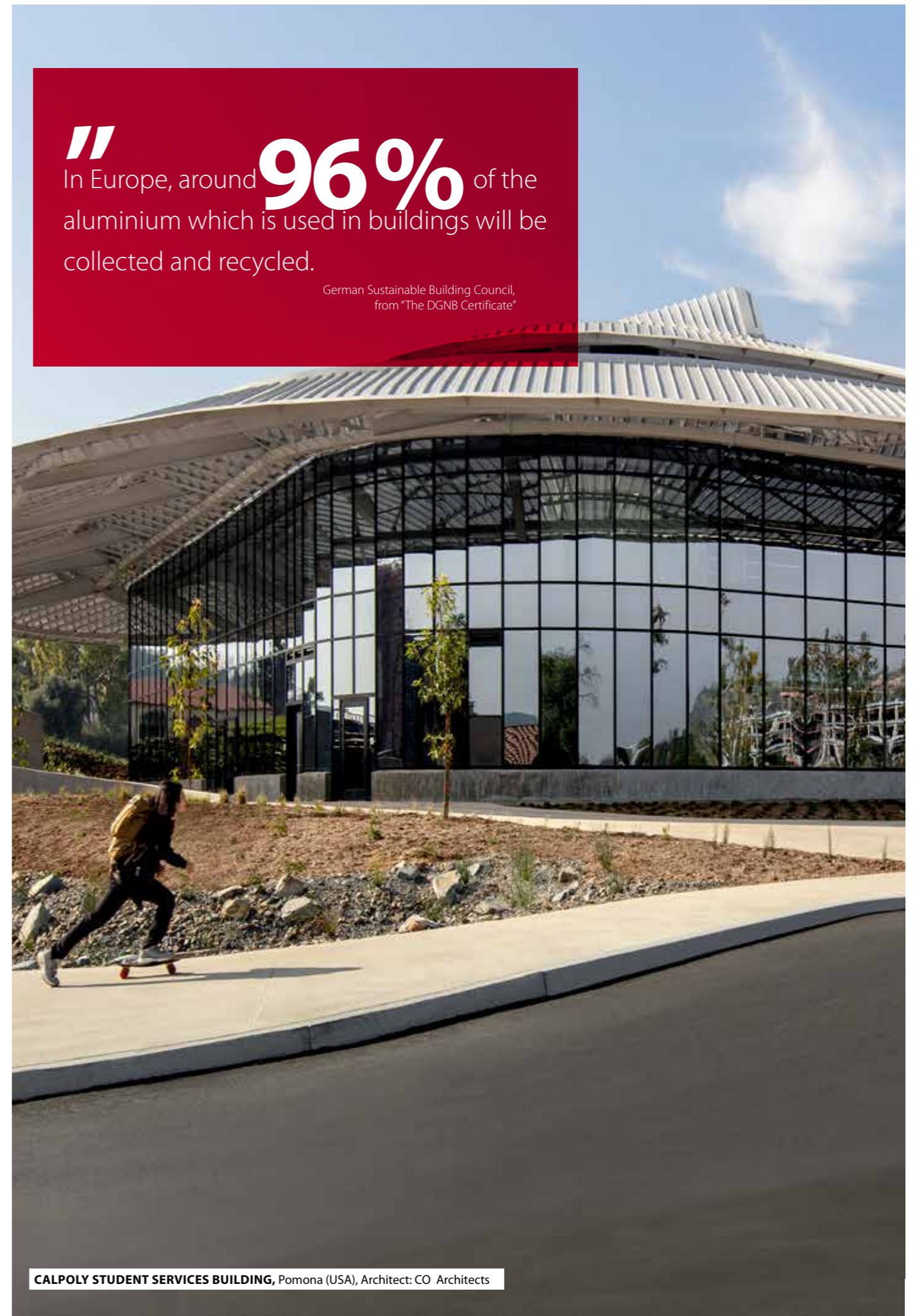
The material used for Kalzip has been subjected to critical tests time and again over the years. Among other things, the Federal Institute for Material Testing and -research - after almost 40 years of exposure - the improved weather resistance of plated Kalzip profiled sheets.

#### Why aluminium?

- Third most common element of the earth's crust - in combination with other elements it is present everywhere in nature
- Aluminium, once produced, delivers products for generations through recycling
- It can be dismantled without restriction
- Roof and façade products are durable, maintenance-free, deconstructable and therefore sustainable
- Very corrosion resistant and causes a very low load potential through worn metal parts.



GARE D'ORLÉANS, Orléans (FR)



" In Europe, around **96%** of the aluminium which is used in buildings will be collected and recycled.

German Sustainable Building Council,  
from "The DGNB Certificate"

CALPOLY STUDENT SERVICES BUILDING, Pomona (USA), Architect: CO Architects

# THE SYSTEMS AT A GLANCE

## THE RIGHT SOLUTION FOR YOUR PROJECT

System	Roof design	The Benefits*	Examples Purpose*	Formability / high-creative freedom	Thermal Insulation/ U-Value	Soundproofing	Sustainability	Energy efficiency according to EnEV
<b>Kalzip Liner roof system</b> Page 14		<ul style="list-style-type: none"> <li>- Kalzip Liner systems provide a fast installation</li> <li>- Allows other trades to work below once the non fragile walkable liner is installed</li> <li>- The liner and Kalzip outer sheet are laid perpendicular to the purlins across the purlins</li> <li>- Steel or aluminium options available</li> </ul>	<ul style="list-style-type: none"> <li>- Is predominantly used for new build construction, although they can also be used for refurbishment</li> <li>- Ideal for covering complete building envelopes</li> <li>- For normal acoustic requirements</li> </ul>	+++	+++	++	+++	+++
<b>Kalzip Structural Deck roof system</b> Page 16		<ul style="list-style-type: none"> <li>- Similar to the Liner system but with a top hat for enhanced thermal performance</li> <li>- Allows other trades to work below once the non fragile liner is installed</li> <li>- The liner deck and Kalzip outer sheet are laid perpendicular to the purlins across the purlins</li> <li>- Steel or aluminium options available</li> </ul>	<ul style="list-style-type: none"> <li>- For enhanced acoustic absorption</li> <li>- Ideal for covering complete building envelopes for rigorous acoustics specifications</li> </ul>	+++	+++	++	+++	+++
<b>Kalzip Deck roof system</b> Page 18		<ul style="list-style-type: none"> <li>- For all roof shapes, roof pitches, all Substructures and supporting structures</li> <li>- High design freedom - convex, concave, conical, elliptical, hyperbolic and XT free-form</li> <li>- Economical due to standard system components</li> <li>- Low weight</li> <li>- Variable in thermal insulation</li> <li>- Roof construction with minimized thermal bridges</li> </ul>	<ul style="list-style-type: none"> <li>- For building projects with high creative requirements</li> <li>- Ideal for covering complete building envelopes</li> <li>- For normal acoustic requirements</li> </ul>	+++	+++	++	+++	+++
<b>Kalzip Low U-value roof</b> Page 21		<ul style="list-style-type: none"> <li>- Cost effective and technical feasible, because it will likely survive the life of the building without requiring an upgrade</li> <li>- Reducing heat loss by improving U-values</li> <li>- Will contribute to the regime of improvements which will ultimately result in delivering net zero emissions for the UK by 2050</li> <li>- System options: Liner deck system, structural deck and liner systems.</li> </ul>	<ul style="list-style-type: none"> <li>- For building projects with with technical sound solutions and low U-value requirements.</li> </ul>	++	+++	+++	+++	+++
<b>Kalzip DuoPlus</b> Page 24		<ul style="list-style-type: none"> <li>- High insulation thicknesses possible, thus optimised building and thermal protection</li> <li>- Virtually free of thermal bridges, therefore extremely low heat transfer coefficient</li> <li>- Low weight</li> <li>- Excellent sound insulation values</li> </ul>	<ul style="list-style-type: none"> <li>- Ideal for construction projects with high acoustic requirements, e. g. B. Airports and multi-purpose halls</li> <li>- Suitable for the energetic refurbishment of buildings in order to comply with the EnEV</li> </ul>	++	+++	+++	+++	+++
<b>Kalzip Vented Roof Systems</b> Page 28		<ul style="list-style-type: none"> <li>- Economical alternative to bitumen and pvc foil/ sealings, traditional roofing materials such as bricks or slate</li> <li>- Low maintenance and no maintenance costs</li> <li>- Cost-effective overall package due to standardized web lengths, surface and components</li> <li>- High safety due to durable aluminium-alloy</li> </ul>	<ul style="list-style-type: none"> <li>- For flat roof landscapes in housing</li> <li>- Refurbishment of damaged flat roofs - sustainable and safe</li> </ul>	+	+++	+++	+++	+++

+ Standard   
 ++ Particularly suitable   
 +++ Outstanding

\* This system overview serves merely as an orientation for choosing the best possible system for your building project.

System	Roof design	The Benefits*	Examples Purpose*	Formability / high-creative freedom	Thermal insulation/ U-Value	Soundproofing	Sustainability	Energy efficiency
<b>Kalzip ProDach</b> Page 32		<ul style="list-style-type: none"> <li>- Suitable for new construction and renovation</li> <li>- Virtually free of thermal bridges, therefore extremely low heat transfer coefficient</li> <li>- Meets the requirements of the EnEV</li> <li>- Can be adapted exactly to object-specific requirements due to insulation board thicknesses of up to 220 mm</li> <li>- Excellent sound insulation values</li> </ul>	<ul style="list-style-type: none"> <li>- Especially suitable for construction projects with high acoustic requirements, e. g. B. Airports, Multipurpose halls</li> <li>- For use with Kalzip AF profiled sheets</li> <li>- Suitable for the energetic refurbishment of buildings in order to comply with the EnEV</li> </ul>	+	+++	+++	+++	+++
<b>Kalzip Vario LB Refurbishment system</b> Page 36		<ul style="list-style-type: none"> <li>- Sustainable and durable refurbishment solution for damaged flat roofs from 1.5</li> <li>- Low structural weight, also suitable for statically critical roof structures</li> <li>- In most cases, no interruption of use during rehabilitation</li> <li>- Saving of disposal costs for old roof cladding and insulation layer depending on condition</li> <li>- Improvement of the energetic standard</li> </ul>	<ul style="list-style-type: none"> <li>- For permanent architectural and structural upgrading of buildings</li> <li>- Ideal for deconstruction and construction in existing buildings</li> <li>- For the sustainable rehabilitation of ailing Flat roofs</li> <li>- For the visual enhancement of buildings worthy of preservation</li> <li>- Improvement of summer forest protection</li> </ul>	++	+++	++	+++	+++
<b>Kalzip FlexiCon RR 80</b> Page 40		<ul style="list-style-type: none"> <li>- Economical and favourable solution as substructure for freeform structures</li> <li>- Quick adjustment of the spatial position of the pipe substructure segments by means of three measuring points</li> <li>- Height compensation of on-site tolerances</li> <li>- Higher insulation thicknesses</li> </ul>	Ideal for substructures and substrates such as: <ul style="list-style-type: none"> <li>- Single-shell roof structures for industry and Sports facilities</li> <li>- Double-shell roof structures with normal heat transfer coefficients (U-values)</li> <li>- Sophisticated building geometries such as Large containers, domed roofs</li> <li>- Renovation of existing roof areas</li> </ul>	+++	+++	++	+++	+++
<b>Kalzip NatureRoof</b> Page 44		<ul style="list-style-type: none"> <li>- Installation directly on the Kalzip profiled sheets without additional sealing measures</li> <li>- High efficiency with fast assembly</li> <li>- Environmentally compatible and decomposable</li> <li>- Year-round improvement of thermal insulation and indoor climate, thereby increasing the value of living</li> <li>- Improvement of the microclimate. - Slowing down of the water drain</li> </ul>	<ul style="list-style-type: none"> <li>- All building projects with a requirement for additional use of the roof areas</li> <li>- Creation of compensation areas</li> </ul>	++	+++	+++	+++	+++
<b>Kalzip AluPlusSolar</b> Page 48		<ul style="list-style-type: none"> <li>- Maximum freedom of design for sophisticated object architecture through a roof-integrated photovoltaic System without additional fastening elements</li> <li>- High safety and performance, a fully IEC-certified glassless, semi-flexible and ultra-lightweight light module based on silicon solar cells</li> <li>- Optimal use of solar energy even in low light conditions due to the micro-lens-shaped surface of ETFE (ethylene tetrafluoroethylene) foil</li> </ul>	<ul style="list-style-type: none"> <li>- All building projects with a requirement for additional use of the roof areas</li> </ul>	++	+++	++	+++	+++
<b>Kalzip SolarClad</b> Page 50		<ul style="list-style-type: none"> <li>- Retrofitting existing Kalzip roofs for all building widths</li> <li>- Building authority approved fixing clamps for maximum safety</li> <li>- Low weight - incl. solar modules - usually no additional strengthening of the roof structure necessary</li> <li>- Optimal use of solar energy even in low light conditions due to the micro-lens-shaped surface made of ETFE (ethylene tetrafluoroethylene) foil</li> <li>- Ideal for all roof shapes, for barrel-shaped roofs contour following up to 13 m radius</li> </ul>	<ul style="list-style-type: none"> <li>- All building projects with a requirement for additional use of the roof areas</li> </ul>	+	+++	++	+++	+++
<b>Kalzip combinations, e.g. Composite panels</b> Page 52		<ul style="list-style-type: none"> <li>- Ideally suited for the attachment of additive, shape-supporting building materials</li> <li>- High design freedom</li> <li>- Penetration-free mounting on the flanges</li> <li>- Separation of the water-bearing layer from the visual appearance</li> </ul>	<ul style="list-style-type: none"> <li>- Aesthetically sophisticated architecture</li> <li>- Complete building envelopes</li> </ul>	+++	+++	++	+++	+++

+ Standard    ++ Particularly suitable    +++ Outstanding

\* This system overview serves merely as an orientation for choosing the best possible system for your building project.



© Kenan Taufik, Berlin

**CENTRAL TRAIN STATION, Salzburg (AT), Architect: kadawittfeld Architekten**

# KALZIP LINER ROOF SYSTEM

## Fast installation without loss of quality

Kalzip liner roof systems are predominantly used for new build construction, although they can also be used for refurbishment in the event of other failed roofing systems or building enhancements.

The Kalzip liner roof system is ideal where speed of installation on a project is of utmost importance. A non-fragile walkable Kalzip liner sheet can be quickly installed to provide a weather cover to allow other trades to work below. The remainder of the roofing components can then be installed without affecting the critical path of the construction programme.

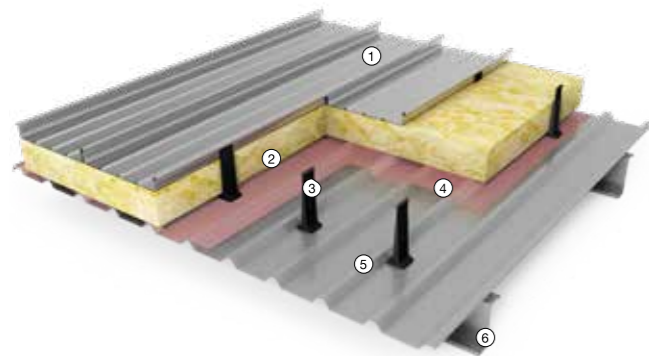
The Kalzip liner roof system has the outer Kalzip standing seam roof sheet and the internal Kalzip liner trapezoidal profiled liner sheet laid in the same direction across roof purlins acting as the primary support. Typical purlin centres would be approximately 1.4 to 1.8 metres.

The Kalzip standing seam roof sheets are supported directly off the roof purlins via the support clips/halters (aluminium clips or E clips) so therefore act independently of the Kalzip liner sheet. When lightweight quilt type insulation is used, the external loads (wind suction, snow, access etc.) are transferred direct to the support purlins and not the liner sheet, without affecting the critical path of the construction programme.

### THE BENEFITS

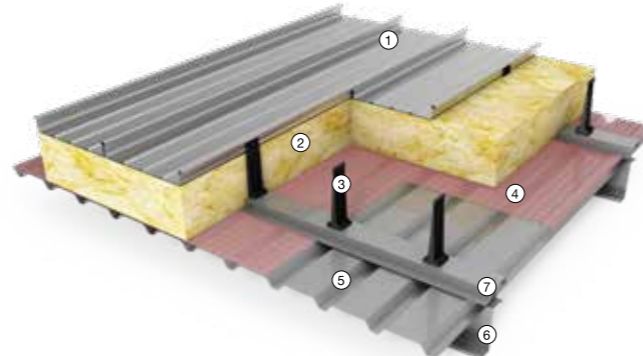
- Kalzip Liner systems provide a fast installation
- Allows other trades to work below once the non fragile walkable liner is installed
- The liner and Kalzip outer sheet are laid perpendicular to the purlins across the purlins
- Purlin centres are typically between 1.0m to 1.8m
- Perforated options available for acoustic enhancement
- Steel or aluminium options available

Standard liner roof configuration

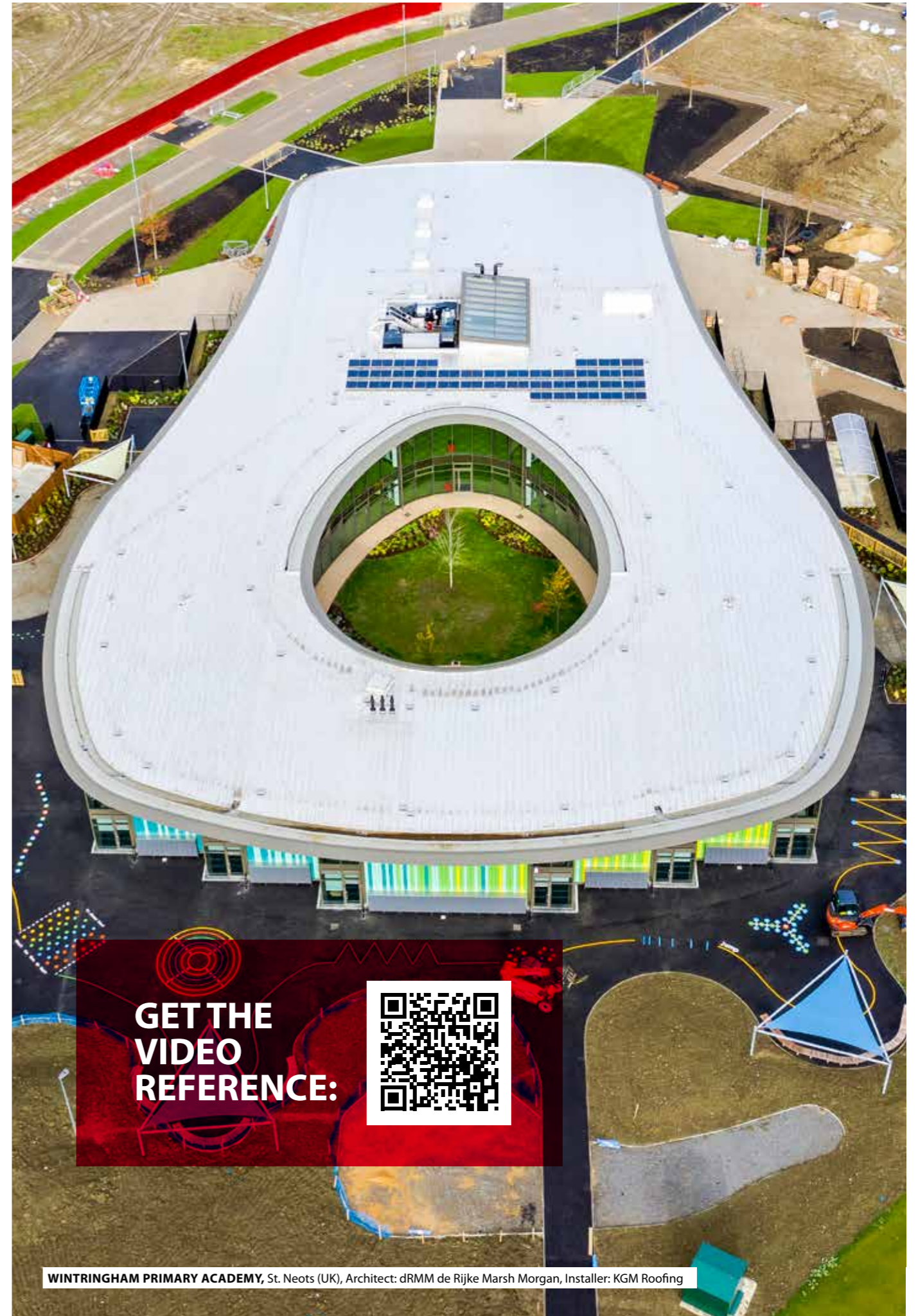


- 1 Kalzip standing seam sheet
- 2 Kalzip insulation
- 3 Kalzip E clip
- 4 Kalzip vapour control layer
- 5 Trapezoidal liner sheet
- 6 Purlin

Liner with top hat spacer system for increased U-values



- 1 Kalzip standing seam sheet
- 2 Kalzip insulation
- 3 Kalzip E clip
- 4 Kalzip vapour control layer
- 5 Trapezoidal liner sheet
- 6 Purlin
- 7 Top hat sub purlin



WINTRINGHAM PRIMARY ACADEMY, St. Neots (UK), Architect: dRMM de Rijke Marsh Morgan, Installer: KGM Roofing



# KALZIP STRUCTURAL DECK SYSTEM

## Form and functionality

Kalzip structural decking provides an economical solution for long span installations and eliminates the need for purlins. For enhanced acoustic absorption, decking sheets can be perforated and can support mass, such as increased insulation or board, which may be introduced for more rigorous acoustic specifications.

With a choice of steel or aluminium, a selection of profiles, gauges and sheet lengths – this range of products has been developed to extend the versatility of Kalzip, making it suitable for a wide range of applications.

As a general rule, steel is cost effective and provides the optimum in loading and spanning capability; whereas aluminium offers exceptional durability in buildings with high humidity levels such as swimming pools and wet industrial process plants, e.g. paper mills.

Where structural decking is installed there is a reduced requirement for secondary steelwork. The Kalzip structural decking sheet is generally laid transverse to the direction of the Kalzip standing seam roof sheet and spans between the main steel rafters. Typical rafter centres would be approximately 3 to 8 metres.

The Kalzip clips are installed in a diagonal layout so that all external roof loads can be evenly distributed to the structural decking sheet. The frequency of clips may be increased at the perimeter of the building where higher wind loads occur.

The gauge and profile of the Kalzip structural decking sheet is therefore determined by the rafter centres, all external roof loads, internal wind loads, service loads (e.g. lighting) and the dead weight of the construction components.

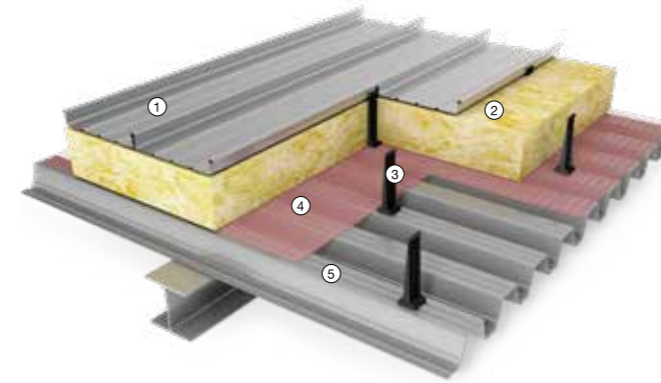
### THE BENEFITS

- This is a long span solution which negates the need for roof purlins
- The deck is installed directly onto the steel rafters
- It allows other trades to work below once the edeck is installed
- The deep section deck profiles can support additional mass such as those needed for acoustic systems
- The deck sheet and Kalzip outer sheet are typically laid perpendicular to each other
- Perforated options available for acoustic enhancement
- Steel or aluminium options available

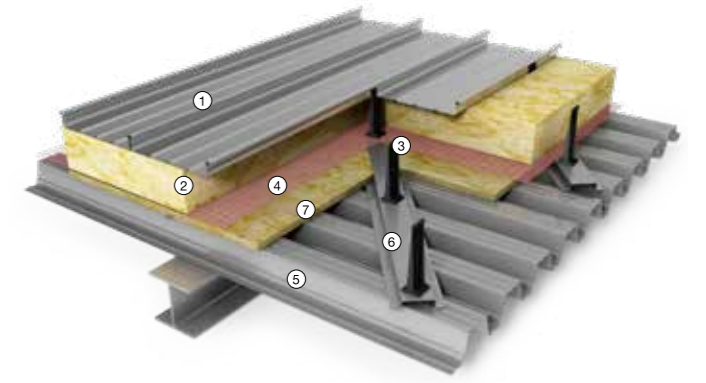


WARSAWA ZACHODNIA, Warswa (PL), Architect: dwa Architekci, Installer: Korman Sp. z o.o.

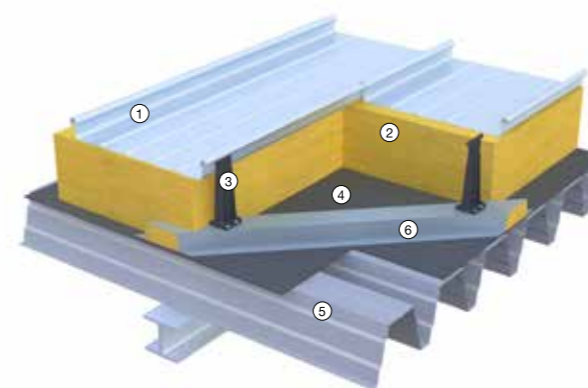
Kalzip standing seam on structural decking



Kalzip standing seam on perforated structural decking with acoustic insulation slab



Kalzip standing seam on structural decking with top hat sub purlins



- ① Kalzip standing seam sheet
- ② Kalzip insulation
- ③ Kalzip E clip
- ④ Kalzip vapour control Layer
- ⑤ Structural decking
- ⑥ Top hat sub purlins
- ⑦ Acoustic insulation slab



# KALZIP DECK ROOF SYSTEM

## Statically exactly adjustable and highly flexible

Kalzip is a flexible, weather-resistant, easy-to-install, lightweight construction system which can be used to bridge even large spans without difficulty. Through extensive system components and accessories, Kalzip becomes a complete solution for building envelopes, easily combined with other building materials. This always results in again unique buildings, which are visually and technically convincing.

### THE BENEFITS

- Applicable for all substructures
- Fast, largely weather-stand-alone installation
- Individual design variations from Geometries through XT free-form profiles for unusual building shapes
- Penetration-free roof cladding, therefore no weak points due to fasteners
- Complies with the requirements of the industrial building guideline and DIN 18234-1 for industrial roofs and the DIN EN 13984
- Durable and sustainable through the use of aluminium recycling alloy
- No lightning protection is necessary in the area, as the aluminium standing seam roof serves as a natural catchment device. Superstructures of any kind must be tested separately.

## The application determines the design

The unique flexibility of the standard roof structure with a variety of profile construction widths makes it possible to combine the demand for form and function with technical perfection. The spectrum of convex, concave or elliptical and hyperbolically rounded shapes opens up interesting variations for creative architecture.

The Kalzip XT free-form profiles enable the implementation of computer-generated shape languages and construction principles made possible. Evolutionary animations, visualized in 3-D objects, bring forth new organic architectural forms - the fusion of biology and architecture.

The standard roof structure is predominantly designed as a warm roof structure and it is, like all other Kalzip roof structures, generally suitable for all roof pitches from 1.5° and for all substructures and supporting structures. The constructive design depends on the respective application. It takes into account loads caused by snow, wind, temperature and humidity.

Thermal insulation requirements can be met flexibly. The roof structure can be adapted exactly to the requirements of the building by selecting the thickness of the insulation material. In addition, sophisticated detailed solutions for interior and exterior drainage are available.



PHOTO ELYSÉE, Lausanne (SUI), Architect: Aires Mateus e Associados, Installer: Alance AG

# KALZIP LOW U-VALUE SYSTEM

## The advanced lightweight construction system

### High safety over the entire service life

- The profiled panels are connected to the sub-structure by means of special clips that snap into the seams and are covered by the next element. The roof cladding will not be penetrated
- Pressure and suction loads become safe added
- The possibly existing residual moisture of the insulation layer can escape through the seams
- Sophisticated and detailed solutions for roof penetrations, connections and terminations for roof edges
- Non-flammable, resistant to flying sparks and radiant heat ("hard roofing")
- Kalzip assumes the function of a Collecting device according to DIN VDE V 0185-3 for lightning protection

### Unlimited application possibilities

- Suitable for warm and cold roof constructions in all shapes, substructures, supporting structures and roof pitches from 1.5°
- High stability and low self-weight - very well suited for large spans and the refurbishment of old roofs
- Lengths without joints over 100 m and more metres, when production takes place on-site.
- Adapts flexibly to any floor plan, building geometry and size

### Vorzügliche bauphysikalische Werte

- High thermal insulation requirements are easily met. The roof structure can be adapted exactly to the requirements of the building by selecting the thickness of the insulation
- High quality sound insulation is made possible by constructive measurements
- Kalzip profiled sheets are optionally available with an anti-condensation coating (Kalzip Aquasine®) available

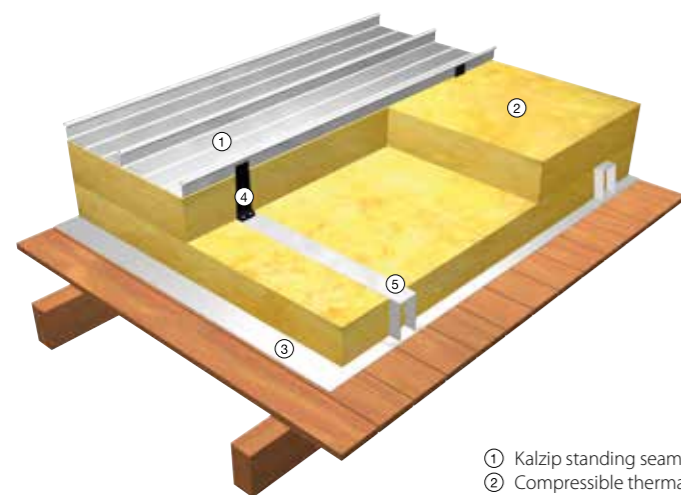
### Durability and economic efficiency

- Corrosion-resistant, weatherproof Aluminium alloy as base material
- Insensitive to UV rays, resistant to microorganisms and to aging
- Particularly quick installation, mostly independent of weather conditions
- Economical due to pre-manufactured system components

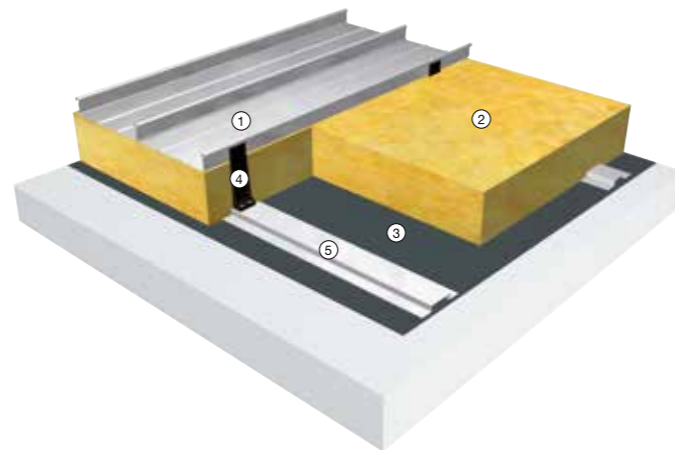
All these advantages can be applied to all Kalzip systems and features.

Non-ventilated Kalzip roof on timber rafters with visible timber lining

Non-ventilated Kalzip roof on concrete with purlins



- ① Kalzip standing seam sheet
- ② Compressible thermal insulation felt
- ③ Kalzip vapour control layer
- ④ Kalzip composite clip
- ⑤ Hat profile



## The cost effective and technically sound solution

Kalzip's low U-value roof system provides a cost effective and technically sound solution for roof U-values as low as 0.10 W/m<sup>2</sup>/K by combining rigid insulation boards with glass mineral fibre layers.

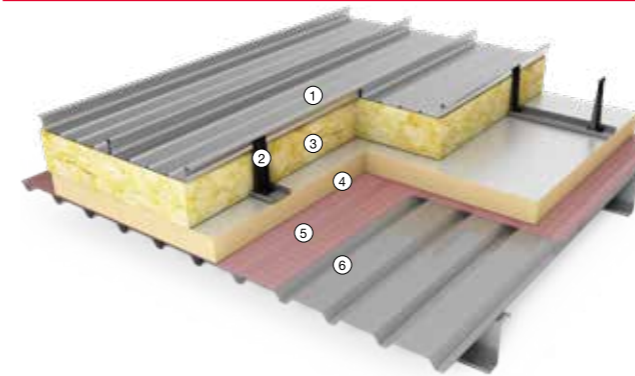
It is the symbiosis of the two insulation types that gives the system its high performance and uniqueness in achieving extremely low U-values, allowing a significantly greater overall thermal resistance to be achieved compared to that of any one single layer of insulation of the same total thickness.

The low U-value system is primarily based on a standard Kalzip standing seam roof build and as such is subject to the same basic set of criteria and properties for materials, finishes, geometries, accessories and components as outlined in the Kalzip systems brochure.

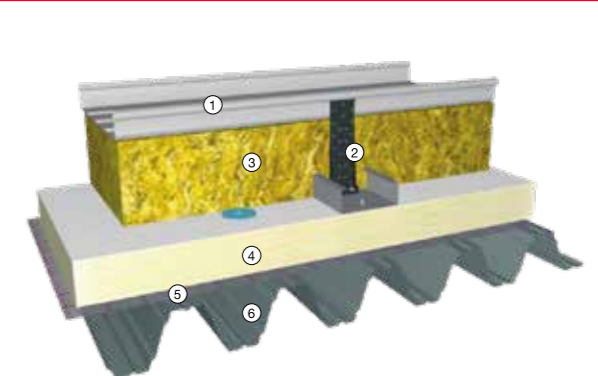
### THE BENEFITS

- Kalzip standing seam roof sheets are supported directly off the roof purlins
- Supported directly off the roof purlins via the support clips/halters (aluminium clips or E clips)
- The profile of the Kalzip liner sheets will be determined by its dimensional compatibility with the Kalzip standing seam roof sheet
- Kalzip liners are available as standard in high grade steel or aluminium.
- Standard finishes include a galvanised, or white enamel finish to suit the internal application.

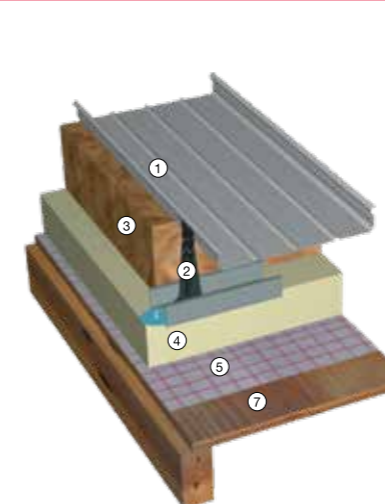
Liner-deck roof system



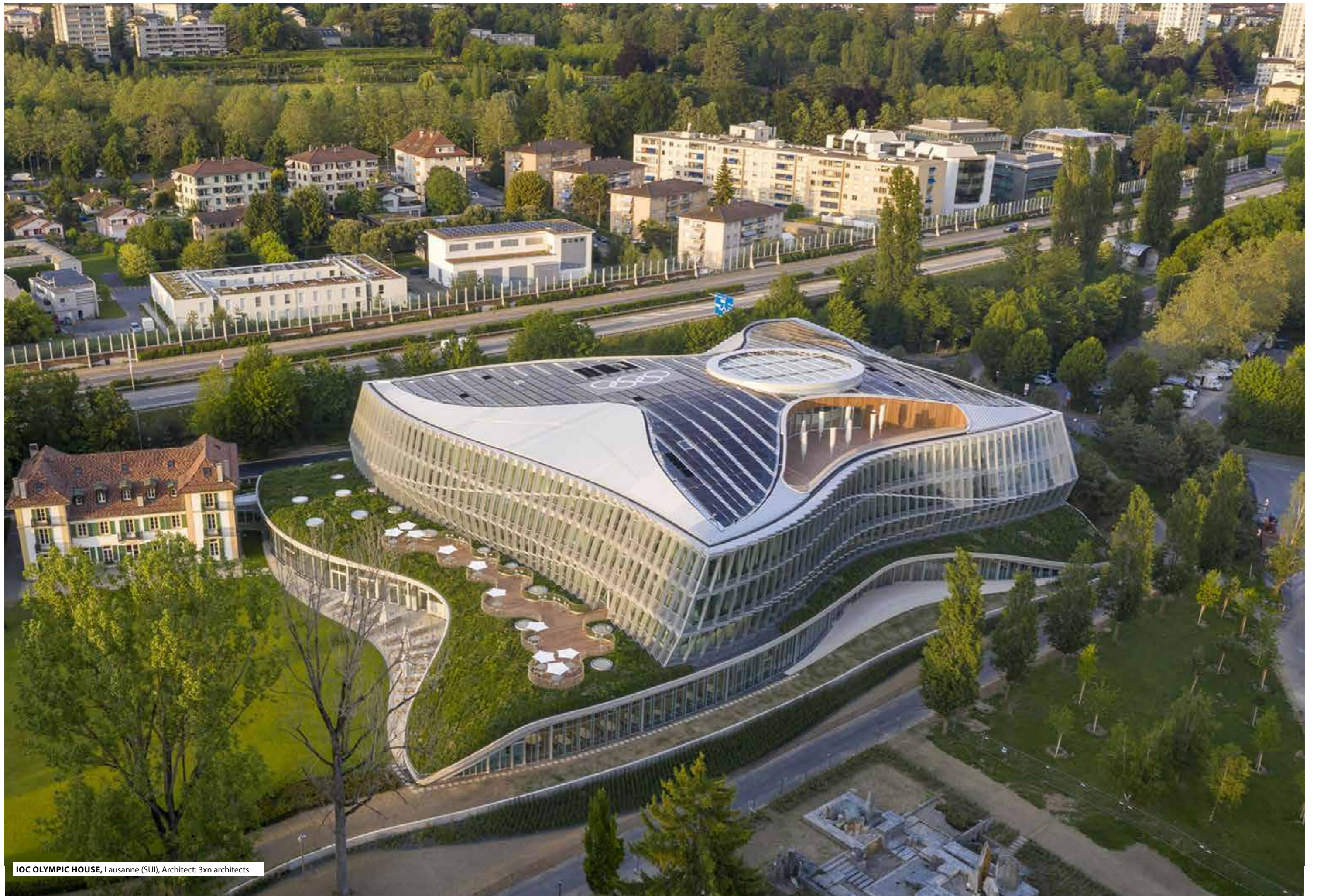
Structural deck roof system



Timber deck roof system



- ① Kalzip top sheet
- ② Kalzip E clips fixed to inverted channel
- ③ Mineral fibre quilt insulation
- ④ Insulation 23 (2400 mm x 1200 mm)
- ⑤ Kalzip vapour control layer
- ⑥ Inverted liner sheet over purlins
- ⑦ Timber decking



IOC OLYMPIC HOUSE, Lausanne (SUI), Architect: 3xn architects

# KALZIP DUOPLUS AND KALZIP DUO

## Energy efficient roof systems

Kalzip's DuoPlus and Duo roof systems provide a cost effective and technically sound solution for roof U-values as low as 0.10 W/m<sup>2</sup>/K.

The system was developed in anticipation of the on-going changes to Part L of the Building Regulations and future initiatives with energy efficiency. These new regulations will lead to ever-tightening design limits on thermal and energy performance of buildings.

Maintaining all the qualities and benefits of a standard Kalzip standing seam roofing system, this hybrid configuration combines rigid insulation slabs with compressible glass mineral fibre insulation.

It is the symbiosis of the two insulation types that gives the system its high performance and uniqueness in achieving extremely low U-values, allowing a significantly greater overall thermal resistance to be achieved compared to that of any one single layer of insulation of the same total thickness.

### THE BENEFITS

- Nearly free of thermal bridges - due to an extremely low heat transmission coefficient
- High thermal insulation - meets the requirements of current EnEV
- Variable thermal insulation thicknesses up to 345 mm
- Suitable for all E clip types and heights
- Excellent sound insulation ratings up to R'<sub>w</sub> = 50 dB (A), depending on the roof structure
- Low weight - ideal for large spans
- A complete System from one source
- Functional and harmonic coordinated system components
- Adjustable fastening system
- High economic efficiency and short installation times through prefabricated system components
- For substructures of trapezoidal steel profiles, concrete, cellular concrete and wood



ACCDUR WINDOW FACTORY, Freudenberg (GER), Architect: Dipl. - Ing. Paul Michael Pilz

## The perfect roof system to fulfill a high energy saving ratio

### Kalzip DuoPlus

The construction principle of the Kalzip DuoPlus and Kalzip Duo roof systems is based on the thermal separation of the external roof and the inner supporting shell. The most common constructions are used for the load-bearing shell to which a suitable vapour barrier is attached. A layer of step-resistant mineral wool or PIR/PUR insulation boards in thicknesses of 100 or 140 mm is used as continuous thermal separation. The specially developed DuoPlus clip-on rotary rail type E is attached to this thermal insulation by means of approved connecting elements, e.g. on a trapezoidal steel substructure. This rotable clip rail has the function of transferring the external force from the clip to the

thermal insulation and the substructure below. Through their special design, it serves as an economical and secure fixing surface for the new Kalzip rotable clip rail with E-clips. These are then screwed in manually and can be adapted during installation depending on the profile dimensions and/or tolerance to the respective conditions. The height of the E-clips determines the second insulation layer of mineral fibre insulation felt, which allows total insulation thicknesses of a current maximum of 330 mm at 65 profile standing seam height, 345 mm at 50 profile standing seam height.

### Kalzip Duo

Kalzip Duo is a particularly economical system variant. This more cost-effective option has no need for a full-surface step-resistant thermal insulation. Only approx. 240 mm wide step-resistant mineral wool insulation strips or PIR/PUR insulation boards of 100 or 140 mm thickness are required as underlays for the DuoPlus clip-on rotating clip-on rail. The gaps are filled with mineral fibre insulation felt. Due to the height of the E-clips, total insulation thicknesses of up to 345 mm are also possible as for the DuoPlus roof construction.

## The system for excellent thermal insulation and high acoustic insulation

### Kalzip DuoPlus or Kalzip Duo on trapezoidal steel profile

#### Subshell

##### Trapezoidal Profiles

Panel thicknesses  $t = 0,88 \text{ mm}$

**Cross sections:** FI 90/305  
FI 100/275  
FI 135/310  
FI 144/287  
FI 150/280  
FI 165/250

#### Optional acoustic profiles perforated:

AK 100/275  
AK 135/310  
AK 150/280  
AK 165/250

#### Kalzip vapour barrier FR self-adhesive

- Pressure-resistant mineral wool insulation according to DIN EN 13162**  
Euroclass A1 - non-flammable  
Application type WD as per DIN 18165  
Thermal conductivity level WLS 037  
Compressive strength: 60 kN/m<sup>2</sup>  
Thickness: 100/140 mm  
Kalzip DuoPlus – fully laid  
Kalzip Duo – in 24 cm wide strips
- Pressure-resistant PIR/PUR thermal insulation according to DIN EN 13165**  
Euroclass E - normal flammability  
Application type WD as per DIN 4102/1  
Thermal conductivity level WLS 024  
Compressive strength: 60 kN/m<sup>2</sup>  
Thickness: 100/140 mm  
Kalzip DuoPlus – fully laid  
Kalzip Duo – in 24 cm wide strips
- Rotary clip adapter E for the attachment of Kalzip E-clips**  
Clip height depends on the requirements of the EnEV
- Connecting elements for Rotary clip rail E**  
Fastener suitable for the fixing base and clamping length e.g. SFS intec SD2-6,0 x L (With Kalzip Duo installations the spaces are filled with mineral wool insulation felt between the 24 cm wide strips.)
- Mineral wool insulation felt according to DIN EN 13162**  
Euroclass A1 - non-flammable  
Application type WL as per DIN 18165  
Thermal conductivity level WLS 040  
Thickness depends on the requirements of the EnEV
- Rotary clip rail E with plug-in connector with a hole average of 7 and 10,5 mm pre-punched**
- Kalzip aluminium profiled sheets**

### Combination of insulating materials with different heat transfer coefficients

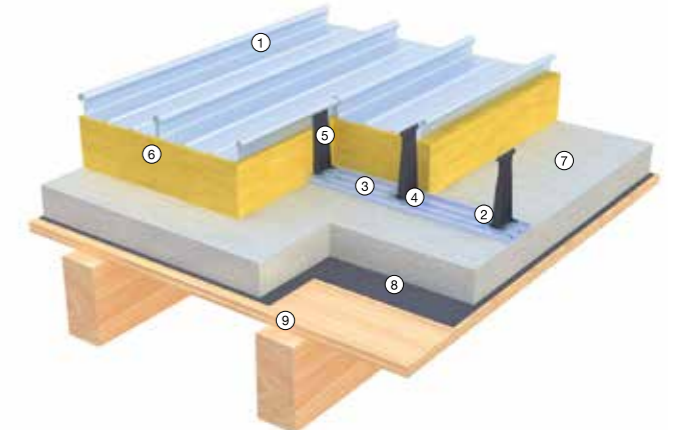
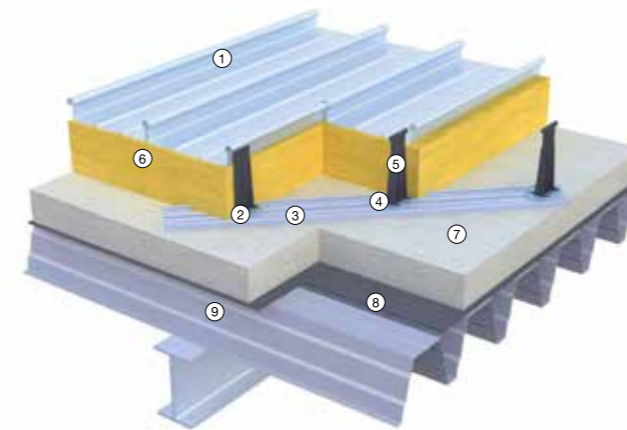
Variant	Base insulation	Insulation felt	Compressed insulation thickness (mm)	U-Value (un-bridged)	U Value (bridged)*
1	WLS 024	WLS 032	100 + 100 140 + 180	0.129 0.084	0.135 0.090
2	WLS 037	WLS 035	100 + 100 140 + 190	0.167 0.107	0.177 0.115
3	WLS 040	WLS 040	100 + 100 140 + 180	0.186 0.119	0.196 0.127

\*U-values in W/(m<sup>2</sup> x K) for the combination of thermal insulation materials with different heat transfer coefficients and insulation thicknesses for a number of clips of 2 clips/m<sup>2</sup>

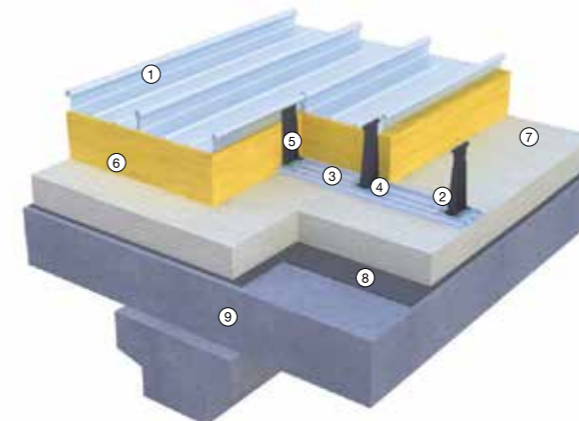


Kalzip DuoPlus on trapezoidal steel deck

Kalzip DuoPlus on timber/plywood



Kalzip DuoPlus on concrete substructure



- 1 Kalzip profiled sheets
- 2 Approved system fasteners
- 3 DuoPlus rotatable clip rail
- 4 E-Type clip adapter
- 5 Kalzip E-type clip
- 6 Insulation
- 7 High density thermal insulation layer
- 8 Vapour Control Layer
- 9 Substructure

# KALZIP VENTED ROOF STRUCTURES



HOUSING PROJECT, Freudenberg (GER), Architect: KKW Architekten Lüdenscheid, Installer: Borau Dach GmbH

**Sustainability and profitability in construction - which means energy efficiency, longevity, safety and no maintenance required! The metal roof from Kalzip was specially developed for these requirements. Kalzip vented roof systems allow air to flow through the attic space, escaping through the roof vents. Properly installed roof vents will prevent the roof from overheating.**

#### **Flexible planning:**

##### **Design freedom for new buildings**

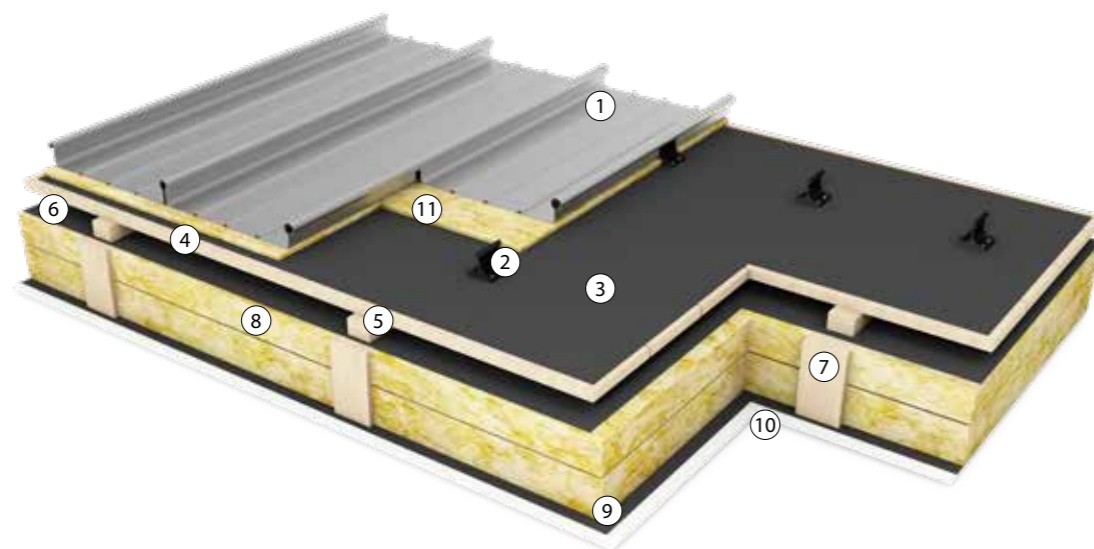
More than 110 million square metres of the Kalzip roof system have already been laid. Thanks to this wealth of experience, the roofs can be installed extremely flexibly, quickly, easily and safely - even with very flat roof pitches from 1.5°. This means that the height on the top floor can also be fully utilised.

In terms of building physics, the diffusion-open roof cladding made of aluminium standing seam panels offers maximum safety. The constructions prevent condensation from developing. When the roof overheats or moisture builds up, this can lead to substantial damage or health risks.

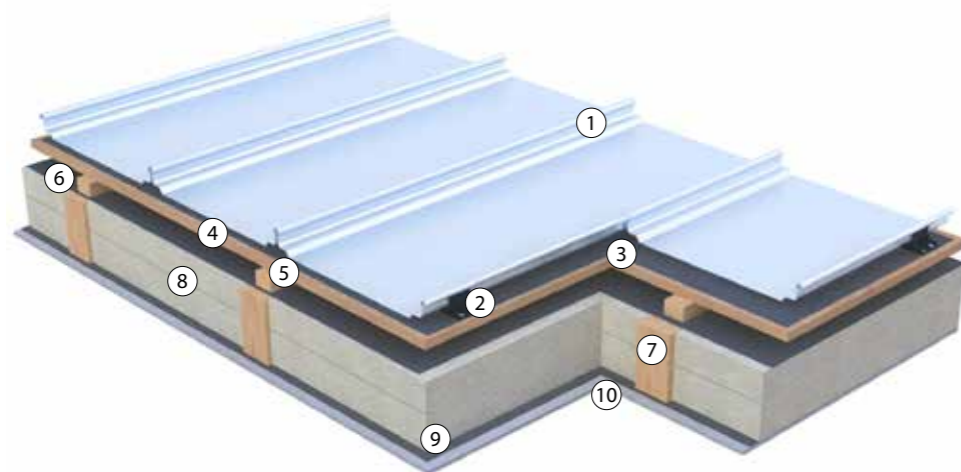
#### **A great advantage - the roof system from Kalzip**

The Kalzip vented roof system matches perfectly with its natural, pre-weathered and matt Alu-PlusPatina surface because of its low solar reflection ("cool roofs"). In addition, it is almost maintenance-free. It not only contributes to the long-term maintenance of the value of the property, but also increases its value through its attractive appearance. At the same time, the metal roof offers natural lightning protection and, thanks to the "hard roofing", further protection against flying sparks and radiant heat. Even after its long service life, the metal roof complies with the principle of sustainability: it can be completely recycled and is therefore particularly environmentally friendly.

**Kalzip - Vented roof structure on formwork with insulation**



**Kalzip AF - Vented roof structure on formwork**



- ① Kalzip profiled sheets
- ② Kalzip E-clip type E5
- ③ Back ventilation level
- ④ Wooden formwork 24 mm
- ⑤ Wood counter battening
- ⑥ Undercarriage track
- ⑦ Timber rafter
- ⑧ Insulation between rafters
- ⑨ Vapour barrier  $s_d \geq 100$  m
- ⑩ Interior room cladding with e.g. plasterboard
- ⑪ Insulation



**COURTYARD HOUSE, Vorarlberg (AT)**





GERMAN FOOTBALL MUSEUM, Dortmund (GER), Architect: HPP Hentrich-Petschnigg & Partner, Installer: B. Schlichter GmbH & Co. KG

© HGEsch Photography

# KALZIP PRODACH

## Functionality and design

The Kalzip ProDach is the combination of seamless Kalzip AF profiled sheets and the step-resistant Prorock thermal insulation boards from the manufacturer Rockwool. Visually, this roof construction is impressive due to its elegant and discreet surface effect, which is based on the traditional standing seam roof. Even smaller buildings obtain a proportionally balanced, well-designed roof cladding with this system. Kalzip ProDach is a complete solution for high-quality, visually attractive, rational roofing.

### THE BENEFITS

- Suitable for new buildings and roof renovation
- Diffusion-open insulating material; water vapour diffusion resistance factor  $\mu = 1.0$
- The insulating material is non-flammable, highly heat and sound insulating, dimensionally stable and vibration damping
- The roof structure can be adapted exactly to the requirements of the building with insulation board thicknesses of up to 220 mm; calculated thermal conductivity =  $0.036 \text{ W}/(\text{m}\cdot\text{K})$
- High-quality sound insulation due to an open-pored insulating material structure - with this roof structure, sound insulation values of 38 to 42 dB can be easily achieved
- The insulation board transfers the ballast from the roof covering to the substructure.

### The areas of application

Kalzip ProDach is suitable for all standard substructures or load-bearing structures made of steel, concrete and timber, and for all applications in building construction and for the renovation of old roofs.

The static design can be adapted exactly to the object requirements by the number and arrangement of the fixing points. Suction loads are safely transferred to the supporting structure via the Kalzip fixing clips. Special system fasteners are available for all types of substrate. The insulation board offers a high level of slip resistance during installation and maintenance work.

## The result of the innovative performance of two major brands - outstanding sound and thermal insulation

### The Installation

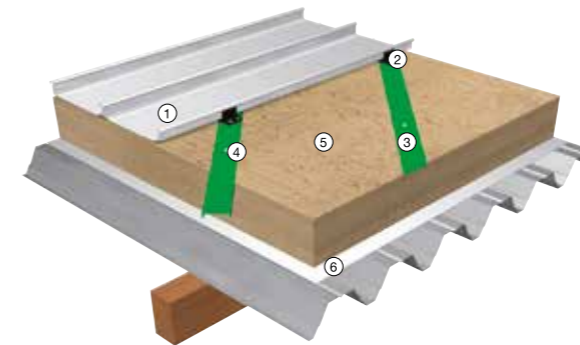
The corrosion-resistant, weatherproof aluminium top layer is attached using the usual Kalzip processing technique with clips, but - and this is the special feature of the Kalzip ProRoof - not directly to the supporting structure but to a corrosion-resistant steel U-rail embedded in the insulation layer. The system fasteners, which connect the U-rail with the supporting structure only penetrate the insulating material at certain points. This results in advantages for sound and heat insulation.

Technical data insulating felt Prorock 036*	
Fire behaviour	Euroclass A1, non-flammable
Thermal conductivity	0,036 W/(m · K)
Temperature characteristics	melting point of rock wool: > 1000 °C
Steam diffusion resistance	$\mu = 1,0$
Compressive stress at 10 % compression	$\sigma_{10} \geq 50$ kPa
Tensile strength vertical to the panel plane (tear strength)	$\sigma_{MT} \geq 7,5$ kPa
Point-load with 5 mm compression	$F_p \geq 550$ N

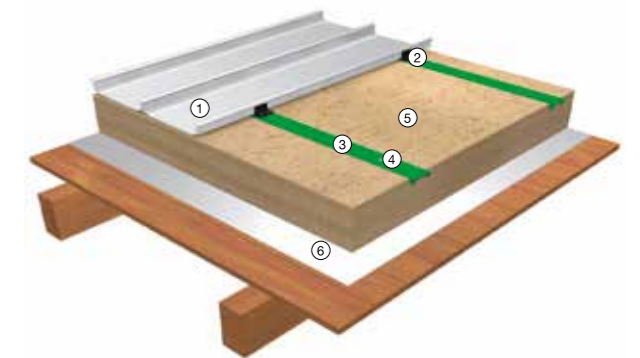
\*The exact thickness of the insulation layer depends on the requirements of the current EnEV.



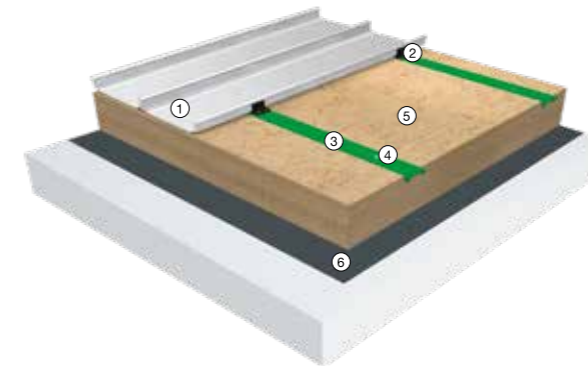
Roof construction Kalzip ProDach on a truss roof construction



Roof construction Kalzip ProDach on rafter roof construction



Roof construction Kalzip ProDach on concrete/ aerated concrete



Attached clips on mounting rails

- ① Kalzip AF profiled sheets
- ② Kalzip composite clip
- ③ Mounting rail steel
- ④ System fastener according to substructure
- ⑤ Thermal insulation
- ⑥ Vapour barrier

### Remark:

The roof structures shown are application examples. The roof structure must be adapted to the structural conditions in each individual case.

# KALZIP VARIO LB

## ROOF REFURBISHMENT SYSTEM

The foundation for an economical and safe refurbishment concept is an exact survey and analysis of the building condition, the bearing capacity and the planned scope of refurbishment. For buildings of the 1970s and 1980s, updated plans, static proofs and the documentation and specification of the building materials used at that time are often missing. The Kalzip refurbishment options therefore offer a comprehensive solution from planning and tendering to the provision of all necessary materials for substructure, roofing and drainage.

### The Kalzip refurbishment service includes:

- Non-binding project-related advice on site from Kalzip refurbishment experts
- Stocktaking by qualified roof experts (e.g. inspection of the insulation and sealing construction)\*
- Recommendation of independent engineering offices for condition monitoring
- Calculation and evaluation of the load-bearing ceiling structure and inclusion of trusses and columns\*
- Development of a planning process capable of making decisions with a property-specific renovation proposal
- Cost calculation
- Provision of bases for the Call for tender
- Cost comparison conventional refurbishment vs. Kalzip
- Calculations for anchors, fasteners and dowels\*
- Heat and moisture protection certificates\*
- Lightning protection\*
- Parts lists and installation plans\*

\*These services are charged.



## Refurbishment of existing roofs with the Vario LB roof refurbishment system

Kalzip offers various systems for the sustainable refurbishment of roofs which have proven themselves over the years. With these solutions, existing roofs can be converted particularly economically into a safe roof (cold roof construction).

In the constructional design, any existing gravel fill is usually removed first. This weight saving provides load reserves that are suitable for safely accommodating additional superstructures. This is followed by a careful inspection of the sealing (cutting open existing perforations, bubbles, etc.). For the construction of a cold roof, a flexible lightweight substructure is firmly connected to the building. Special inclination-flexible troughs serve as anchoring base, into which the variable supports are adjusted and screwed. A T-shaped component with a round tube is inserted and fastened into these

supports vertical to receive the inclination-flexible purlin. The flexible purlin is designed in such a way that it determines the roof pitch while sitting on the round tube and can accommodate the newly developed rail clips.

The system is stiffened by stiffening profiles which are installed from the eaves to the ridge after the LB purlin has been attached. Bracing and coupling rods are also installed to stabilise the structure. The LB clips are then simply screwed into the LB purlin, the Kalzip® profiled sheets are snapped into the clips as usual with the small flange and covered by the larger flange of the next profiled sheet and finally connected together mechanically with a positive fit. The system includes all the connection and end details.

**BEFORE**



**AFTER**



© Thorsten Scherz

© Thorsten Scherz

## For the highest building physics and architectural requirements

The Kalzip Vario LB is a completely cost-effective and sustainable refurbishment solution for dilapidated roofs, transforming them into a safer sloping roof (cold roof construction).

The flexibility and variety of the Kalzip Vario LB refurbishment system allows architects, designers and building contractors creative freedom. Simultaneously, those in the trade can redefine roof landscapes in existing buildings

and significantly improve the visual appearance of old buildings. The system consists of extruded aluminium profiles, which are very light, not flammable and can be structurally used as a full roof framework system. Whether it is a gable, mono-pitched or hip roof – anything is possible.

### THE BENEFITS

- Considerable reduction of installation time due to tailored modular elements
- The materials used are just as durable as the Kalzip roof covering
- High rigidity and stability
- Simple determination of the new roof geometry
- Economical, fast assembly
- Flexible adjustment of the roof pitch, irrespective of the existing building

#### Kalzip Vario LB roof refurbishment system - basic system



#### Kalzip refurbishment of corrugated asbestos roof coverings



#### Kalzip refurbishment with LB purlin connector



MARKET HALLS, Munich (GER, Architect: BH Architekten Installer: Binder und Sohn)



THIS INNOVATION HAS BEEN  
**AWARDED** WITH THE **PLUS X AWARD**  
IN **FOUR CATEGORIES** AND AS  
THE **BEST PRODUCT OF THE YEAR.**





FONTENAY HOTEL, Hamburg (GER)

# KALZIP FLEXICON RR 80

## The flexible substructure for sophisticated architectural geometries

The Kalzip FlexiCon system is a flexible substructure which can be used to compensate for large differences in height in the substructure for receiving and installing Kalzip system fasteners and can be adjusted to the required level. A further area of application is three-dimensional structures or complete building envelopes which, due to their demanding building geometry, have limitations in the design of the substructure.

This particularly includes tank construction, such as digestion towers or domed roofs. This system is also excellently suited for refurbishment, as the pipe construction can be fastened to all substrates. For clip mounting, the clip can be aligned three-dimensionally on the specially designed saddle. This means that the Kalzip profiled sheets fit perfectly and the length can change without restriction due to temperature changes.

### THE BENEFITS

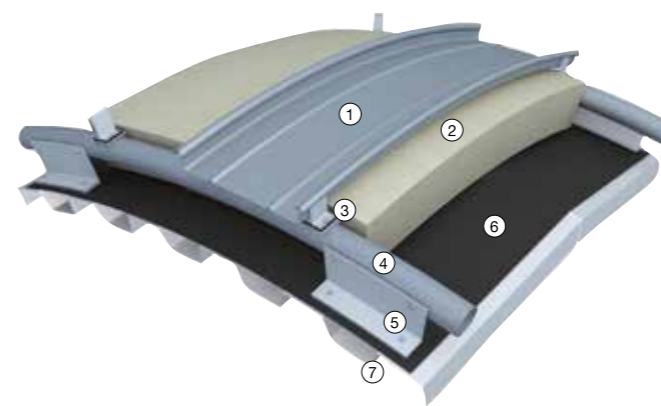
- Economical and low-cost solution for free-form structures substructures with standing seam profiled panels
- High safety due to corrosion-resistant aluminium alloy
- Quick adjustment of the spatial position of the pipe substructure segments using three measuring points
- Height compensation of on-site tolerances
- Simple installation of Kalzip free-form profiled sheets
- Three-dimensional alignment of Kalzip clips is possible
- Adaptation of the profiled panels to the ideal building geometry
- Undisturbed temperature-related linear expansion via perfectly installed Kalzip clips
- Complete engineering and project-related production of the components
- Higher insulation thicknesses

### The area of application

The Kalzip FlexiCon substructure is ideal for all substructures and substrates such as:

- Single-shell roof structures for industry and sports facilities
- Double-shell roof structures with normal heat transfer coefficients (U-values)
- Free-form roof surfaces or building envelopes
- Sophisticated building geometries such as large containers, domed roofs
- Renovation of existing roof surfaces on all substrates
- Compensation of height differences

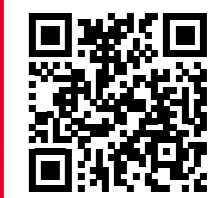
### Kalzip FlexiCon RR 80



Technical data Kalzip FlexiCon RR 80	
Material	Aluminium AlMgSi 0,5
Diameter	80 mm
Thickness	3 mm
Length	6.000 mm
Radii	several radii possible
U-angle	on site

- ① Kalzip aluminium profiled sheet
- ② Mineral wool insulating felt (compressible)
- ③ Kalzip clip on clip saddle
- ④ FlexiCon RR 80
- ⑤ Distance angle
- ⑥ Vapour barrier
- ⑦ Trapezoidal profile

GET THE  
VIDEO  
REFERENCE:



BEACH CAFE, Scheveningen (NL), Architect: BSA Wim de Bruijn, Installer: Felspartners B.V.

SUCCESSFULLY ESTABLISHED  
IN THE MARKET SINCE 1999



GROVE WELLBEING CENTRE, Belfast (UK)

# KALZIP NATUREROOF

## Ecologically valuable and permanently safe roof greening

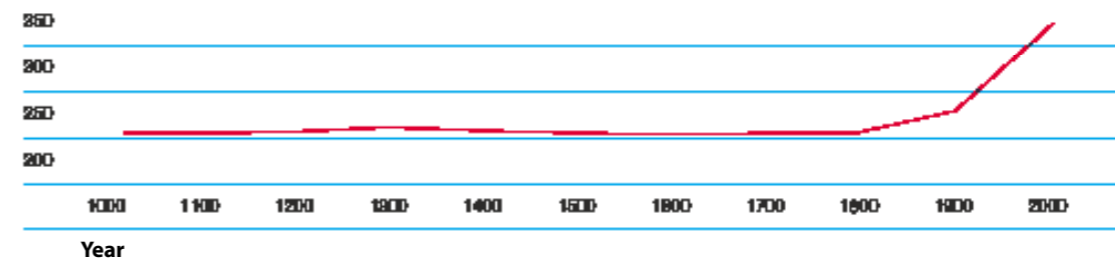
High ecological, structural and design requirements are fulfilled by the Kalzip NatureRoof. The thermally insulating and resource-saving lightweight construction of the Kalzip building system is both the benchmark and the prerequisite for sustainable, intelligent construction. Environmentally friendly and aesthetic needs are equally fulfilled and the technical planning security is guaranteed.

The Kalzip NatureRoof enables safe, extensive roof greening with a low maintenance requirement – low-growing, self-regenerating and dryness-resistant sedum plants convert grey roof landscapes into natural habitats for the smallest of creatures. The sedum plants are undemanding, they withstand smoke and exhaust fumes and are resistant to frost and wind.

### THE BENEFITS

- Construction without additional sealing measures directly on the Kalzip profiled sheets
- Complete package with a modular building method
- Permanently resistant to root and moisture penetration
- High cost-effectiveness with easy and fast installation
- Slip protection enables greening even with inclined and curved roof shapes
- The function as an arrester device for lightning protection is retained
- All components are environmentally friendly and removable
- The planning is homogenous, even if only partial areas are greened
- With an appropriate static design, Kalzip is easy to retrofit to make a NatureRoof (Kalzip 65/400 & alternatively 65/333)
- The Kalzip aluminium profiled sheets offer high protection against mechanical damage to the roof seal when installing the NatureRoof components
- Kalzip remains a full-value roof covering after removal of the greening
- Kalzip is resistant to flying sparks and radiant heat. This property is retained if the corresponding requirements of the FLL guidelines and the state building regulations are followed

## Atmospheric CO<sub>2</sub> concentrations in the last 1000 years



DOWNLOAD  
INSTALLATION  
GUIDELINE





## The Kalzip NatureRoof is unique in its make-up and technical design

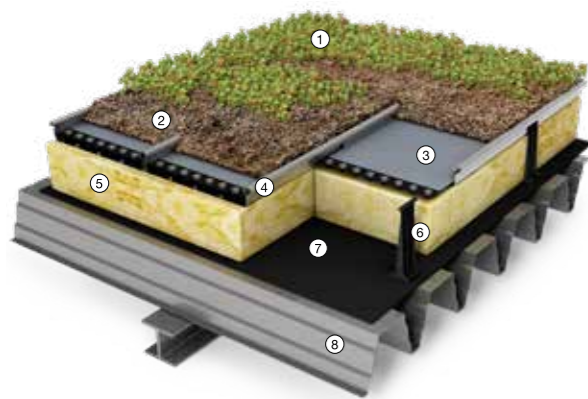
The components of the Kalzip NatureRoof structure are delivered to the construction site as a separate unit. The functional layers are coordinated in their mode of operation and form a unit in terms of execution. DIN 4095 "Planning, design and installation of drainage systems protecting structures against water in the ground" as well as the roof greening guidelines of the FLL [Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau e.V. - research society for landscape development and landscaping] are complied with.

The Kalzip drainage mat is delivered on a roll with a nonwoven filter cladding. The width matches the Kalzip 65/400 aluminium profiled sheets used (65/333 is alternatively possible) in a length of 10 m or 30 m. This is a linear drainage system according to DIN 4095 with drain holes and water storage troughs – a recycling product, biologically neutral, weather-resistant and once again recyclable. The water storage troughs retain up to 6 l/m<sup>2</sup> of the precipitation quantity. This serves the plants as a nutrient and the natural circulation as a valuable evaporation reservoir. The nonwoven filter prevents finer soil and substrate parts from the vegeta-

tion layer being washed into the drainage layer.

The Kalzip plant substrate is a quality-assured natural product with a test certificate. Consisting of lava and pumice gravel, the Kalzip plant substrate's pH-value is well-matched to the aluminium base material. It is placed on top of the drainage mat and has a layer thickness of 6 cm in the settled state (approx. 15 to 20% settling should be allowed for).

### Roof structure Kalzip NatureRoof



- ① Sedum plants, low-growing, self-regenerating, resistant to dryness and frost
- ② Plant substrate, natural product with test certificate
- ③ Kalzip drainage mat delivered on a roll with a nonwoven filter sheath
- ④ Kalzip aluminium profiled sheets, the basis for the NatureRoof structure, which is resistant to root and moisture penetration
- ⑤ Thermal insulation layer, precisely adaptable to suit the building requirements
- ⑥ Kalzip composite clip
- ⑦ Vapour and air barrier, protects permanently against diffusion moisture from above and below
- ⑧ Trapezoidal profile, the resistant, lightweight support shell for beam and purlin roof construction; timber boarding is also possible

## Extensive roof greening with minimum creation and maintenance effort

### Kalzip aluminium profiled sheets 65/400 or 65/333

Thickness: 1.0 mm  
Weight per unit area: 65/400 approx. 3.9 kg/m<sup>2</sup>  
65/333 approx. 4.3 kg/m<sup>2</sup>

### Kalzip NatureRoof construction

Kalzip 65/400/1.0 mm  
KD 400 drainage mat  
Substrate height: 6 - 8 cm (NDS 60 – Vulkaplus Extensiv)  
Roof inclination: 1.5 degrees  
Determined run-off coefficient C = approx. 0.6 – 0.7

### Kalzip KD 400 linear drainage system

Perforated dimpled membrane with integrated geotextile  
Cover width: 400 mm  
Thickness: approx. 20 mm  
Water storage: approx. 6.0 l/m<sup>2</sup>  
Compressive strength: approx. 150 kN/m<sup>2</sup> = 15 t/m<sup>2</sup>  
Water permeability EN ISO 11058: approx. 100 · 10<sup>-3</sup> m/s

### Kalzip KD 333 linear drainage system

Perforated dimpled membrane with integrated geotextile  
Cover width: 333 mm  
Thickness: approx. 28 mm  
Water storage: approx. 6.0 l/m<sup>2</sup>  
Compressive strength: approx. 150 kN/m<sup>2</sup> = 15 t/m<sup>2</sup>  
Water permeability EN ISO 11058: approx. 100 · 10<sup>-3</sup> m/s

### Kalzip NDS -VE NatureRoof substrate, pH = 5 – 7

Lava and pumice gravel  
Layer thickness: 6 cm (more is possible on request)  
Area load: approx. 75 kg/m<sup>2</sup>

Loose goods, deliverable by truck or in a silo vehicle for approx. 380 m<sup>2</sup>, or in a big-bag (contents 1000 l) for approx. 14 m<sup>2</sup>

### Kalzip sedum sprouts

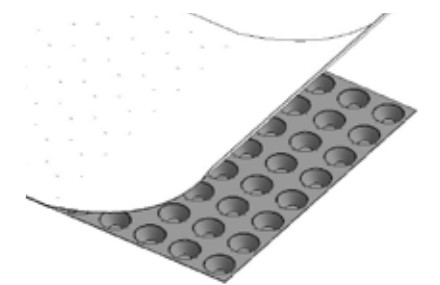
5 – 7 common plant species/sorts depending on the season, in sacks containing 2 - 10 kg

**Kalzip Nerotec 60 erosion-protection adhesive** (when using sprouts or only necessary in case of high wind loads) delivered in 60-litre sacks 1 sack suffices for 25 m<sup>2</sup> (requirement 0.4 kg/m<sup>2</sup>)

### Kalzip shallow-rooted sedum plants

9 common plant species/sorts depending on the season, 50 pieces in slabs

The construction details and the NatureRoof installation guideline can be found at [www.kalzip.com](http://www.kalzip.com)



Kalzip KD 400 linear drainage system



Kalzip NDS 60 NatureRoof substrate



Sedum acre, wallpepper  
Height: 5 cm, bloom: June to August



Sedum album "Coral Carpet", white stonecrop  
Height: 5 cm, bloom: June to August



Sedum floriferum "Weihenstephaner Gold", gold sedum  
Height: 15 cm, bloom: July to August



Sedum hybridum, "evergreen"  
Height: 10 cm, bloom: June to August



Sedum reflexum, blue stonecrop  
Height: 15 cm, bloom: June to August



Sedum reflexum ssp. rupestre, cliff stonecrop  
Height: 10 cm, bloom: June to August



Sedum spurium "Album Superbum", Caucasian stonecrop  
Height: 10 cm, bloom: July to August



Sedum spurium, "Fuldaglut"  
Height: 10 cm, bloom: July to August



Sedum sexangulare, six-sided stonecrop  
Height: 5 cm, bloom: June to August



# KALZIP ALUPLUSSOLAR

## Kalzip AluPlusSolar - roof-integrated, regenerative Energy generation for aesthetic solar architecture

The modules are permanently bonded onto the Kalzip surface. An internal connection technology for the roof-integrated Kalzip AluPlusSolar solution protects the connectors and cables from moisture, snow, ice, UV rays and from animals. A further visual advantage is that no disturbing cable ducts or connections are visible on the roof surface.

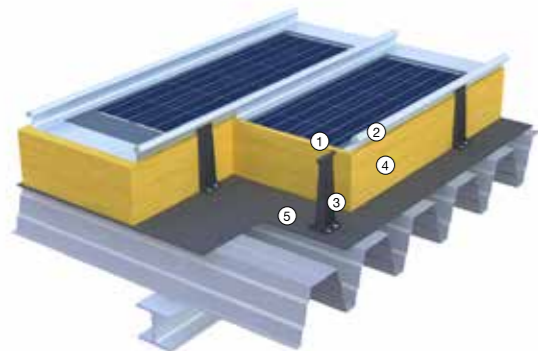
The module is applied to polyester-coated Kalzip profiled sheets in RAL 9006 and is available in straight or curved profile shapes

Kalzip AluPlusSolar can be used to create a wide range of roof shapes. Barrel duo or monopitch roofs can be easily integrated into energy roofs in just as easily as the standard roof constructions. Kalzip AluPlusSolar can also be used for the entire building envelope and façade surfaces can be installed up to a maximum slope of 90 degrees. Kalzip offers architects planning options for designing environmentally conscious solar living spaces - economically, sustainably and aesthetically.

### Planning advice

- Minimum radius in the area of the profiled panel covered with modules: convex > 10 m, concave: 10 m
- Recommended roof pitch from 1.5°
- Application in complete building envelope or façade after consultation with the technical department
- Design (electrical) in accordance with Kalzip Solar Systems installation guidelines

### Kalzip AluPlusSolar on trapezoidal steel liner

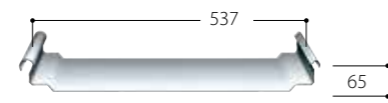


- ① PV-Laminate
- ② Kalzip aluminium profiled sheet
- ③ Kalzip E type Composite Clip

- ④ Thermal insulation (compressible)
- ⑤ Kalzip vapour control layer

### Kalzip AluPlusSolar sheet options

Kalzip AF 65/537



Kalzip 50/444



KALZIP SOLAR SYSTEMS -  
ESTABLISHED SYSTEMS SINCE 2004

# KALZIP SOLARCLAD

## Kalzip SolarClad – the retrofit solution for all Kalzip standing seam roofs, light and flexible

Kalzip SolarClad is a photovoltaic system optimised for use on metal roof coverings which, thanks to its flexibility and versatility, enables the integration of solar modules into almost all standing seam systems with different materials. Kalzip SolarClad stands for a harmonious solar solution that can be integrated into the building structure in the planning of new buildings.

The very light module units are suitable for all roof shapes. Kalzip SolarClad stands for a harmonious solar solution that can be integrated into the building structure. As a retrofit solution for existing Kalzip roof landscapes, Kalzip SolarClad can be installed vertically to the roof or parallel to the roof, in-plane or elevated, on the Kalzip standing seam without penetration using Kalzip seam clamps approved by the building authorities. Existing roof landscapes are thus transformed into solar power plants.

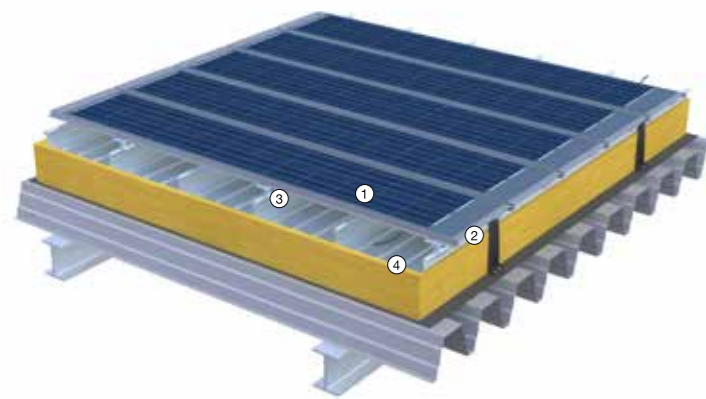
### Notes for different PV systems which are not provided:

Roof-installed constructions for monocrystalline or polycrystalline PV modules or direct attachment of frame modules to the Kalzip standing seam profiled sheets are only permitted with Kalzip seam clamps approved by the building authorities.

### Planning advice

- Recommended roof pitch from 1.5°
- Application in complete building envelope or façade after Consultation with the technical department
- Design (electrical) in accordance with Kalzip Solar Systems installation guidelines

### Kalzip SolarClad



- ① PV-Laminate
- ② Kalzip flat sheet with rear junction box and plug connections
- ③ Kalzip Seam clamp Typ FA
- ④ Kalzip Standing seam profile panel 65/... or 50/...



POLICE DEPARTMENT, Burgau (GER), Architect: Planungsbüro Leinauer, Installer: T+H Ackermann GmbH

# KALZIP OVERCLAD SYSTEMS

## The standing seam system as a water-bearing layer

The possible applications of the additive Kalzip systems can be extended infinitely by combining them with a wide range of covering materials such as slate, wood or large-format composite panels. There are no creative limits - aesthetic claddings in a wide range of design variants can be implemented permanently and safely.

The Kalzip standing seam system serves as a water-bearing layer to which the visible material of the building envelope is applied.

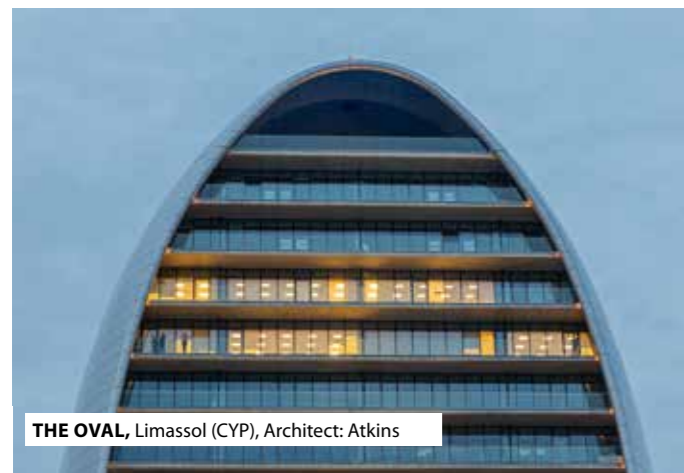
The outer shell or the system is fixed, for example, with an intermediate construction made of extruded aluminium profiles. These are attached to the tried-and-tested Kalzip roof covering by means of fixing clamps without any penetration. In this way, even with complicated details and large-format roofing materials, reliable water drainage and functional reliability is always guaranteed. The selected design variant essentially depends on the shape of the building and the structural conditions.

### THE BENEFITS

- Wide range of design options with all the advantages of the selected Kalzip roof structure
- Penetration-free mounting of the fastening of additive systems
- High load capacity of the system
- Can be dismantled at any time to change or modernise the appearance
- Particularly economical and permanently safe



**KAMEHA GRAND HOTEL**, Bonn (GER), Architect: Architekturbüro Schommer, Installer: Schüngel Metal Systems GmbH



**THE OVAL**, Limassol (CYP), Architect: Atkins



**ITHRA**, Dhahran (KSA), Architect: Snøhetta



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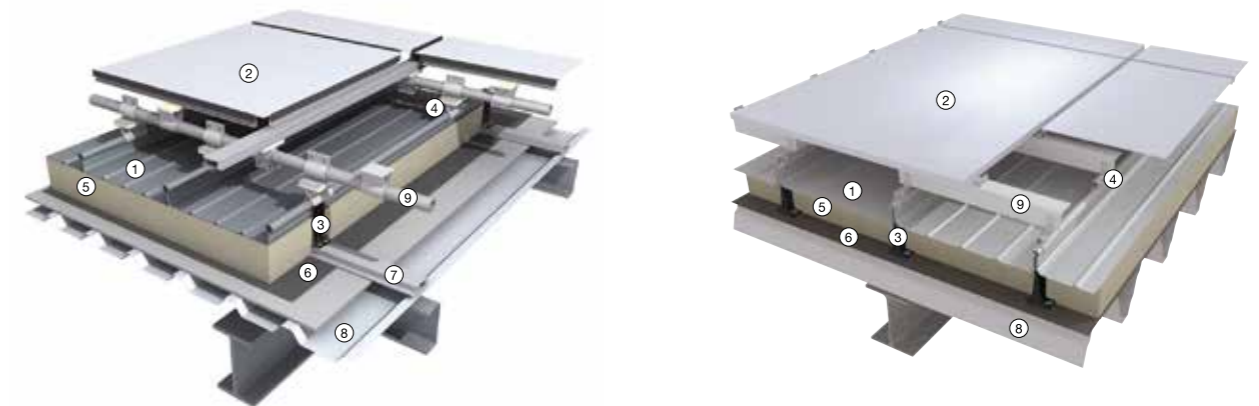
### The areas of application

The wide range of applications depends on the intended use, shape, material combinations and statics. It is important to consider the choice of Kalzip roof construction in advance.

### Combination materials

- Wood
- Natural stone
- Composite panels etc.
- Ceramics

### Exemplary roof structures with composite panels in two design variants



- ① Kalzip aluminium profiled sheet
- ② Composite panels
- ③ Kalzip composite clip
- ④ Fixing clamp
- ⑤ Thermal insulation

- ⑥ Vapour barrier
- ⑦ Hat profile
- ⑧ Trapezoidal profile
- ⑨ Fastening the composite panels

# CONSTRUCTIVE COLOURS & SURFACES

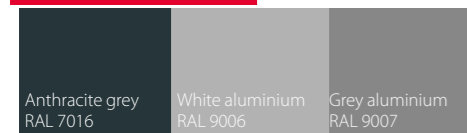
Discover the freedom of design in form, colour and surface, which opens up architectural horizons. Whether cool, pure aluminium aesthetics or hip trend colours for façades or roofs. Kalzip offers even more inspiration now. And for those who prefer a more purist and clear metallic look, there is a wide range of surfaces to choose from. Kalzip goes its own way right up to Kalzip CC Tec EcoClean. The self-cleaning surface with high-tech coating makes aluminium roof and façade systems a real ecological specialist.

## Kalzip Classic Colours

### Colour system for coloured accents in architecture - Polyester or PVDF coated

The polyester or PVDF coatings are applied to the aluminium in the coil coating process and represent an extremely durable, abrasion-resistant product. The combination of resistance and flexibility ensures that the profiled sheets and panels are very easy to form. We recommend the polyester coating for locations with normal climatic conditions. Many variations in colour design are possible here: from a completely matt surface to a gloss level of 80%. PVDF-coated profiled panels are suitable for use close to seawater; they are also particularly UV-resistant. This gives them the highest possible resistance to loss of gloss, chalking and colour changes - for perfect protection and maximum durability.

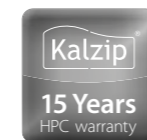
### STANDARD COLOURS:



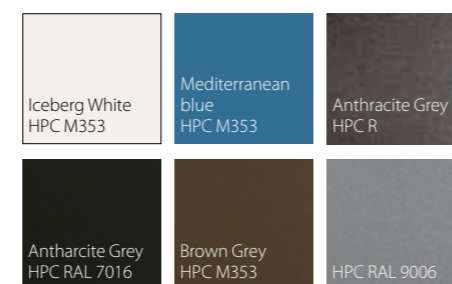
## Kalzip HPC Colours

### The high-performance colour system with long-term guarantee

Color high performance: Our own Kalzip high-tech polymer resin colour system enables new structures and colours. The high UV stability prevents changes in the colour image. Kalzip recommends HPC colours for locations with extreme climatic conditions and high levels of sunlight. The new CC Trend shades are particularly aesthetically appealing. With a gloss level of only 3 %, this colour system promises the highest mattness and thus noble surfaces in a fascinating quality. Kalzip offers a 15 year guarantee on chalking



### STANDARD COLOURS:



resistance and colour stability. We are pleased to present our exclusive CCTrend colours which we have developed in collaboration with a renowned paint manufacturer. Whether Iceberg White, Mediterranean Blue, Sea Green, Black Grey, Brown Grey or Aluminium Grey: these colours are only available from Kalzip.

## Characteristics of coil coating paint systems

Coating system	Coating thickness range (µm)	Balance of hardness and flexibility	Chemical resistance	Excretion behaviour	Weather Resistance	Gloss level in %
Polyester 2-layer	25 +/- 5	+	+	+	+	10-80
PVDF 2-layer	25 +/- 5	+	++	++	++	10-30
HPC 2-layer	35 +/- 5	+	++	++	++	3-80

+ good ++ excellent



AGRU, Bad Hall (AT), Architect: x architekten, Installer: Kohler Dach und Wand

## Stucco-embossed

The classic natural aluminium stucco design reflects only slightly and is therefore hardly dazzling. With its robust surface it is also insensitive to slight mechanical damage.

### STANDARD SURFACE:



## AluPlusPatina

The matt metallic version of AluPlusPatina with a stucco-embossed surface or fine mill finish, i.e. rolled smooth, conveys calm elegance. It radiates sovereign timelessness like an aluminium that has been weathered for years with an even surface greying.

AluPlusPatina is also available in the colours champagne or bronze - these are applied electrolytically as a toning and thus provide a further protective layer that increases the already long service life.

Another advantage of this treatment is that this surface treatment does not affect the workability of the material in any way. All tints are provided with a 5 µm thick passivation layer as standard.

The thickness of the surface layer is the result of an optimal combination of highest colour quality and mechanical suitability for cold roll forming techniques.

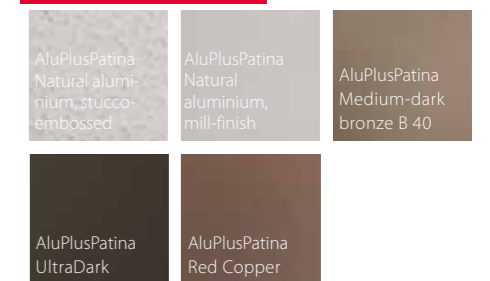
### THE BENEFITS:

- Noble and matt appearance due to pre-weathered surface
- Reduced glare due to diffuse light reflections
- Dirt-repellent surface - insensitive to fingerprints
- UV-resistant
- Suitable for large spans due to high inherent strength
- Available for all Kalzip widths
- Available in stucco-embossed or smooth finish

## The areas of application

Kalzip AluPlusPatina is the ideal solution for building projects in which architects and planners wish to give roofs and façades a special expression by means of their discreet matt appearance, while at the same time avoiding the typical light reflections which often occur.

### STANDARD SURFACES:





WASTE THERMAL TREATMENT PLANT, Krakow (PL), Installer: Korman Sp. z o.o.

**DOWNLOAD:  
COLOURS &  
SURFACES  
BROCHURE**





CITY PERFORMANCE HALL, Dallas (USA), Installer: Castro Roofing of Texas, LP

## AluPlusZinc

AluPlusZinc combines the many positive characteristics of aluminium and zinc. Light, matt grey, which can change further due to weathering, is a building material full of character for roofs and façades.

Contemporary technology and a material that ages with dignity were combined in a patented process. As a symbiosis of aluminium and zinc, which combines the classic zinc look with the low weight and high corrosion resistance of the established Kalzip standing seam profiles, we have developed this manufacturing process within the Group and had it protected as a PEGAL process.

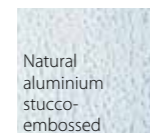
In a special process, a permanent bond is created between the aluminium carrier material and the zinc surface. The new product has an additional surface treatment that creates a stable patina and makes it resistant to weathering. This protective layer resists harmful weathering very well and gives Kalzip AluPlusZinc outstanding characteristics compared to conventional zinc surfaces.

Measurements of the weather-induced removal rate are hardly verifiable. This is proven by extensive scientific studies. The laboratory tests have been fully confirmed by outdoor weathering tests in urban and industrial environments as well as in a maritime climate.

### Advantages

- Excellent corrosion behaviour due to the applied Zinc patina in the PEGAL process
- The weather-related removal rate is considerably lower than with conventional zinc
- Even surface
- High inherent strength - therefore suitable for large spans
- Smooth appearance and colour uniformity over the entire surface
- Efficient and cost-saving due to low weight, 3.5 - 4.5 kg/m<sup>2</sup>
- Resource-saving reduction of the material input for the load-bearing structural parts
- Unjointed web lengths over 100 m possible

### STANDARD SURFACE:



Natural aluminium stucco-embossed

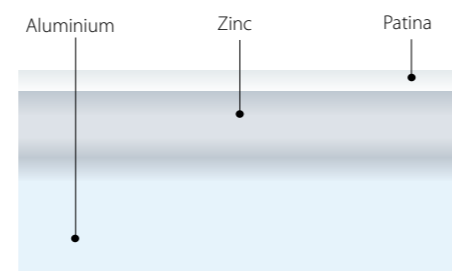
### The areas of application

Kalzip AluPlusZinc is suitable for the construction of high-quality roofs and walls on new buildings as well as for the renovation of existing buildings. Especially in inner-city areas, when integration is required, AluPlusZinc is predestined for representative buildings. Kalzip AluPlusZinc is characterised by its very good corrosion behaviour.

When manufactured in the patented PEGAL process, a permanent bond is created between aluminium and zinc. An additional surface treatment creates a stable patina which is highly resistant to weathering. Outdoor weathering tests in an urban atmosphere and in a very aggressive combination of industrial and North Sea climate confirm an above-average Weathering behaviour of AluPlusZinc.

### Simplified representation

#### Kalzip AluPlusZinc (PEGAL)



# PERFECTION IN ROLLFORMING

## TECHNOLOGY

### Flexibility in unexpected dimensions

The high-precision Kalzip elements can be manufactured both on the most modern factory machinery as well as on mobile rollformers which can be used anywhere on earth - wherever it makes economic and ecological sense to do so. The relief of road traffic and short distances from the production site to the place of use are time-saving, just like the typical Kalzip lightweight construction.

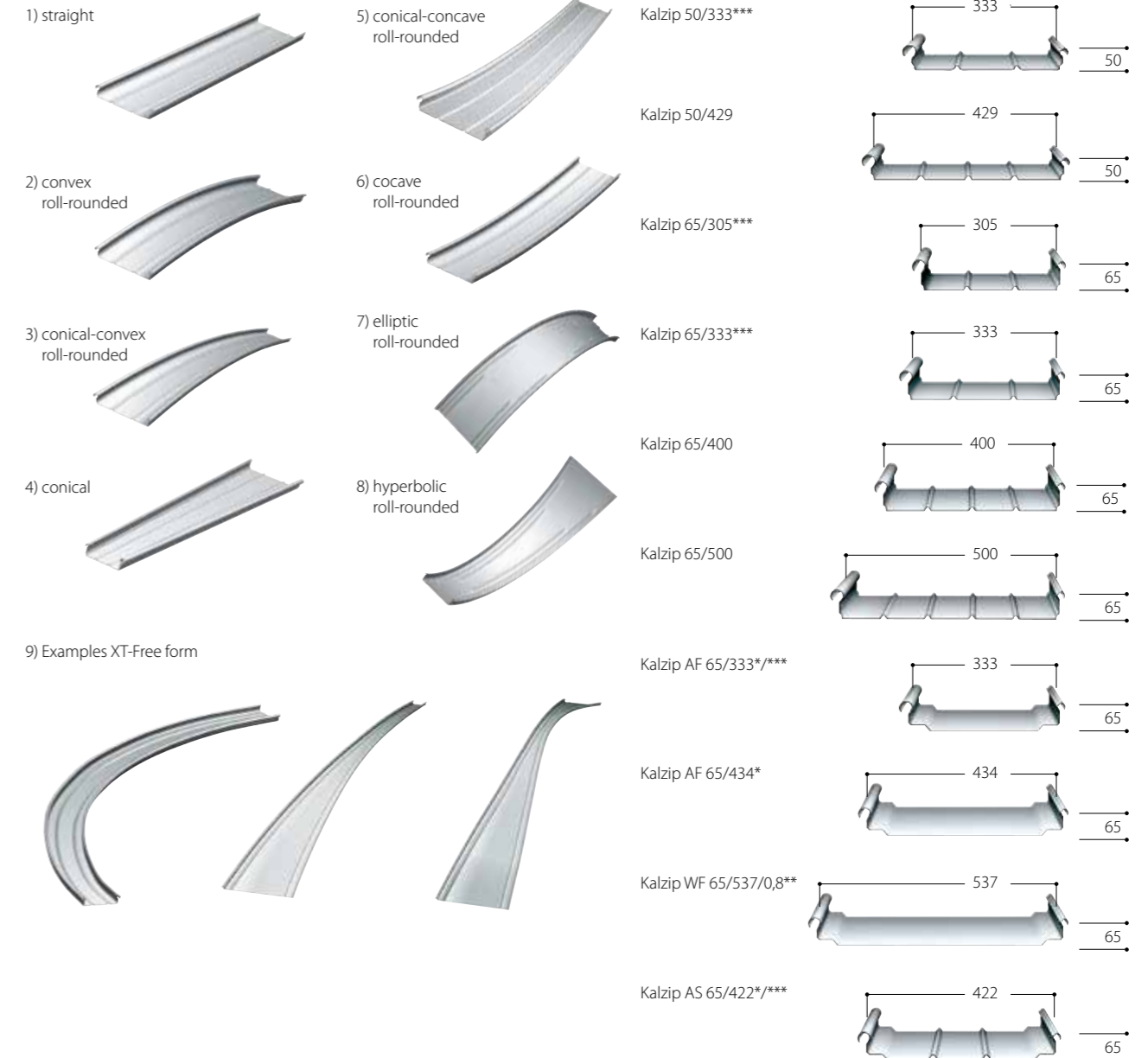
#### Perfection in production technology - anywhere in the world - just in time

A large number of mobile rollformers in use all over the world ensure a cost-effective solution with minimal logistical effort. There are no limits even for unusual roof shapes.

The unique advantages of on-site production are particularly impressive when covering large roof areas with impressive lengths of panels. Numerous patents and utility models prove the uniqueness and technological advantage of this system.



### Kalzip shapes, widths and dimensions



\* Only in conjunction with rigid insulation materials or wooden formwork.  
 \*\* Only as straight profiled sheets in lengths of 20 m (longer sheets on request). Measured from the fixed point to the end of the profiled panel.  
 \*\*\* Availability of shapes, widths, quantities, surfaces, colours and dimensions on request!

# SYSTEM COMPONENTS & ACCESSORIES

Exactly matching system components and useful accessories complete the wide range of design options offered by Kalzip. The technical requirements for a long service life, easy handling, safe installation and the recyclability of the materials are given the highest priority. The accustomed demand for excellent Kalzip quality is consistently maintained - perfect and reliable right down to the last detail. Of course, the current regulations relating to the structural thermal insulation of the building envelope, the required fire protection class and the applicable European standards are also fulfilled.

## Intelligent and technologically mature for a complete roof structure:

- Supporting shells made of steel or aluminium
- Kalzip vapour barriers
- Insulating materials (compressible or step-resistant on request)
- Kalzip system holder E-clips, RT clips
- System fastener for all substrates
- Kalzip tread grates/ continuous gratings and railing systems for pitched roofs
- Latchways CFP - approved cable-guided fall protection system for Kalzip® standing seam roofs

- Kalzip snow guard system
- Kalzip standing seam clamps for the penetration-free fastening of additive systems
- Lightning protection components
- and much more

Comprehensive information on all system components and all accessories is available at: [WWW.KALZIP.COM](http://WWW.KALZIP.COM)

Fall arrest system Latchways CFP



Roof Walkway system with and without handrails



Kalzip Seam Clips



Kalzip Snow guard system



# KALZIP SYSTEM

## Technical and Design Support

Using the latest CAD equipment, the Kalzip technical team is fully equipped to meet the specification requirements of the most complex roof designs down to the finest detail.

Trained staff work closely with clients, tailoring specifications to meet individual requirements of the project – including all necessary calculations, assembly instructions and technical advice ensuring that both specification and delivery requirements are met. Kalzip provide a comprehensive technical advisory and support service to assist architects, designers, specifiers and approved Kalzip installation contractors with building design, building physics, product application and site considerations, from design stage through to project completion and beyond.

The Technical Services Department has extensive roofing and cladding expertise and can provide suitable designs and details for any application via the latest CAD equipment. Economical construction solutions for the most complex roof designs can also be provided. With the increasing pace of Kalzip's product innovations and ability to comply with the improving Building Regulations, additional information to support both the specifier and installer alike are constantly being developed.

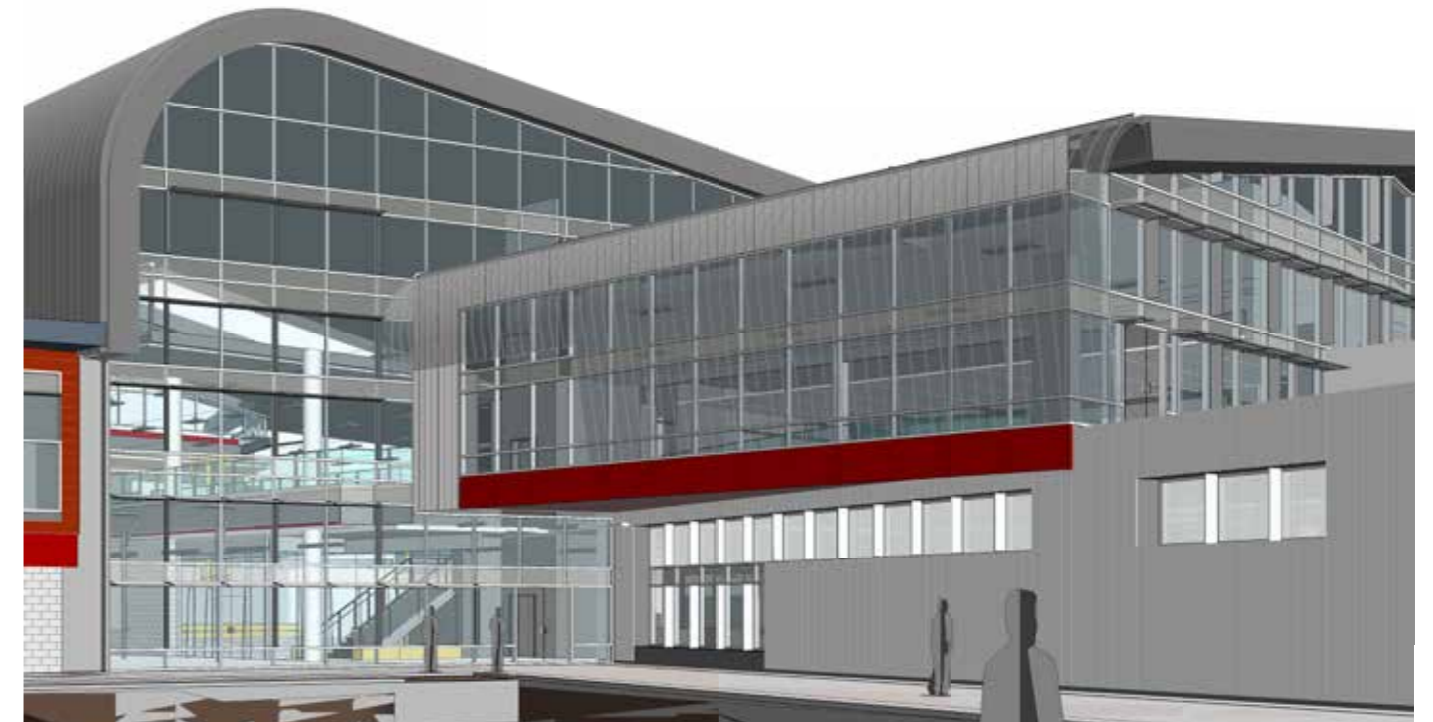
Complex shapes and solutions not only mean increased capability within the technical team but also the ability of the department to communicate the necessary knowledge to Kalzip's approved installer network via its training school and courses.

## BIM

Kalzip has produced a set of freely downloadable Building Information Modelling (BIM) objects to provide specifiers with a standard range of Kalzip system build ups. This initial family of intelligent objects has been produced using Autodesk's Revit, and comes complete with supporting documentation including; NBS specifications, a user guide and comprehensive technical details providing construction professionals with a complete BIM ready solution.

### Our technical service for you:

- Tender documents adapted to your building project
- Technical support in solving detailed questions
- Advice and assistance with all questions relating to Kalzip







**WWW.KALZIP.COM**

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