Kalzip® systems

Products and applications

Office building Messchenveld (NL)
Profile type 65/400, RAL 9007
Architect: Axes Architecten, Assen

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Railway station Newport (UK), Profile type: 65/xtail, stucco-embossed
Architect: Grimshaw Architects

Innovative performance and proven system solutions for creative architectural design

Creative people all over the world are opting for it, to implementable visionary high-tech architecture with Kalzip. Roofs and facades are impressively set in scene through puristically elegant restraint or as a design element - Kalzip creates solitaires, giving every 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 building with positive ecological balance

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"; should make an active contribution to achieving 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.

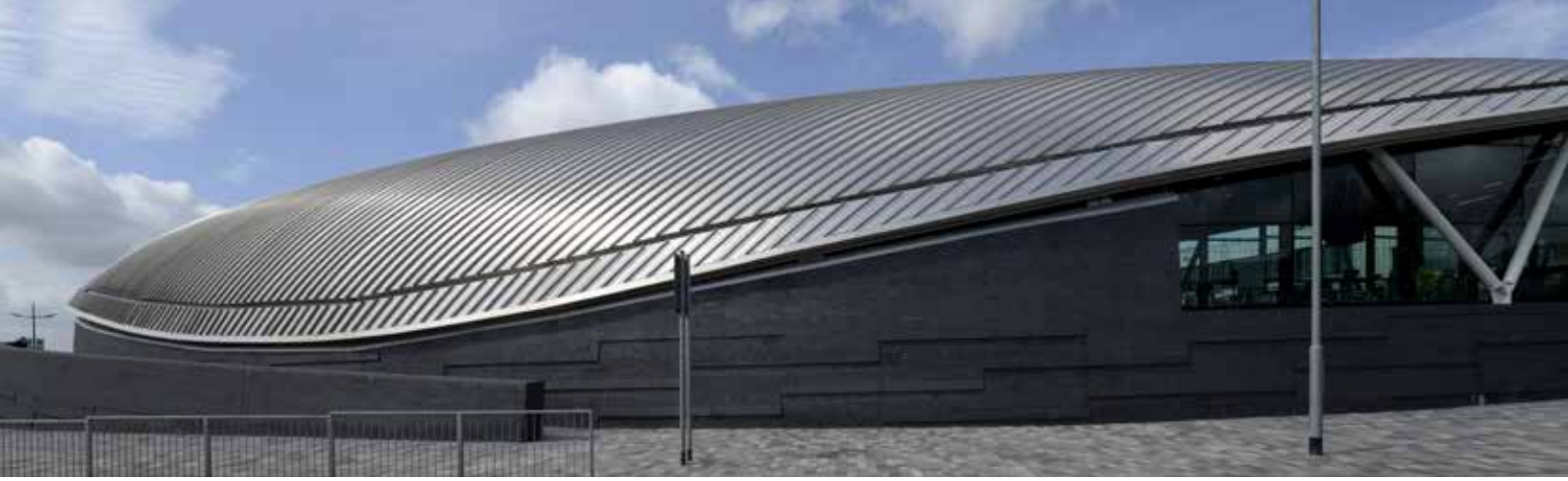
With the BRE, ECO* and FDES Environmental Declarations, Kalzip offers the relevant European programmes which support certification of the construction project. You make a Type III environmental product declaration in accordance with ISO 14025 and are recognized and verified by independent auditors.

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.

So 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.

* European EPD,
carried out by the Institute for Building and Environment (IBU e. V.) in accordance with prEN 15804.

Institut Bauen
und Umwelt e.V.



Stoke Bus Station (UK), Profile type : 65/400, stucco-embossed
Architect: Grimshaw Architects

Aluminium - functional and 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 has abundant deposits. It contributes significantly to protecting buildings effectively and for decades against external influences and to maintaining their value.

Due to its enormous durability and excellent recycling properties, three-quarters of the aluminium produced worldwide to date is still in use.

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.

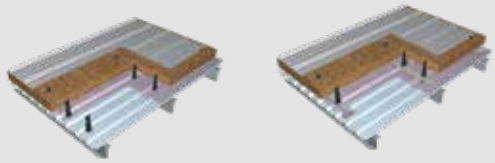
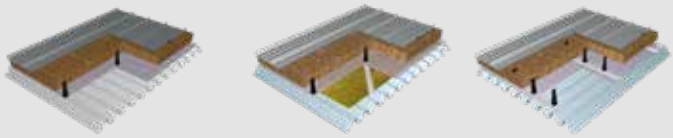
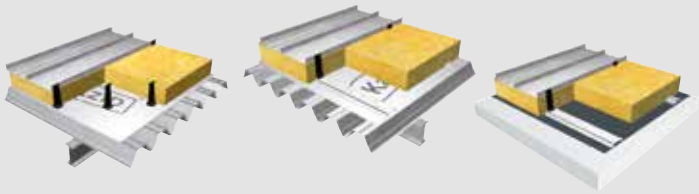
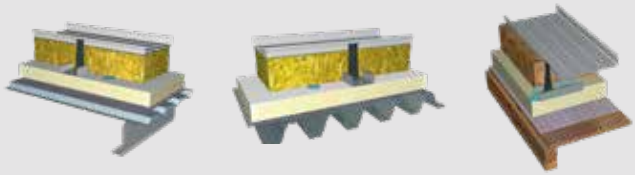
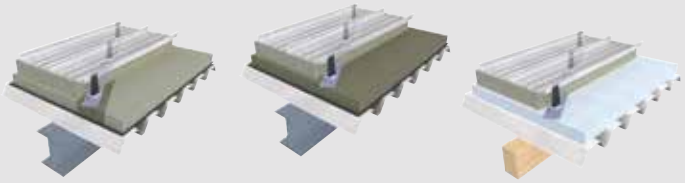
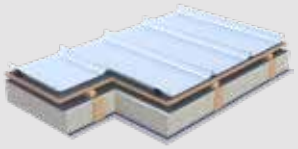
The material used for Kalzip has been subjected to critical tests time and again over the years. Among other things, the Federal Institute for Material Testing and -research - after almost 40 years of exposure - the improved weather resistance of plated Kalzip profiled sheets.

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
- Up to 95 % of the energy used for production required energy are generated during the Recycling saved
- 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.

Spazio Zoetermeer (NL), Profile type 65/... tapered, stucco-embossed
Architect: De Architekten Cie, Amsterdam

The systems at a glance - the right solution for every requirement

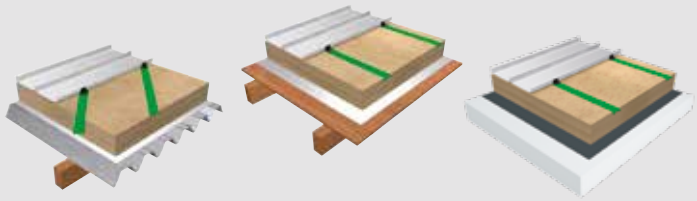
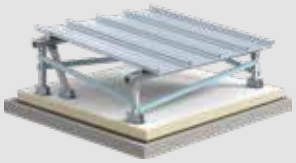
System	Roof design	Advantages*
Kalzip Liner roof system Page 12		- Kalzip Liner systems provide a fast installation - Allows other trades to work below once the non fragile walkable liner is installed - The liner and Kalzip outer sheet are laid perpendicular to the purlins across the purlins - Steel or aluminium options available
Kalzip Structural deck roof system Page 12		- Similar to the Liner system but with a top hat for enhanced thermal performance - Allows other trades to work below once the non fragile liner is installed - The liner deck and Kalzip outer sheet are laid perpendicular to the purlins across the purlins - Steel or aluminium options available
Kalzip Deck roof system Page 12		- For all roof shapes, roof pitches, all Substructures and supporting structures - High design freedom - convex, concave, conical, elliptical, hyperbolic and XT free-form - Economical due to standard system components - Low weight - Variable in thermal insulation - Roof construction with minimized thermal bridges
Kalzip Low U-value roof Page 12		- Cost effective and technical feasible, because it will likely survive the life of the building without requiring an upgrade - Reducing heat loss by improving U-values - Will contribute to the regime of improvements which will ultimately result in delivering net zero emissions for the UK by 2050 - System options: Liner deck system, structural deck and liner systems.
Kalzip DuoPlus and Kalzip Duo Page15		- High insulation thicknesses possible, thus optimised building and thermal protection - Virtually free of thermal bridges, therefore extremely low heat transfer coefficient - Low weight - Excellent sound insulation values
Kalzip Aluminium-Roof system for resdential Page 21		- Economical alternative to bitumen and plastic sheets/ sealings, traditional roofing materials such as bricks or slate - Low maintenance and no maintenance costs - Cost-effective overall package due to standardized web lengths, surface and components - High safety due to durable aluminium-alloy

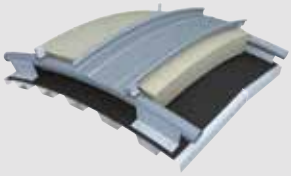
⊕ Standard ⊕⊕ Particularly suitable ⊕⊕⊕ Outstanding

Examples Purpose*	Formability / high-creative freedom	Thermal insulation/ U-Value	Soundproofing	Sustainability	Energy efficiency according to EnEV
- Is predominantly used for new build construction, although they can also be used for refurbishment - Ideal for covering complete building envelopes - For normal acoustic requirements	+ + +	+ + +	+ +	+ + +	+ + +
- For enhanced acoustic absorption - Ideal for covering complete building envelopes for rigorous acoustics specifications	+ + +	+ + +	+ +	+ + +	+ + +
- For building projects with high creative requirements - Ideal for covering complete building envelopes - For normal acoustic requirements	+ + +	+ + +	+ +	+ + +	+ + +
- For building projects with with technical sound solutions and low U-value requirements.	+ +	+ + +	+ + +	+ + +	+ + +
- Ideal for construction projects with high acoustic requirements, e. g. B. Airports and multi-purpose halls - Suitable for the energetic refurbishment of buildings in order to comply with the EnEV	+ +	+ + +	+ + +	+ + +	+ + +
- For flat roof landscapes in housing - Refurbishment of damaged flat roofs - sustainable and safe	+	+ + +	+ + +	+ + +	+ + +

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

The systems at a glance - the right solution for every requirement

System	Roof design	Advantages*
Kalzip ProRoof Page 25		- Suitable for new construction and renovation - Virtually free of thermal bridges, therefore extremely low heat transfer coefficient - Meets the requirements of the EnEV - Can be adapted exactly to object-specific requirments due to insulation board thicknesses of up to 220 mm - Excellent sound insulation values
Kalzip Vario LB Refurbishment system Page 28		- Sustainable and durable refurbishment solution for damaged flat roofs from 1. 5 - Low structural weight, also suitable for statically critical roof structures - In most cases, no interruption of use during rehabilitation - Saving of disposal costs for old roof cladding and insulation layer depending on condition - Improvement of the energetic standard
Kalzip Foamglas® Page 33		- For high thermal and acoustic requirements - Absolutely water- and vapour-proof (suitable as emergency sealing) - No additional vapour barrier required - Highest functional reliability due to additional water-bearing layer - Alternative roof concept if mechanical connecting means are not possible

System	Roof design	Advantages*
Kalzip FlexiCon RR 80 Page 35		- Economical and favourable solution as substructure for freeform structures - Quick adjustment of the spatial position of the pipe substructure segments by means of three measuring points - Height compensation of on-site tolerances - Higher insulation thicknesses

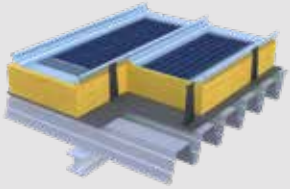
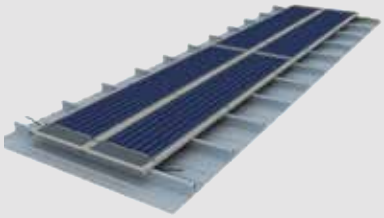
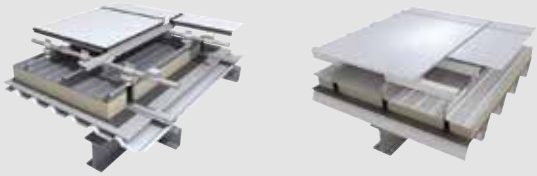
⊕ Standard ⊕⊕ Particularly suitable ⊕⊕⊕ Outstanding

Examples Purpose*	Formability / high-creative freedom	Thermal insulation/ U-Value	Soundproofing	Sustainability	Energy efficiency according to EnEV
- Especially suitable for construction projects with high acoustic requirements, e. g. B. Airports, Multipurpose halls - For use with Kalzip AF profiled sheets - Suitable for the energetic refurbishment of buildings in order to comply with the EnEV	+	+ + +	+ + +	+ + +	+ + +
- For permanent architectural and structural upgrading of buildings - Ideal for deconstruction and construction in existing buildings - For the sustainable rehabilitation of ailing Flat roofs - For the visual enhancement of buildings worthy of preservation - Improvement of summer forest protection	+ +	+ + +	+ +	+ + +	+ + +
- For construction projects with high thermal and phy sical requirements, e. g. B. for swimming pools, swimming pools for swimming pools swimming pools and ice stadiums - For the construction of production halls for high-valuable goods and industrial buildings with high thermal requirements - For high-quality administrative and school buildings	+ +	+ +	+ + +	+ + +	+ + +

Examples Purpose*	Formability / high-creative freedom	Thermal insulation/ U-Value	Soundproofing	Sustainability	Energy efficiency according to EnEV
Ideal for 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) - Sophisticated building geometries such as Large containers, domed roofs - Renovation of existing roof areas	+ + +	+ + +	+ +	+ + +	+ + +

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

The systems at a glance - the right solution for every requirement

Additive Systeme	Roof design	Advantages*
Kalzip NatureRoof Page 38		- Installation directly on the Kalzip profiled sheets without additional sealing measures - High efficiency with fast assembly - Environmentally compatible and decomposable - Year-round improvement of thermal insulation and indoor climate, thereby increasing the value of living - Improvement of the microclimate. - Slowing down of the water drain
Kalzip AluPlusSolar Page 41		- Maximum freedom of design for sophisticated object architecture through a roof-integrated photovoltaic System without additional fastening elements - High safety and performance, a fully IEC-certified glassless, semi-flexible and ultra-lightweight light module based on silicon solar cells - Optimal use of solar energy even in low light conditions due to the micro-lens-shaped surface of ETFE (ethylene tetrafluoroethylene) foil
Kalzip SolarClad Page 43		- Retrofitting existing Kalzip roofs for all building widths - Building authority approved fixing clamps for maximum safety - Low weight - incl. solar modules - usually no additional strengthening of the roof structure necessary - Optimal use of solar energy even in low light conditions due to the micro-lens-shaped surface made of ETFE (ethylene tetrafluoroethylene) foil - Ideal for all roof shapes, for barrel-shaped roofs contour following up to 13 m radius
Kalzip combinations, e.g. Composite Composite panels Page 46		- Ideally suited for the attachment of additive, shape-supporting building materials - High design freedom - Penetration-free mounting on the flanges - Separation of the water-bearing layer from the visual appearance

⊕ Standard ⊕⊕ Particularly suitable ⊕⊕⊕ Outstanding

Examples Purpose*	Formability / high-creative freedom	Thermal insulation/ U-Value	Soundproofing	Sustainability	Energy efficiency according to EnEV
- All building projects with a requirement for additinal use of the roof areas - Creation of compensation areas	⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕
- All building projects with a requirement for additional use of the roof areas	⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕
- All building projects with a requirement for vadditional use of the roof areas	⊕	⊕ ⊕ ⊕	⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕
- Aesthetically sophisticated architecture - Complete building envelopes	⊕ ⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕

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

Kalzip liner roof system

Form and functionality

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.

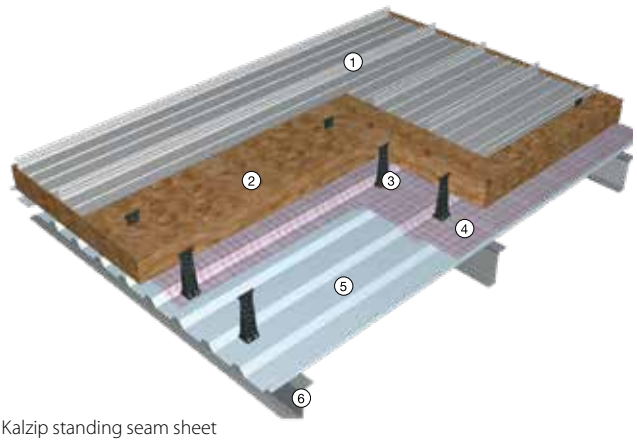
The Kalzip liner roof system has the outer Kalzip standing seam roof sheet and the internal Kalzip liner trapezoidal profiled liner sheet laid in the same direction across roof purlins acting as the primary support. Typical purlin centres would be approximately 1.4 to 1.8 metres.

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.

Advantages:

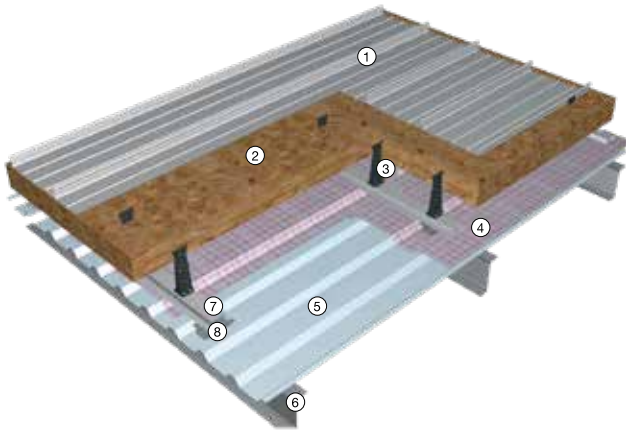
- Kalzip Liner systems provide a fast installation
- Allows other trades to work below once the non fragile walkable liner is installed
- The liner and Kalzip outer sheet are laid perpendicular to the purlins across the purlins
- Purlin centres are typically between 1.0m to 1.8m
- Perforated options 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 Trapeziodal 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 Trapeziodal liner sheet
⑥ Purlin
⑦ Top hat sub purlin
⑧ Top hat saddle bracket


SERVICES

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.

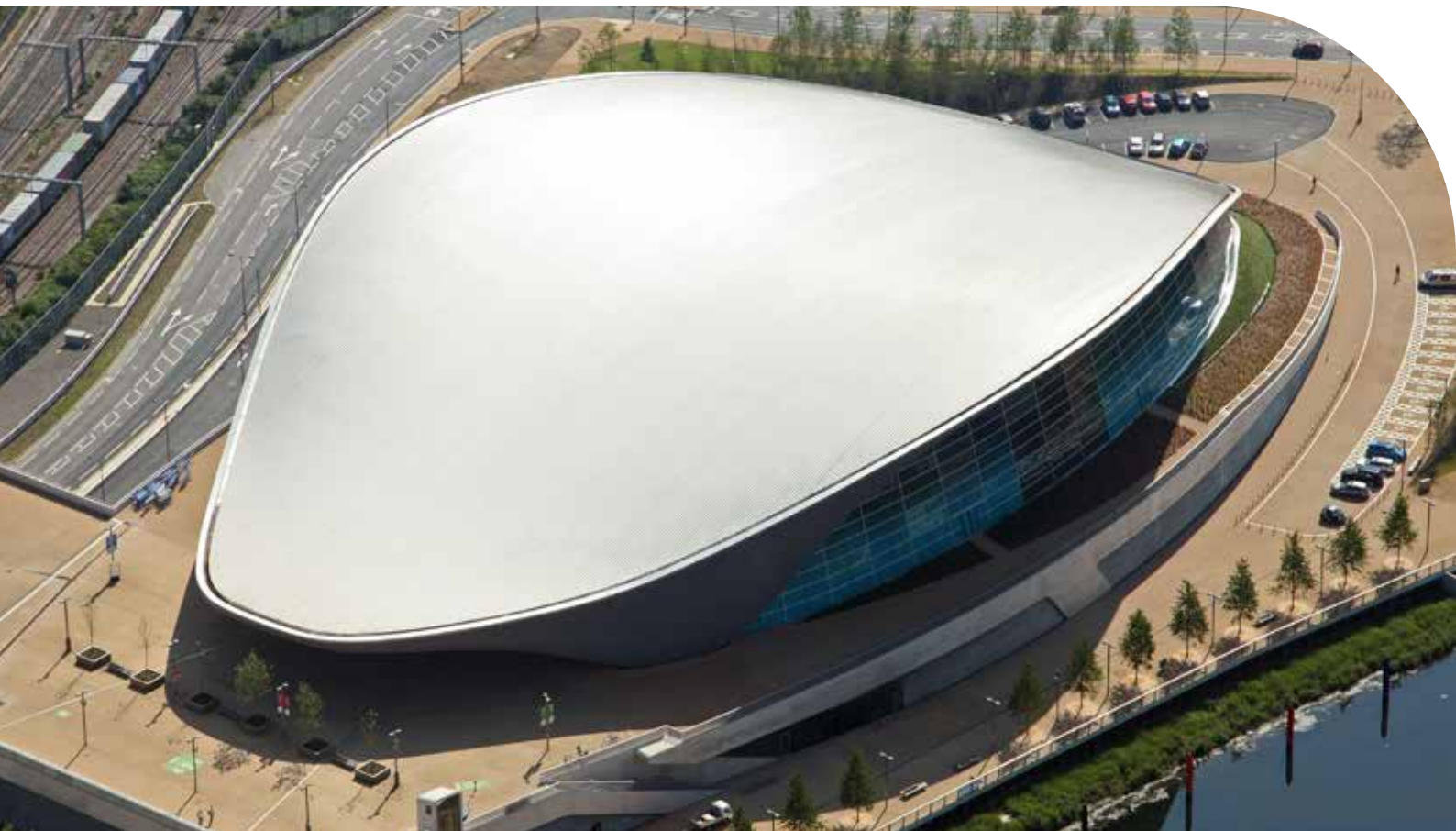
Where structural decking is installed there is a reduced requirement for secondary steelwork. The Kalzip structural decking sheet is generally laid transverse to the direction of the Kalzip standing seam roof sheet and spans between the main steel rafters. Typical rafter centres would be approximately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

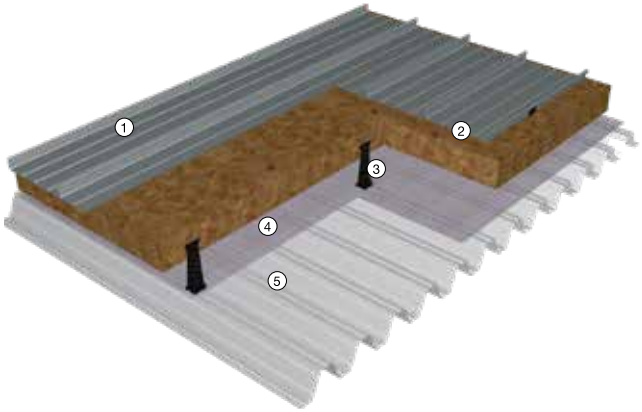
The gauge and profile of the Kalzip structural decking sheet is therefore determined by the rafter centres, all external roof loads, internal wind loads, service loads (e.g. lighting) and the dead weight of the construction components.

Advantages:

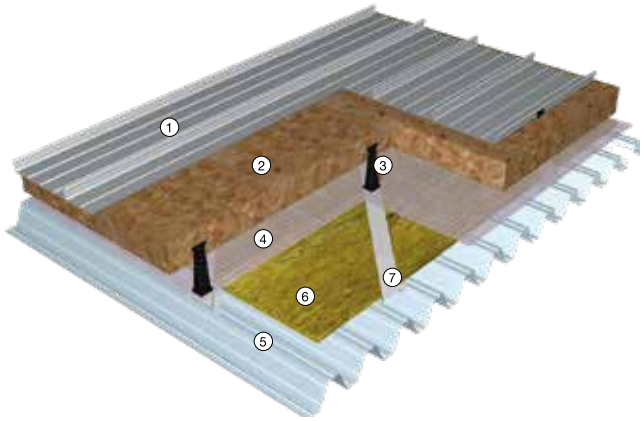
- This is a long span solution which negates the need for roof purlins
- The deck is installed directly onto the steel rafters
- It allows other trades to work below once th edeck is installed
- The deep section deck profiles can support additional mass such as those needed for acoustic systems
- The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



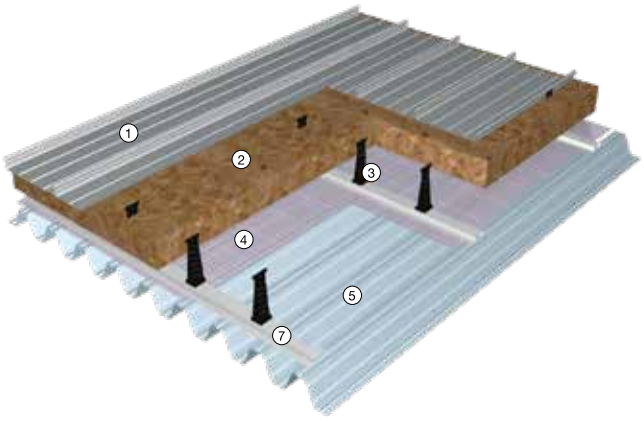
Kalzip standing seam on Kalzip structural decking



Kalzip standing seam on perforated Kalzip structural decking with acoustic insulation slab



Kalzip standing seam on Kalzip 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 Acoustic insulation slab
⑦ Top hat sub purlins

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.

Advantages

- 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.

Protestant parish hall, Heddesheim (DE)
Profile type: 65/400, AluPlusPatina Champagne G 12
Architect: motorplan Architektur + Stadtplanung

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.

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

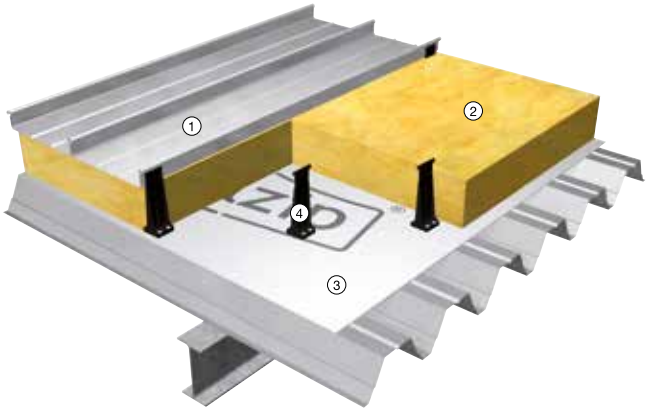
- Corrosion-resistant, weatherproof Aluminium alloy as base material
- Insensitive to UV rays, resistant to microorganisms and to aging
- Particularly quick installation, mostly independent of weather conditions
- Economical due to pre-manufactured system components

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

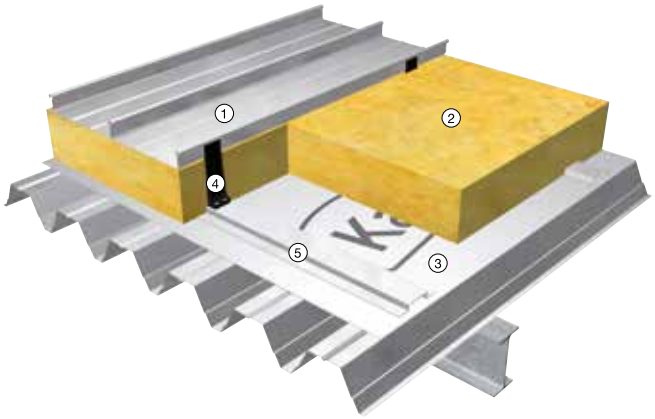
Martin Community Frankfurt-Schwanheim (DE)
Profile type: 50/429, HPC 7016 3%
Architect: Reuter + Werr Architekten BDA

Eurowheel, Vorchdorf (AT)
Profile type: 65/333, bronze
Architect: Kienesberger Schrökenfuchs Architeture

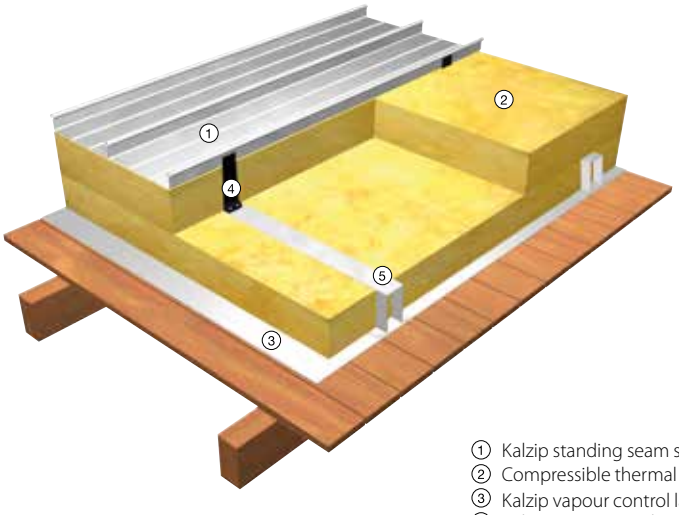
Non-ventilated Kalzip roof on a trapezoidal steel deck



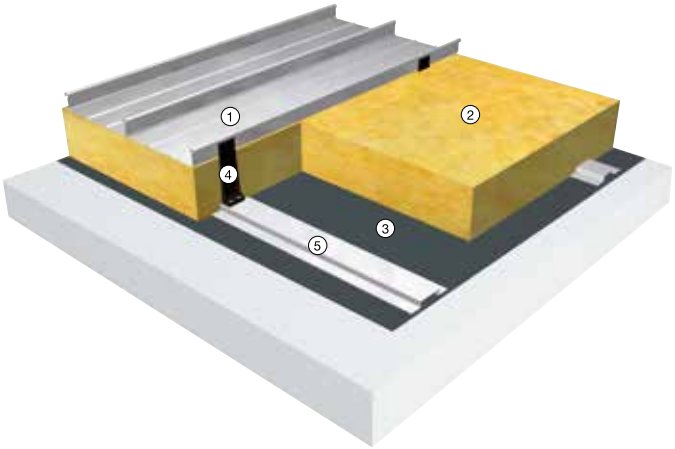
Non-ventilated Kalzip roof on purlins with trapezoidal inner sheet



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

Kalzip low U-value system

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/m2/K by combining rigid insulation boards with glass mineral fibre layers.

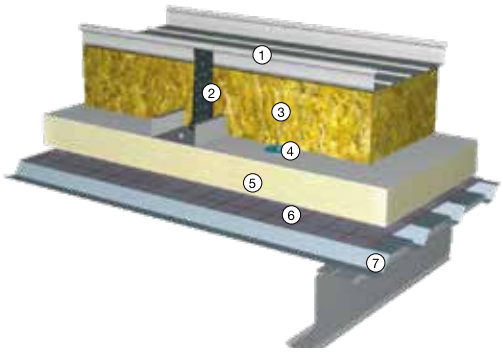
It is the symbiosis of the two insulation types that gives the system its high performance and uniqueness in achieving extremely low U-values, allowing a significantly greater overall thermal resistance to be achieved compared to that of any one single layer of insulation of the same total thickness.

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.

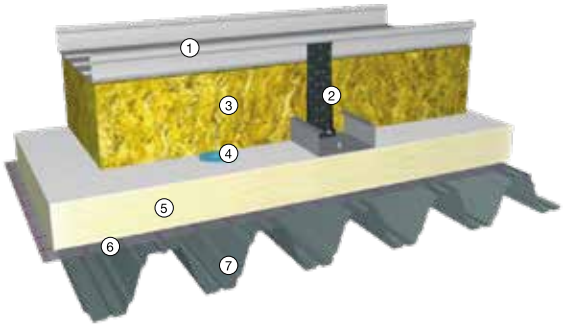
Advantages:

- 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.

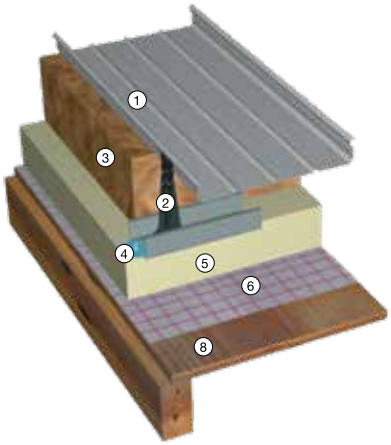
Liner-deck roof system



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 SFS Iso-Tak fastener system
⑤ Kalzip insulation 23 (2400 mm x 1200 mm)
⑥ Kalzip vapour control layer
⑦ Inverted liner sheet over purlins
⑧ Timber decking

Kalzip DuoPlus and Kalzip Duo

EnEV compliant roof systems

The Kalzip DuoPlus and Kalzip Duo Roofing systems offer a complete construction system without thermal bridging, which easily meets the new energy requirements for new buildings.

The permissible annual primary energy requirement was reduced by an average of 25 percent and the permissible heat transfer coefficient degreased by an average of 20 percent. Depending on the type of use, the maximum heat transfer coefficients that may be achieved during refurbishment are those specified in attachment 3 of the current EnEV (for example U = 0.20 W/(m^2-K). Kalzip DuoPlus and Kalzip Duo show what perfect solutions look like in terms of the EnEV, which save energy and yet offer individual design versatility.

Advantages

- 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'w = 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

Grand Canal Theatre Dublin (IRE)
Profile type: 65/400, stucco-embossed
Architect: Daniel Libeskind, New York

The perfect roof system to fullfill the current Energy Saving Regulation

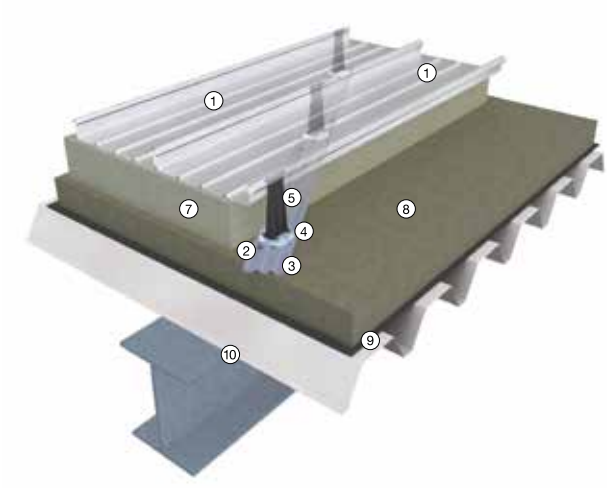
Kalzip DuoPlus

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 roatable 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 roatable 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

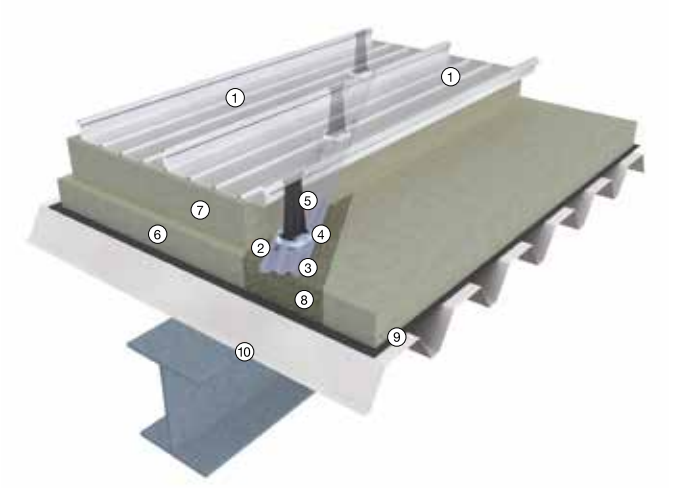
Kalzip Duo is a particularly economical system variant. This more cost-effective option has no need for a full-surface step-resistant thermal insulation. Only approx. 240 mm wide step-resistant mineral wool insulation strips or PIR/PUR insulation boards of 100 or 140 mm thickness are required as underlays 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.

Kalzip DuoPlus on a trapezoidal steel profile



① Kalzip standing seam sheet
② Connecting element SFS intec SD2-S16-6,0 x L
③ DuoPlus clip-on rotary rail type E
④ DuoPlus rotary clip adapter
⑤ Kalzip E clip

Kalzip Duo on a trapezoidal steel profile



⑥ Mineral wool insulation felt (compressible)
⑦ Mineral wool insulation felt
⑧ Thermal insulation, step-resistant (mineral wool or PIR/PUR insulation boards
⑨ Vapour barrier
⑩ Substructure

The system for excellent thermal insulation and high acoustic insulation

Kalzip DuoPlus or Kalzip Duo on trapezoidal steel profile

- **Subshell**

  Fischer Trapezoidal Profiles
  Panel thicknesses t = 0,88 mm

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

  Optional Fischer 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/m2
  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/m²
  Thickness: 100/140 mm
  Kalzip DuoPlus – fully laid
  Kalzip Duo – in 24 cm wide strips

- **Rotary clip rail E with plug-in connector**
  with a hole average of 7 and 10,5 mm pre-punched

- **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 beween 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

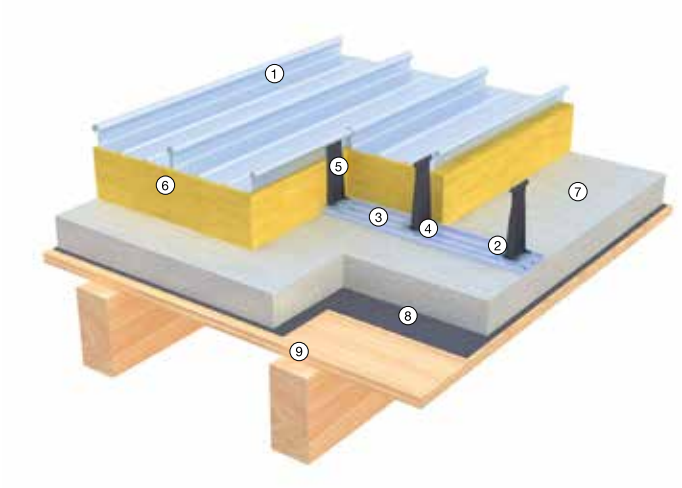
- **Kalzip aluminium profiled sheets**

Combination of insulating materials with different heat transfer coefficients

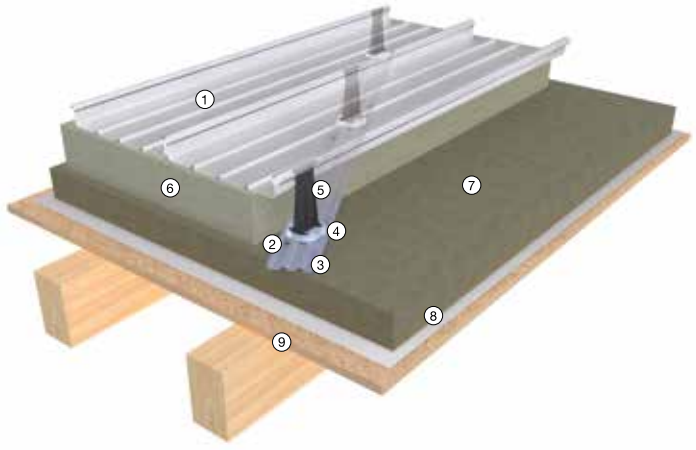
Variant	Basic insulation	Insulation felt	Insulation thickness compressed (mm)	U-value (undisturbed)	U-value * (rated value)
1	WLS 024	WLS 032	100 + 100 140 + 180	0,135 0,086	0,141 0,092
2	WLS 037	WLS 035	100 + 100 140 + 190	0,173 0,106	0,186 0,118
3	WLS 040	WLS 040	100 + 100 140 + 180	0,195 0,123	0,205 0,131

*U-values in W/(m2 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/m²

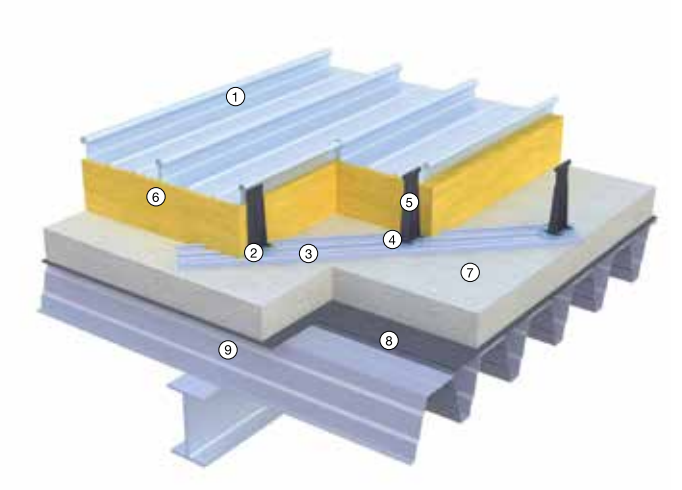
Kalzip DuoPlus and Duo as a rafter roof construction on a timber material with rotary clip rail type E parallel to the eaves



Kalzip DuoPlus and Duo as a rafter roof construction on a timber frame fabric with diagonal clip rail type E



Kalzip DuoPlus and Duo as a truss roof construction with trapezoidal steel underlay and rigid PIR/PUR insulation boards



Swivel clip rail E with thermal insulation

① Kalzip standing seam sheet
② Connecting element SFS intec SD2-6,0 x L
③ Clip-on rotary rail E
④ Rotary clip adapter
⑤ Kalzip E-clip
⑥ Mineral wool insulation felt (compressible)
⑦ Thermal insulation, step-resistant (mineral wool or PIR/PUR insulation boards
⑧ Vapour barrier
⑨ Substructure

Housing area Joseph-Seliger, Ottobrunn (D)
Profile type: 65/434, RAL 9006
Architect: goergens + miklautz Architekten

Kalzip aluminium roof system for residentials

Sustainability and profitability in housing construction - which means energy efficiency, longevity, safety and no maintenance required! The metal roof from Kalzip was specially developed for these requirements. With the price-optimized construction concept you can use all roof forms on your new building or renovate old flat roofs. The noble Aluminium surface additionally lends the building a new aesthetic value.

Flexible planning: Design freedom for new buildings

More than 100 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. Our Kalzip technical advisors will provide you with concrete support in the planning and tendering of your projects. We have a comprehensive collection of detailed solutions at our disposal.

In terms of building physics, the diffusion-open roof cladding made of aluminium standing seam panels offers maximum safety. The special construction of the two flanges allows moisture to escape from the thermal insulation.

A great advantage - the roof system from Kalzip

The Kalzip roof cladding with its natural, pre-weathered and matt aluminium plus patina surface is low-reflective and 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.

Sustainable and value-enhancing

An alternative for renovation:
A new roof for existing buildings

Wind, weather and UV rays cause conventional flat roof sealings to "age". Wrinkles and tensions arise in sensitive seam areas and for connections to rooflights and walls. Flat roofs that become dilapidated over time ultimately pose a danger to the building structure. The virtually maintenance-free Kalzip pitched roof offers you a cost-effective alternative to renovation. You also save long-term maintenance costs, which would otherwise be maintenance and repairs would have to be included. To convert a flat roof into a pitched roof, a lightweight framework of Vario RT system elements is firmly connected to the substructure. In most cases, the old waterproofing and insulation structure can remain on the roof and does not have to be disposed of at great expense.

The new roof cladding made of aluminium standing seam panels is then installed on the flexible stud frame. In the ventilated intermediate space, a mineral fibre insulation layer can be laid loosely on the floor slab in accordance with the requirements of the EnEV. All work can often be carried out without disturbing the residents. The ventilation of the new cold roof construction helps to avoid heat accumulation in summer and ensures a plasant living climate.

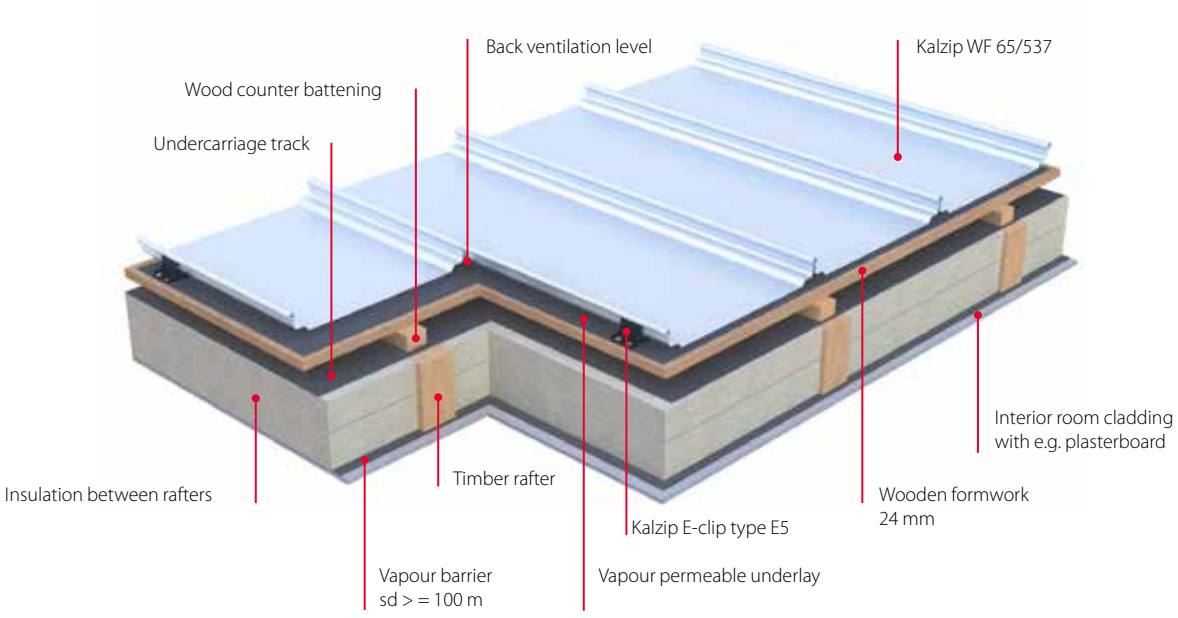
Anderson Street residential area, Inverness (UK)
Profile type: 65/400, stucco-embossed
Architects: Keppie Design Ltd.

Housing area Bonlanden with green roof, Filderstadt (D)
Profile type: 65/333, stucco-embossed
Architect: Thomas Baur

Technical data	
Profile type	AF 65/537 (seamless profile)
Thickness (mm)	0,8
Material	Aluminium EN AW 3004/3005
Profile panel shape	Straight profiled sheets
Maximal length	20 m* (longer panels on request)
Surface	AluPlusPatina natural aluminium
System fastener	Kalzip E-clips: E 5 – E 180
Roof Pitch	from 1.5° according to approval Z-14.1-181
Anti-condensate coating	DripStop (optional)
Insulation	Compressible mineral wool, rigid insulation materials
Weight incl. system fastener (m^2)	approx. 3 kg

*Measured from the fixing point to the end of the Kalzip profiled sheet

Kalzip residential standing seam roof WF 65/537 in aluminium



German Football Museum Dortmund
Profile type: 65/434, RAL 9010
Architect: HPP Hentrich-Petschnigg & Partner

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.

Advantages

- Suitable for new buildings and roof renovation
- Diffusion-open insulating material; water vapour diffusion resistance factor μ = 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 W/(m-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

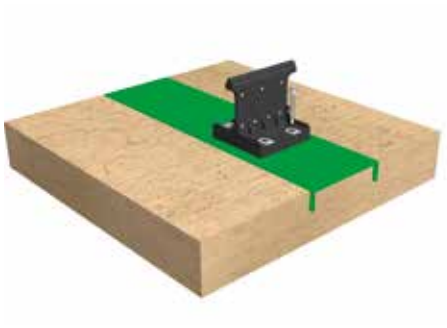
The Installation

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	Fp ≥ 550 N

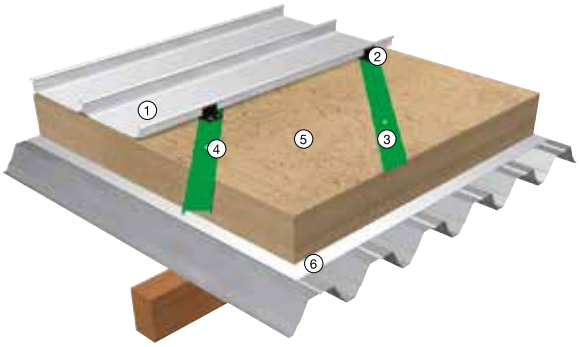
* The exact thickness of the insulation layer depends on the requirements of the current EnEV.

Fixing the rail with expanding rivets

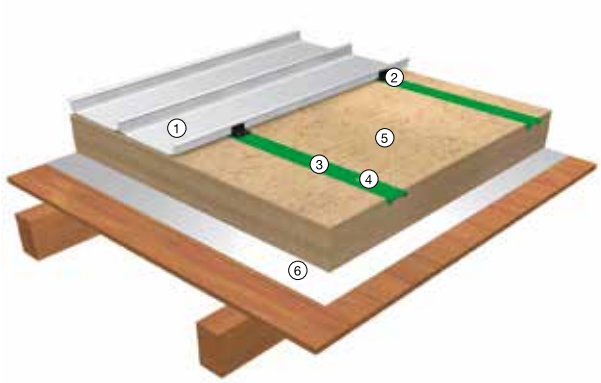


Attached clips on mounting rails

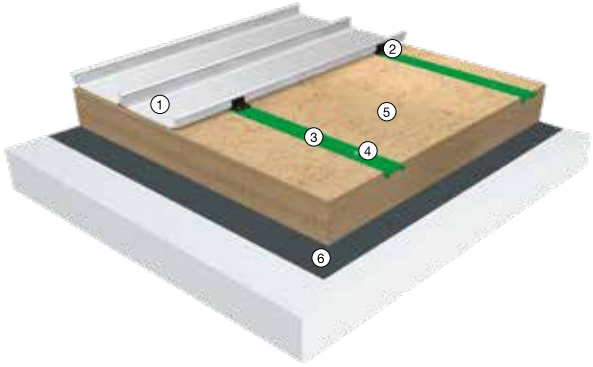
Roof construction Kalzip ProDach on a truss roof construction



Roof construction Kalzip ProDach on rafter roof construction



Roof construction Kalzip ProDach on concrete/ aerated concrete



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
- Supervision of the execution work with extended warranty*
- Calculations for anchors, fasteners and dowels*
- Heat and moisture protection certificates*
- Lightning protection*
- Parts lists and installation plans*

*These services are charged.

Vor der Sanierung
Berufsbildende Schulen Meppen (D
Planer: Stefan Hölscher, Geeste

After the refurbishment
Vocational school Meppen (DE)
Profile type: 65/400 , RAL 9007
Planner: Stefan Hölscher, Geeste

Refurbishment of flat roofs (from 1.5°) with the Vario LB roof renovation system

Kalzip offers various systems for the sustainable refurbishment of flat roofs which have proven themselves over the years. With these solutions, flat roofs can be converted particularly economically into a safe pitched 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.

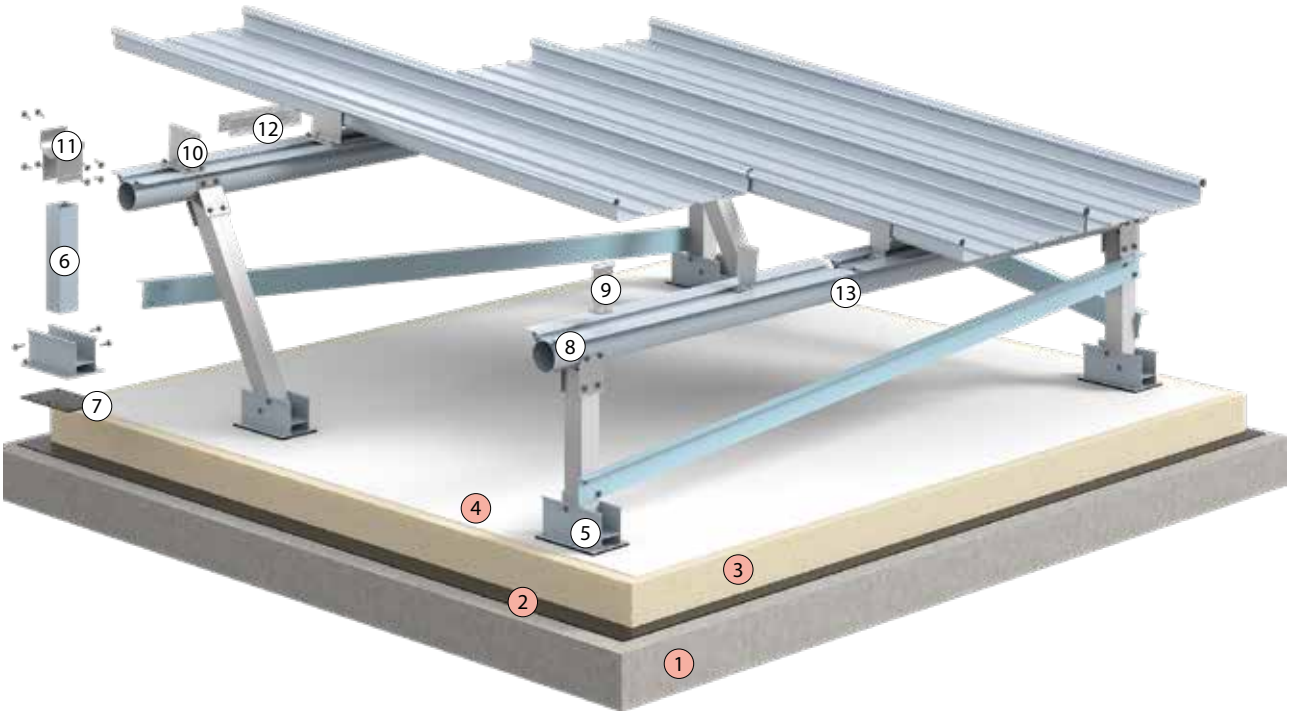
For the highest building physics and architectural requirements

Usually, the existing supporting structure can continue to be used without additional measures. The new substructure can be easily and safely adapted to the building geometry and structure.

Kalzip refurbishment offer the opportunity to permanently increase the value of the property through contemporary roof architecture.
In accordance with the architectural concept, the profiled sheets are prefabricated to exact dimensions in roll formers. As a result, barrels, vaults and rounded eaves solutions can also be realised cost-effectively and accurately. This refurbishment variant is preferably suitable for all flat roof constructions made of bitumen or foil.

Advantages

- Low, additional structural weight - suitable for statically critical roof structures
- Activation of payload and safety reserves by removing the gravel layer
- High rigidity and stability
- Simple determination of the new roof geometry
- Economical, fast assembly
- Old insulation materials can continue to be used, depending on their condition, and new insulation materials provide additional thermal protection



Kalzip Vario LB System structure

Old inventory

1) Top storey ceiling (rigid substructure) e.g. concrete or trapezoidal profiles
2) Vapour barrier
3) Flat roof insulation
4) Existing bitumen or membrane sealing

Kalzip renovation solution

5) Vario LB basic profile
6) Vario LB support profile
7) Vario LB thermal cap 145/200
8) Kalzip LB tubular purlin 80
9) Vario LB rotary clip
10) Fixed point clip
11) Vario LB fork profile
12) Vario LB support plate
13) Vario LB joint profile 80
14) Eave angle

Vallendar comprehensive school (DE) before and after renovation; profile type: 50/429, stucco-embossed
Architect: Guido Fries Architekten, Vallendar

Trust in aluminium! Cost-effective over the entire service life

In the medium to long term, the virtually maintenance-free Kalzip metal roof made of aluminium profiled sheets saves you hard cash. A roof cladding made from Kalzip aluminium profiled sheets offers significantly better protection: the roof is installed without penetration and is classified as a hard roofing material which is not flammable.

Sample calculation: Flat pitched roof, 1.500 m2
Bitumen roof deck: 18 mm, rigid mineral wool insulation. **Kalzip:** 65/500, 0,8 mm soft fibreglass insulation.

	Bitumen	Kalzip standing seam	Savings with Kalzip
Construction	90.000 €	99.000 €	**–9.000 €**
Maintenance			
In 10 years	22.000 €	5.000 €	**17.000 €**
In 25 years	35.000 €	10.000 €	**25.000 €**
In 50 years	80.000 €	30.000 €	**50.000 €**
Renovation			
In 10 years	0 €	0 €	**0 €**
In 25 years	22.500 €	0 €	**22.500 €**
In 50 years	44.500 €	0 €	**44.500 €**
Disposal	5.000 €	–3.571 €	**8.571 €**
Total			
In 10 years	112.000 €	104.000 €	**16.571 €**
In 25 years	152.500 €	105.429 €	**47.071 €**
In 50 years	219.500 €	125.429 €	**94.071 €**

Kalzip roof construction

Building type:
Industrial or commercial hall with a roof area of 1,500 m^2 in double-shell construction

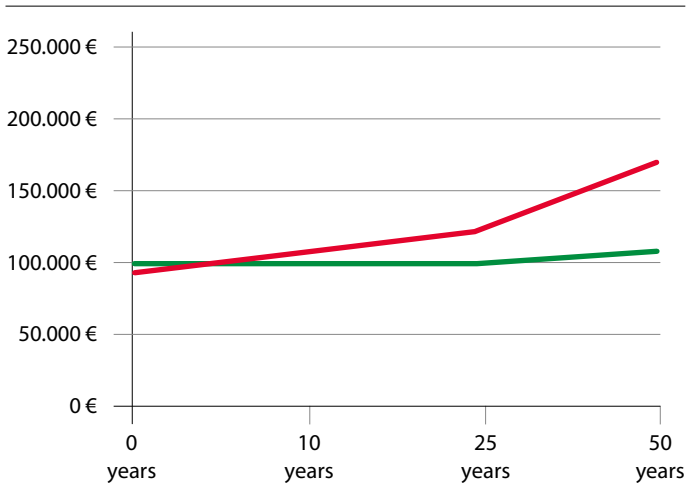
Roof shape:
Saddle roof, 3° roof pitch

Drainage:
exterior

Number of rooflights/RWAs and other penetrations: approx. 8

Insulating material mineral WLG 040:
U-value: approx. 0.24 W/(m^2 x K)
Thickness approx. 160 mm

Chart



Sanitation Miele & Cie KG , Warendorf
Architect: Bauabteillung Miele & Cie. KG

Kalzip + Foamglas®

The key element for safe roof concepts

The Kalzip Foamglas® system is a roof construction which, due to the diversity of the insulation material, occupies a technically exceptional position and thus leads to an absolutely safe, damage and maintenance-free building envelope.

Advantages

- Absolutely water- and vapour-proof (suitable as emergency sealing)
- Non-capillary suction
- Non-flammable (Building material class A1/ Euro class A)
- Free of thermal bridges
- Wind and airtight
- Pest proof
- Stable to size (does not swell, shrink or deform)
- Resistant to rotting
- Suitable as secondary sealing
- Extremely temperature-resistant and equipped with the best sound insulation properties
- Alternative roof concept if mechanical fasteners are not possible

The area of application

The system is particularly suitable for construction projects in which high demands are placed on the components of the roof system due to building physics conditions and where there is a permanent risk of condensate formation. Sensitive production areas, e.g. pure areas for the production or storage of electronic components, where a perfect tightness of the building envelope is essential, are also an ideal area of application for this construction method.

Grundschule Mülheim-Kärlich
Profiltyp 65/434), RAL 9007
Architekten: VG Weißenthurm

The perfect roof system for highest constructional requirements

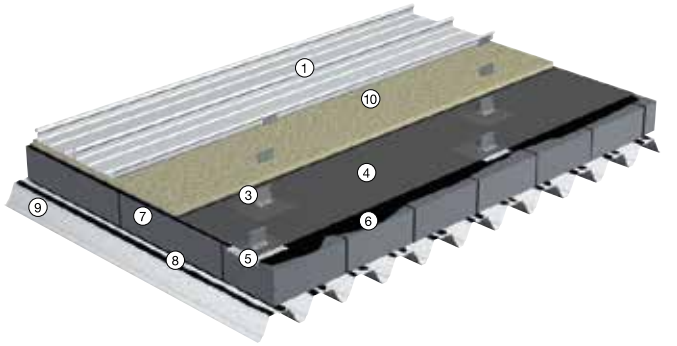
Kalzip and Foamglas® offer double safety, because the Insulation also has a sealing effect. This means that roof edges and connections are also made durable and free of thermal bridges. With Foamglas® almost all roof shapes can be realized, since the foam glass sheets are easy to process and adapt.

Kalzip with FOAMGLAS® additionally stands out through

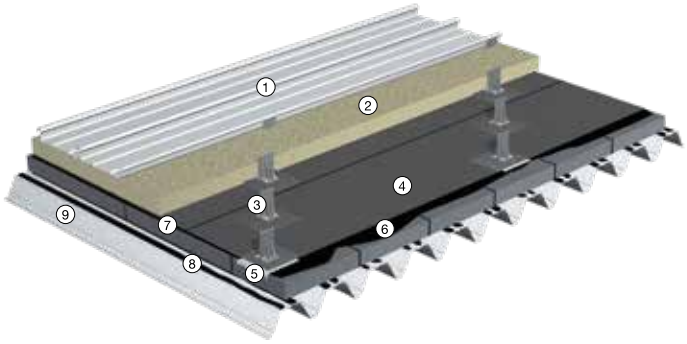
- High energy efficiency due to air- and vapour-tight thermal insulation and thermal bridge-free mounting
- Few functional layers in the roof structure
- No additional vapour barrier
- No mechanical fixation in the supporting structure
- Additional safety through a waterproof subroof (moisture-proof system)
- Additional load-bearing effect via the insulation layer
- Eignung für Kalzip Falzbares Aluminium in handwerklicher Klempnertechnik geeignet
- Ideal conditions for the renovation of roofs even with minimal tendency
- High degree of safety against water accumulation, e.g. in the event of ice jumps

Technical data Foamglas® insulation board T4 WDS	
Bulk density	ρ = 110 kg/m³
Thermal conductivity	λ = 0,04 W/(m·K)
Fire behaviour	Building material class A1/Euro class A (non-flammable)
Pressure resistance	tn. σ = 0,23 N/mm²
Thermal expansion coefficient	αth = 8,5·10-6 1/K
Vapor diffusion resistance	∞ = vapour-tight
Water resistance	permanently waterproof
Application temperature	at least +5 °C
Temperature resistance	-260 °C to +430 °C

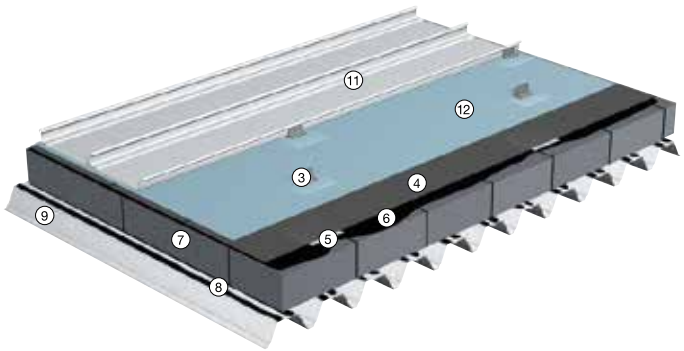
Standard roof construction Kalzip FOAMGLAS® system



Roof construction Kalzip with FOAMGLAS® as a combined solution



Roof construction Kalzip AF on FOAMGLAS® insulation



① Kalzip aluminium profiled sheet
② Compressible thermal insulation
③ Kalzip composite clip
④ Polymer bitumen sealing (1-layer)
⑤ Claw plate L
⑥ Hot bituminous pavement swab
⑦ Kalzip Foamglas® panel
⑧ Bitumen bonding
⑨ Trapezoidal profile
⑩ Optional: 20 mm soft thermal insulation
⑪ Kalzip AF profiled sheet
⑫ PE foil

Digestion tower sewage treatment plant Fredrichshafen (DE)
Profile type: 65/500, RAL 5012

Kalzip FlexiCon RR 80

The flexible substructure

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.

For sophisticated architectural geometries

Advantages

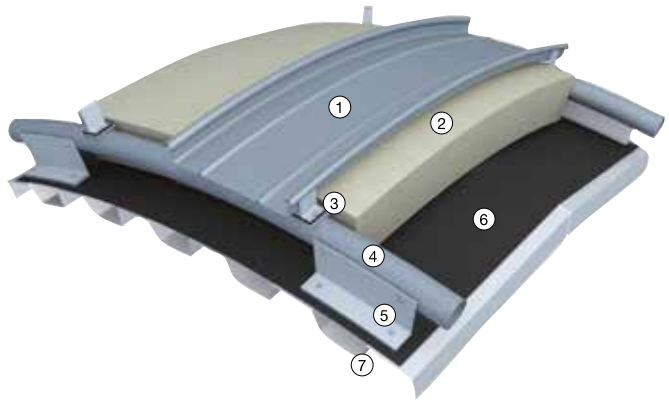
- Economical and low-cost solution for free-form structures substructures with standing seam profiled panels
- High safety due to corrosion-resistant aluminium alloy
- Quick adjustment of the spatial position of the pipe substructure segments using three measuring points
- Height compensation of on-site 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



Tecnical dataKalzip 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

Kalzip NatureRoof

Ecologically valuable roof greening

The Kalzip NatureRoof meets high ecological, structural and design expectations.
The heat-insulating and resource-saving lightweight construction of the Kalzip construction system is a benchmark and a prerequisite for sustainable, intelligent constructing. Environmentally friendly and aesthetic requirements are equally fulfilled and technical planning reliability is guaranteed.

The Kalzip NatureRoof enables a safe green roof with minimal maintenance - low-growing, self-regenerating, drought-resistant sedum plants transform grey roof landscapes into flowering oases. Sedum plants are undemanding, they tolerate smoke and exhaust fumes and are resistant to frost and wind.

Advantages

- The assembly takes place without additional Sealing measures directly on the Kalzip profiled sheets
- A compact solution in modular design
- Permanently resistant to root penetration and moisture penetration
- High economic efficiency due to easy, fast installation
- Thrust protection enables a Greening with inclined and curved roofs
- The function as a catchment device for lightning protection is maintained.
- All components are environmentally friendly and can be dismantled
- The planning is homogeneous, even if only partial areas are greened
- With the appropriate static load Kalzip is easily retrofittable to a natural roof (only Kalzip 65/333)
- The Kalzip aluminium profiled sheets offer a high level of protection against mechanical damage to the roof waterproofing when the NaturDach components are applied
- After removing the vegetation, Kalzip remains as a full roof covering
- Kalzip is resistant to flying sparks and radiant heat. This attribute is retained if the relevant requirements of the FLL guidelines and the state building regulations are met.

Administration building Kalzip GmbH Koblenz (D)
Profile type: 65/333, stucco-embossed
Architect: Architektengruppe Voss Naujack von Canal, Koblenz

Cofi Roc Café Caernarfon, Gwynedd, Wales (UK)
Profile type: 65/333, stucco-embossed
Architect: Aegis Architects

Compensating green areas with the Kalzip NatureRoof

The water retention effect is particularly high on flat roofs. The greening measures of roof areas is a sustainable enrichment for plants, animals and people. The Kalzip NatureRoof makes a valuable contribution to rainwater management and to the improvement of the air quality.

With a Kalzip Nature Roof which has a runoff coefficient of Ψ = 0.5 (up to 5 % slope), 50 % of the precipitation is retained by the storage capacity of the NatureRoof structure. According to experiments at the School for Technology and Architecture in Bonn, about 33 % of the precipitation returns to the natural rainwater cycle through evaporation.

Renaturation as a compensation for urbanisation contributes significantly to the preservation of our environment and the improvement of living conditions. Low air humidity, high dust formation, pollution and overheating can be effectively counteracted by green roofs. Material pollution from the air in undissolved and particulate form, e.g. "acid rain" and soot, is reduced to a high proportion when seeping through the root area of the NaturDach structure.

Reduction of pollutants with extensive roof greening:

Cd	Zn	Cu	Pb	N
96 %	16 %	99 %	99 %	97 %

Kalzip NatureRoof additionally impresses with

- Considerable pressure relief for the sewerage system and delayed discharge of excess rainwater into the local and communal drainage facilities
- Improvement of the oxygen content, microclimate and humidity in the building environment
- Binding of dust and air pollutants, e.g. CO^2
- Thermal and mechanical protection against temperature, radiation and weathering influences
- Year-round improvement of thermal insulation and indoor climate
- Value enhancement for the building
- Creation of ecological compensation areas as a countermeasure to progressive soil sealing

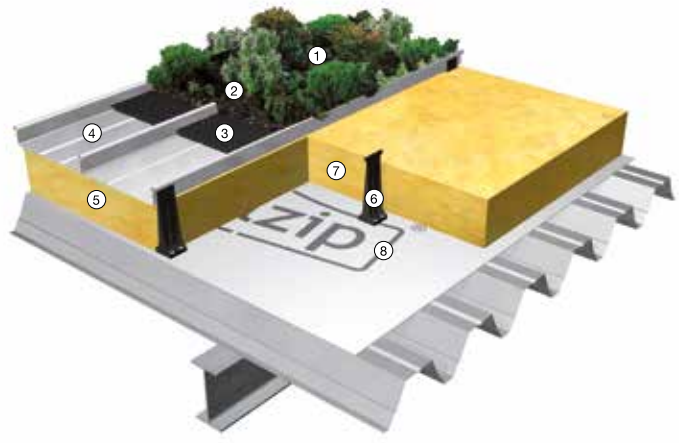
The Kalzip NatureRoof is unique in its constellation and technical design

The components of the Kalzip NatureRoof system are delivered to the construction site as a separate unit. The functional layers are matched to one another in their mode of action and form a single unit in terms of execution. DIN 4095 "Drainage for the protection of structures" as well as the roof greening guidelines of the FLL, Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau, are complied with.

The Kalzip drainage mat is supplied in rolls with a filter fleece coating. The width corresponds to the Kalzip aluminium profiled sheets 65/333 used in a length of 30 m. It is a linear drainage system in accordance with DIN 4095 with drainage holes and water storage troughs - a Recycled product, biologically neutral, weather resistant and recyclable again. The Water storage troughs hold back up to 3.2 l/m2 of precipitation. This serves the planting as a nutrient and the natural cycle as a valuable evaporation reservoir. The filter fleece prevents finer soil and substrate particles from the vegetation layer from being slurried into the drainage layer.

The Kalzip planting substrate is a quality assured natural product with a test certificate. Consisting of lava and pumice gravel, the pH value of the Kalzip Plant Substrate is well matched to the aluminium base material. It is applied to the drainage mat and has a layer thickness of 6 cm when set (approx. 15 to 20 % settlement must be taken into account).

Roof structure Kalzip NatureRoof



① **Kalzip sedum planting, low-growing, self-regenerating, drought-resistant, frost-resistant**

② **Kalzip plant substrate, a natural product with a test certificate**

③ **Kalzip drainage mat with filter fleece coating, supplied in rolls**

④ **Kalzip aluminium profiled sheets, the root-resistant and moisture-proof basis for natural roof constructions.**

⑤ **Thermal insulation layer, exactly adaptable to object-related requirements**

⑥ **Kalzip composite clip**

⑦ **Vapour and air barrier, permanently protects against diffusion moisture from above and below**

⑧ **Trapezoidal profile, the durable and lightweight load-bearing shell for truss and purlin roof construction; wooden formwork is also possible**

Extensive roof greening with minimal construction effort and maintenance

Kalzip aluminium profiled sheets 65/333
Thickness: 1,0 mm
Basis weight: approx. 4.0 kg/m2

Kalzip NatureRoof Construction
Surface load: water saturated approx. 90 kg/m2
Discharge coefficient up to 5 % roof pitch: Ψ = 0.5
Discharge rate with precipitation donation
0.03 l/sec/m2 and roof slope 3 %: 2.41 l/sec/m2

Kalzip KD 33 linear drainage system
Construction width: 333 mm
Thickness: approx. 2,5 cm
Surface load: 4.5 kg/m2

Drainage mat
Polystyrene, compressive strength: 383 kN/m2
Outflow rate: 4 l/sec/m2
Water storage volume: 3.2 l/m2

Filter fleece
Polypropylene staple fibre fleece
Punching force (CBR test): 1400 N
Pore opening width (Dw): 0.14 mm

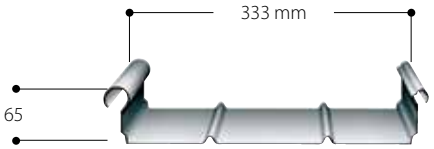
Kalzip NDS 60
Natural roof substrate, pH = 5 - 7
Lava and pumice gravel
Construction thickness: 6 cm
Surface load: approx. 75 kg/m2

Loose goods, available by truck or
in a silo vehicle for approx. 380 m2,
in Big-Bag (1000 l capacity) for approx. 14 m2

Kalzip flat root plants Sedum
9 common plant species/varieties
depending on the season,
50 pieces each in plates

Kalzip Sedum sprouts
5 - 7 common plant species/varieties
depending on the season,
in bags with a capacity of 2 - 10 kg

Kalzip Nerotec 60 Erosion protection adhesive
(when using rungs)
in bags of 60 litres capacity
1 bag is sufficient for 25 m2 (requirement 0.4 kg/m²)

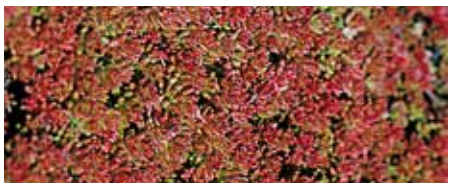


Kalzip aluminium profiled sheets 65/333


Kalzip KD 33 linear drainage system


Kalzip NDS 60 Natural roof substrate


Sedum acre, Sharp stonecrop
Height: 5 cm, Flowering: June to August


Sedum album "Coral Carpet", Red Moossedum
Height: 5 cm, Flowering: June to August


Sedum floriferum "Weihenstephan Gold", Gold sedum;
Height: 15 cm, Flowering: July to August


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


Sedum reflexum, Tripmadam
Height: 15 cm, Flowering: June to August


Sedum reflexum ssp. rupestre, rock stonecrop
Height: 10 cm, Flowering: June to August


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


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


Sedum sexangulare, Mild stonecrop
height: 5 cm, flowering: June to August

Kalzip AluPlusSolar

Aesthetic solar architecture

Kalzip AluPlusSolar profiled sheets of the second generation enable roof-integrated generation of regenerative energy using photovoltaics, with maximum creative f reedom for sophisticated architectural projects.

The ultra-light and flexible, extremely robust solar module is based on silicon solar cells and is the world's first fully IEC-certified solar module without glass, which embeds the PV cells in glass fibre reinforced plastic (GRP). The patented glass fiber reinforced plastic core together with state-of-the-art front and back sides and EVA films guarantee strength, robust design, flexibility, quality and durability - and all in one module.

The modules are permanently and firmly laminated onto the Kalzip surface. The internal connection system of the roof-integrated Kalzip AluPlusSolar solution protects the plug connections and cables securely against moisture, snow, ice, UV rays and animals. A further visual advantage is that no disturbing cable ducts or connections are visible on roof surfaces.

The micro-lens-shaped surface, consisting of an ETFE (ethylene tetrafluoroethylene) foil, which leads to the so-called light trap effect and thus to better absorption of the sun's rays, ensures higher yields. By using the ETFE film, the surface is not only dirt-repellent but also glare-free.

The module is applied to polyester-coated Kalzip profiled sheets in RAL 9006 and is available in straight or convex rounded profile shapes. Integrated into the surface without the need for an elevation, the solar modules are visually unobtrusive but retain their own expressive character. The combination of the advantages of aluminium with those of a photovoltaic system results in a perfect synthesis of design and function.

With Kalzip AluPlusSolar a wide range of roof shapes can be achieved. Barrel, shed or pitched roofs can be designed as energy roofs just as easily as individually curved shapes. Kalzip AluPlusSolar can also be used for the entire building envelope and facade surfaces can be "solarised" up to a maximum inclination of 90 degrees. Kalzip offers architects planning options for designing environmentally friendly solar living spaces - economically, sustainably and aesthetically.

The advantages

- Aesthetic, roof-integrated photovoltaics without additional fastening elements
- High safety and efficiency due to the first fully IEC-certified glassless, semi-flexible and ultra-light module based on silicon solar cells
- Optimal use of solar energy even in low light conditions due to the micro-lens-shaped surface made of ETFE foil (ethylene tetrafluoroethylene)
- Can be connected with standard DC connection boxes and controlled with conventional inverters
- Economical due to high performance guarantee (25 years)
- Dirt-repellent and glare-free surface - therefore minimal maintenance
- Suitable as cold and warm roof version
- Ideal for sophisticated object architecture
- High system safety due to internal connection technology
- Efficient plant design and profitability calculation with Kalzip
- Kalzip AluPlusSolar profiled sheets are optionally available with an anti-condensation coating (Kalzip Aquasine)
- On request also available as façade-integrated solar solution

Electrical characteristics	
Description	12 x 2
Output (Wp)	110
Isc (A)	9,15
Voc (V)	16,01
Imp (A)	8,63
Vmp (V)	13,04

Technical data	
Solar panels	24 5BB Monocrystalline solar cells
Solar panel characteristics	156 mm x 156 mm, 3 Busbars
Frontage	Polymer foil with high permeability
Upper embedding foil	Proprietary fibre-reinforced plastic
Cell embedding	EVA
Junction box	TÜV-certified (IP 67) with a Bypass diode (12 A)
Output cable	2 x 400 mm
Connector	PV-compatible connector
Dimensions (L x W x H)	2052 mm x 355 mm x 2 mm
Weight of laminate	2,5 kg

High reliability
25 years performance guarantee according to DAS Energy warranty conditions
10 years product warranty
Maximum system voltage: 1000 V
Maximum current: 20 A
All data under STC/standard test conditions (1000 W/m^2, 25 °C)

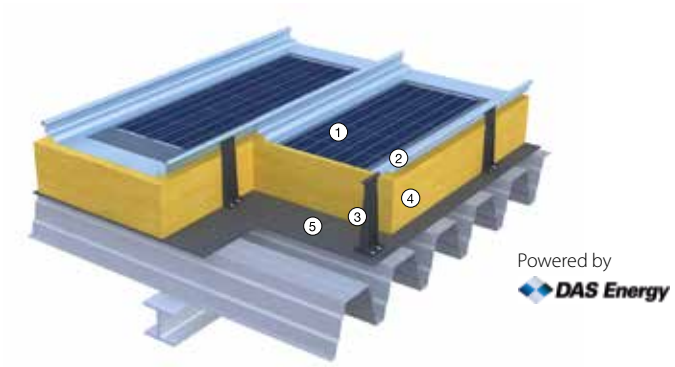
Certifications	
IEC 61215:2005	IEC 61730-1&2:2007
Fire protection class II	EN 13501-5:2007 Euroclass B $_{(ROOF)}$ t1

Temperature characteristics	
Operating temperature range	–40 to 85 °C
Environmental temperature range	–45 to 45 °C
Thermal coefficient of Pmpp	–0,393 %/°C
Thermal coefficient of Voc	–0,310 %/°C
TThermal coefficient of Isc	0,051 %/°C

Planning information

- Minimum radius in the area of the profiled panel covered with modules: convex > 10 m, concave: 10 m
- Roof pitch: from 1.5° upwards
- Application in complete building envelope or façade after consultation with the application technology department
- Design (electrics and fastening) according to Kalzip SolarSystems installation guidelines

Kalzip AluPlusSolar



① PV Laminate
② Kalzip aluminium profiled sheet 65/537
③ Kalzip composite clip type E
④ Thermal insulation (compressible)
⑤ Kalzip vapour barrier MH

Kalzip SolarClad

Lightweight and flexible

Kalzip SolarClad is a solar cladding system optimised for use on metal roofing Photovoltaic system which, thanks to its flexibility and versatility, allows the integration of solar modules into almost all standing seam systems with different materials.

The ultra-light and flexible, extremely robust solar module is based on silicon solar cells and is the world's first fully IEC-certified without glass, which embeds the PV cells in glass fibre reinforced plastic (GRP). The patented glass fibre reinforced plastic core together with the most modern front and rear backs and EVA films guarantee Strength, robust design, flexibility, Quality and durability - all in one module.

The very light modular 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 parallel to the roof or parallel to the roof, horizontally, following the contours of the roof, or mounted on Kalzip standing seam using Kalzip fastening clamps approved by the building authorities. Existing roof landscapes can therefore be transformed into solar power stations.

Advantages

- PV retrofit solution laminated onto flat sheets for all Kalzip widths
- Fixing clamps approved by the building authorities for maximum safety
- Low weight - including solar modules only approx. 7 kg/m^2, usually no additional roof construction is necessary
- For maximum power density and optimized yields, SolarClad can be mounted vertically, horizontally, parallel to the roof or as an elevation
- Retrofitting of existing Kalzip roofs
- High efficiency and safety due to fast, penetration-free installation
- Simple structural analysis of Kalzip roofs
- Improvement of summer thermal insulation through façade and roof shading
- High safety and performance through the first fully IEC-certified glassless, semi-flexible and ultra-light module based on silicon solar cells
- Optimum use of solar energy even in low light conditions through the microlens-shaped surface of ETFE film (ethylene tetrafluoroethylene)
- With standard DC connection boxes and to be connected with conventional Control inverters
- Economical due to high performance guarantee (10 years)
- Dirt-repellent and glare-free surface - therefore minimal maintenance
- Ideal for all roof shapes, for barrel-shaped roofs contour-following up to 13 m radius
- High system safety due to rear connection technology
- Efficient plant design and profitability calculation with Kalzip
- Also available as a façade-integrated solar solution on request

Residential house Oordegem (B)
Profile type: 65/400, stucco-embossed

The retrofit solution for all metal roofs

Kalzip SolarClad is offered as a complete system including Kalzip fixing clamps and various standing seam variants. The solar modules are permanently laminated onto Kalzip system supports at the factory ready for connection and can be installed on any metal roof system without penetration using the fastening clamps approved by the building authorities.

The areas of application

Kalzip SolarClad is ideally suited for all roof shapes up to complete building envelopes and façade applications. Due to its low dead weight, there are generally no additional structural requirements for the roof or façade, making Kalzip SolarClad suitable for all roof/facade structures and Kalzip building widths.

Planning information

- Recommended roof pitch from 1.5° upwards
- Application in a complete building envelope or façade after consultation with the application technology
- Design (electrics and fastening) according to Kalzip SolarSystems installation guidelines

High reliability
25 years performance guarantee according to our warranty conditions
10 years product warranty
Maximum system voltage: 1000 V
Maximum current: 20 A
All data according to STC/standard test conditions (1000 W/m², 25 °C)

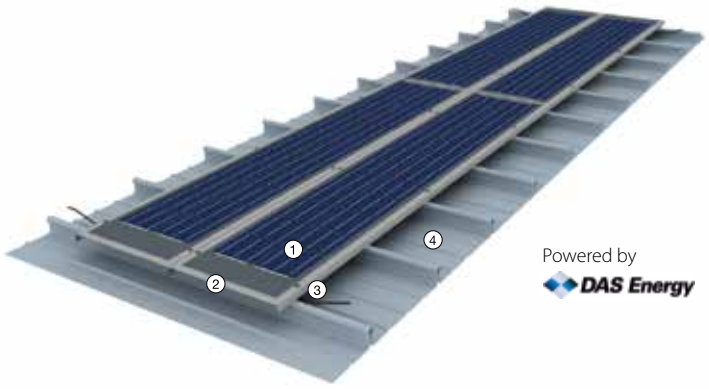
Certifications	
IEC 61215:2015	IEC 61730-1&2:2007
Fire protection class II	EN 13501-5:2007 Euroclass $B_{(ROOF)}$ t1

Temperature characteristics	
Operating temperature range	–40 to 85 °C
Environmental temperature	–45 to 45 °C
Thermal coefficient of Pmpp	–0,393 %/°C
Thermal coefficient of Voc	–0,310 %/°C
Thermal coefficient of Isc	0,051 %/°C

Electrical characteristics	
Description	12 x 2P
Output (Wp)	100
Isc (A)	8,41
Voc (V)	15,03
Imp (A)	8,02
Vmp (V)	12,47

Technical data	
Solar panels	24 polycrystalline silicium cells
Solar panel characteristics	156 mm x 156 mm, 3 Busbars
Frontage	Polymer foil with high permeability
Upper embedding foil	Proprietary fibre-reinforced plastic
Cell embedding	EVA
Junction box	TÜV-certified (IP 67) with a bypass diode (12 A)
Output cable	2 x 400 mm
Connector	MC4-compatible connector
Dimensions (L x W x H)	2052 mm x 355 mm x 2 mm
Weight of laminate	2,5 kg

Kalzip SolarClad



① PV Laminate
② Kalzip flat sheet with rear connection box and plug connections
③ Kalzip fixing clamp type FA
④ Kalzip standing seam profiled sheets 65/... or 50/...

Additive systems and materials

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 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.

Advantages

- 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

Hotel Kameha Grand Bonn (DE)
Profile type: 50/429, stucco-embossed
Architect: Architekturbüro
Karl-Heinz Schommer, Bonn

Fan Wold, Dortmund (DE)
Profile type: 50/429, RAL 9006
Architect: osd office for structural design

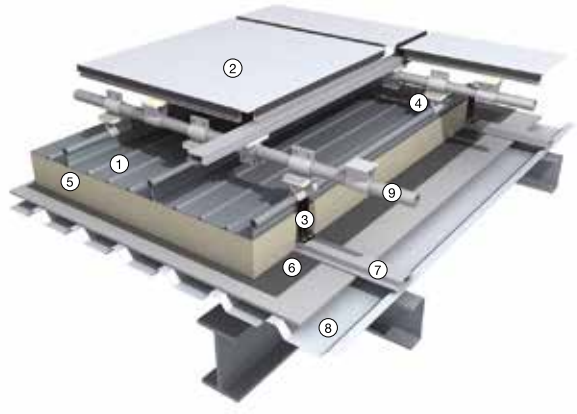
The areas of application

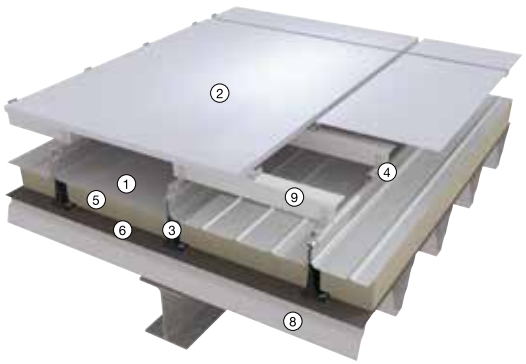
The wide range of applications depends on the intended use, shape, material combinations and statics. It is important to consider the choice of Kalzip roof construction in advance.

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 and 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.

CC Classic

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:

CC Trend

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 resistance and colour stability. We are pleased to present our exclusive CC Trend 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.

Standard colours:

Nya Nordiska Textiles GmbH, Dannenberg (D),
Profiktyp: 50/429, Selon Ech 2111/09
Architekt: Staab Architekten, Berlin
BDA Architekturpreis Niedersachsen 2012

Deichhalle Ettelbrück (L)
Profiltyp: 50/333, AluPlusPatina Gold G 30, RAL 9005
Architekt: Besch da Costa Architectes, Luxembourg

CC Pure

Metallic - from elegant to noble

Puristic, clear and timeless - our metallic surfaces that have made us famous - we can offer you a wide range of different surface finishes.

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 colours and Surfaces:

Natural aluminium stucco-embossed

AluPlusPatina Natural aluminium, stucco-embossed

AluPlusPatina Natural aluminium, mill-finish

AluPlusPatina Champagne G 12

AluPlusPatina Light Bronze B 20

AluPlusZinc

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 advantages

- 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 facades a special expression by means of their discreet matt appearance, while at the same time avoiding the typical light reflections which often occur.

Krakow Waste Incineration Plant (PL)
Profile type 50/429, RAL 3031, 6011, 6018, 6019, 6021
Architects: Architectural office Teller Architekci ,
Architectural office Lapinski Architekci,
Architectural office Manufaktura nr 1,
Prochem S.A.

Biological Institute of the University Hospital Dijon (F)
Profile type: 65/400, AluPlusZinc
Architect: AIA Atelier de la Rize Architectes - Albert Constantin, Lyon

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.

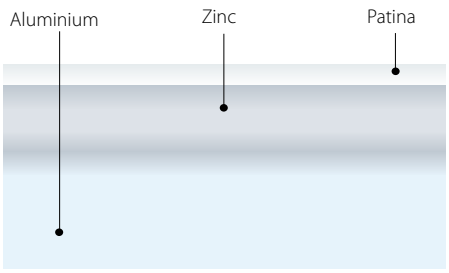
Advantages

- 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^2
- Resource-saving reduction of the material input for the load-bearing structural parts
- Unjointed web lengths over 100 m possible

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)



Residential complex The Iceberg (DK),
Profile type: 50/400, RAL 9010
Architects: Cebra, JDS Architects, SeARCH and Louis Paillard

CC Tec

ProTect - the effective protection against anti-graffiti contamination

To protect the surfaces, Kalzip also offers a high-quality and exceptionally weather-resistant high-end special coating based on a polymer technology using fluorocarbon (FLP).

It is characterised by high scratch resistance, best colour and gloss stability as well as a significantly higher surface hardness and temperature resistance.

EYou can obtain a selection of possible colour shades directly from your customer advisor or from the Kalzip customer service team in our plant in Koblenz.

Further information and application examples can be found in our book on constructive colours and surfaces, which we will be pleased to send you free of charge on request.

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

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

1) straight

2) convex roll-rounded

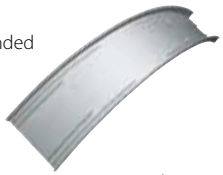
3) conical-convex roll-rounded

4) conical

5) conical-concave roll-rounded

6) cocave roll-rounded

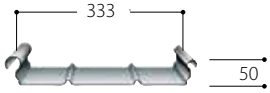
7) elliptic roll-rounded



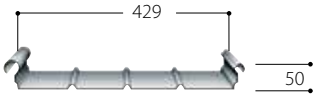
8) hyperbolic roll-rounded

9) Examples XT-Free form

Kalzip 50/333***



Kalzip 50/429



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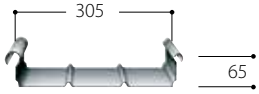

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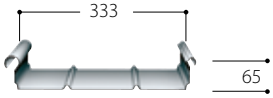

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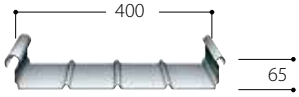
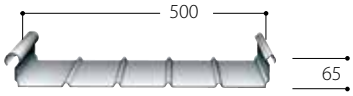


Kalzip 65/500



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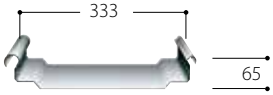

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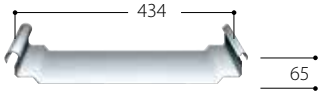
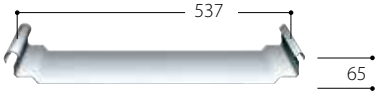
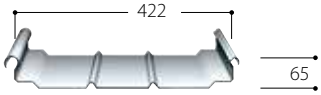


Kalzip WF 65/537/0,8**



Kalzip AS 65/422*/***



* 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!

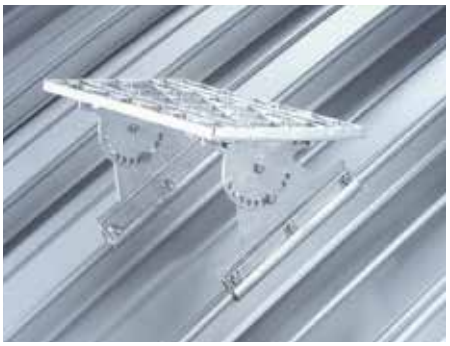
System components and accessories

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**



Kalzip Service

What applies to Kalzip products also describes our service: tailor-made, competent, flexible, reliable and of the highest quality, in a word: perfect. With maximum product and consultancy services, Kalzip pursues the goal of realising only the very best solutions.

You will benefit from over 50 years of experience. With perfection and technical know-how, experienced engineers accompany your construction project - whether new construction or renovation - from the idea to the realisation on site. Kalzip customers benefit from our comprehensive consulting and planning services, right through to project management.

Since the first Kalzip roof was produced in Germany in 1968, the lightweight aluminium system has been conquering the world. More than 100 million square metres of Kalzip profiled sheets have now been installed. The construction system available under the globally registered trademark Kalzip turns visions into reality. Impressive, futuristic, f unctional, aesthetically pleasing ecologically outstanding buildings from the seemingly limitless possibilities of roofing and building envelopes. Architects and building owners prefer Kalzip. We have set and continue to set trends.

An international network of assembly companies, system partners and suppliers guarantees our customers perfect complete solutions including all accessories in an extraordinarily high manufacturing and service quality. You are welcome to ask for our technical advice!

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

Our own seminars:

- Practice-oriented architect seminars
- Assembly training courses
- Courses on aluminium thin sheet welding (WIG) in cooperation with local chambers of trade

www.kalzip.com

Kalzip is a Donges Group Company

www.donges-group.com

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