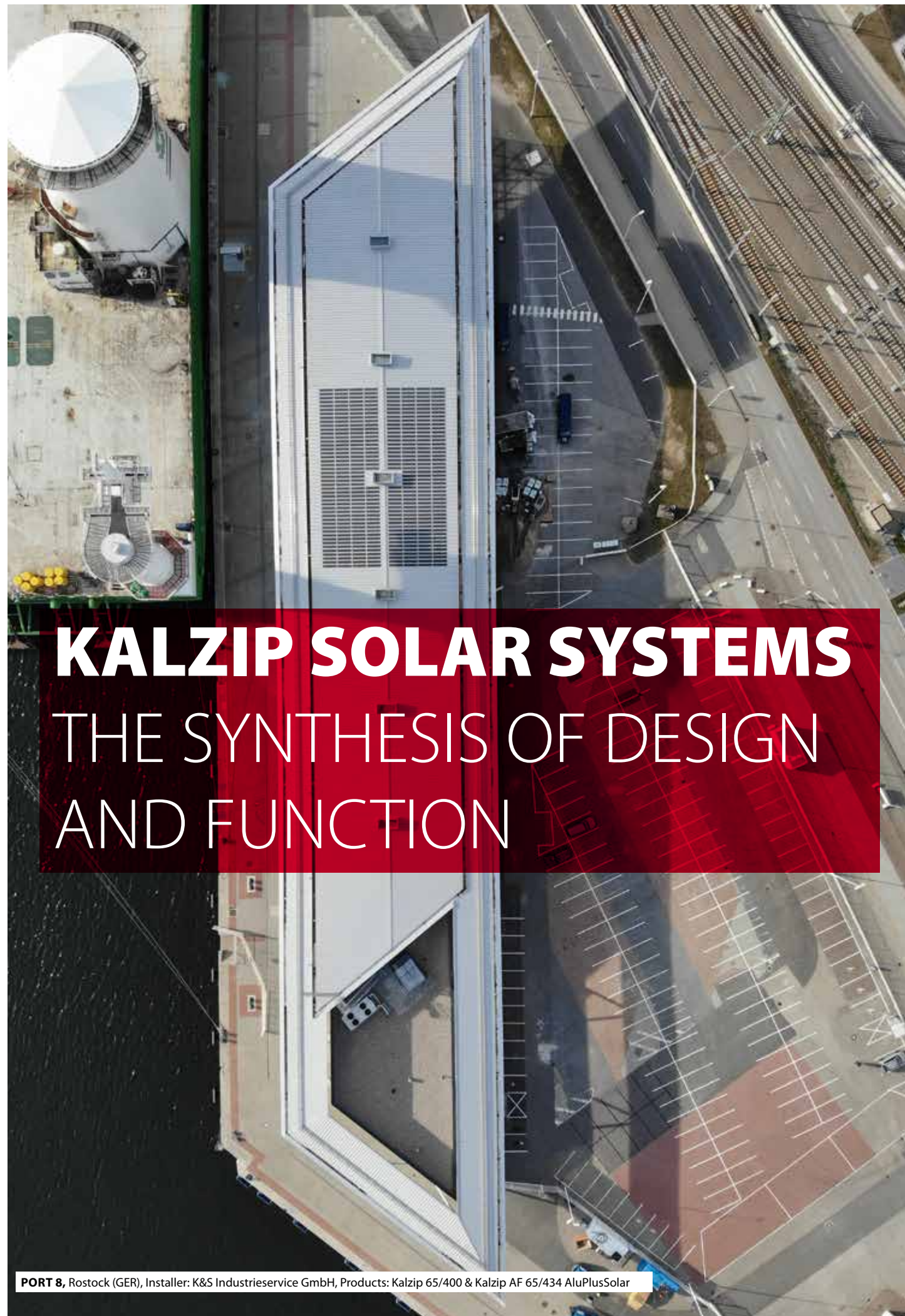


A close-up, perspective view of a roof covered with solar panels. The panels are dark blue with a grid of silver lines. The roof has a gabled structure with dark grey ridges. A thick red curved line is at the top left, and a thick black curved line is at the top right, both partially overlapping the solar panels.

KALZIP® SOLAR SYSTEMS

Roof-integrated PV solution for solar architecture



KALZIP SOLAR SYSTEMS

THE SYNTHESIS OF DESIGN AND FUNCTION

PORT 8, Rostock (GER), Installer: K&S Industrieservice GmbH, Products: Kalzip 65/400 & Kalzip AF 65/434 AluPlusSolar



METALINE, Hildrizhausen (GER), Architect: Dälken Ingenieurgesellschaft mbH, Installer: Zippert GmbH & Co. KG, Product: Kalzip AF 65/537



ABBAY REFURBISHMENT, Mechelen (BE), Installer: Monument Vandekerckhove



SCHOOL CAFETERIA, Wriedel (GER), Installer: AZK-Klempnerei

KALZIP SOLAR SYSTEMS

ESTABLISHED SYSTEM SINCE 2004

Solar technology in 2023 is not just a supplementary, but an indispensable component for sustainable energy generation. Roof surfaces offer enormous potential for the installation of photovoltaic systems. Architects and planners are focussing on solutions that blend harmoniously into the overall appearance of the existing architecture and at the same time guarantee maximum functionality.

Kalzip building systems fulfil these requirements to the highest degree. They combine structural perfection with outstanding design freedom and are therefore ideal for the realisation of both small and large projects. With our AluPlusSolar system, we offer an aesthetically pleasing and flexible solution

that can be adapted to almost any roof shape. This roof-integrated solar system has proven itself since its introduction in 2004 and allows you the proven design freedom of Kalzip systems in the field of photovoltaics.

We have developed the SolarClad system for existing Kalzip roofs. It is simply mounted on the flanges using the approved Kalzip seam clamp and thus enables simple retrofitting with solar modules.

In co-operation with Diconal, we have also developed a further solution for retrofitting solar modules to existing roofs. This solution complements our existing range and opens up further possibilities for integrating solar technology into your Kalzip project.

Kalzip Solar Systems offer many advantages and can be used for a wide range of requirements. Our aim is to make the integration of solar technology into your building project as seamless and efficient as possible, without compromising on aesthetics or performance. With Kalzip Solar Systems, the future of sustainable energy generation is here and now.

EXPERIENCE.

INTERNATIONAL.

Kalzip can look back on 55 years of experience in the field of aluminium roof and façade systems. As a technology trendsetter, Kalzip has been actively promoting rooftop PV solar solutions since 2004, with the Kalzip AluPlus Solar and SolarClad solutions. Since then, we have continued to develop the product and bring it up to the latest technological standards.

These developments over the years have made us a specialist in this segment that you can rely on for your project. More than 750 Kalzip solar systems have already been installed throughout Europe.

The photovoltaic module developed by our partner - DAS Energy - impresses with its high energy yield while being ultra-light and flexible. The modules weigh 3.3 kg/m² and thus simplify the static requirements for the roof construction. In addition, the flexibility enables an application

on almost all roof geometries.

AluPlusSolar and SolarClad have a Kalzip-specific bottom connection technology and are therefore optimally protected from external weather influences.

Kalzip solar systems contribute to active environmental protection by generating energy in a way that conserves resources.

Powered by



Monocrystalline cells

The solar modules used by Kalzip are currently the most commonly used photovoltaic cells. They are monocrystalline cells consisting of silicon monocrystals. They produce a particularly high output and currently manage to convert over 22% of light energy into electricity.

DAS Energy PV modules are made of glass fibre reinforced plastic and the patented prepreg material (= chemically processed glass fibre fabric). The development of this technology is due to Diamond Aircraft's more than 25 years of experience with glass fibre material.



SCHOOL CAFETERIA, Wriedel (GER), Installer: AZK-Klempneri

KALZIP ALUPLUS SOLAR

Roof-integrated, regenerative energy generation for aesthetic solar architecture

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

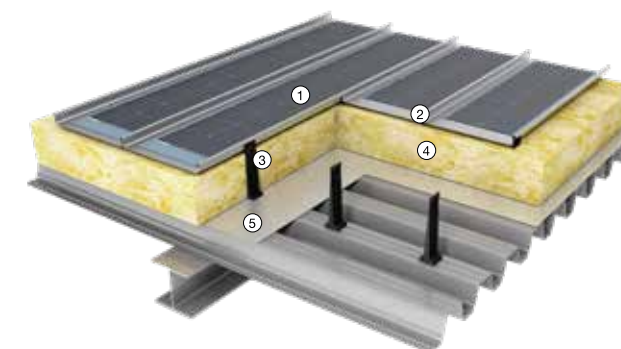
More yield is ensured by the microlens-shaped surface, consisting of an ETFE film (ethylene tetrafluoroethylene), which leads to the so-called light trap effect and thus to better absorption of the sun's rays. The use of the ETFE film means that the surface is not only dirt-repellent, but also glare-free.

Kalzip AluPlusSolar can be used to create a wide range of roof shapes, such as barrel, shed or monopitch roofs, as well as individually curved shapes. Kalzip AluPlusSolar can also be used for the entire building envelope and façade surfaces can be „solarised“ up to a maximum slope of 90 degrees. Kalzip offers architects planning options for designing environmentally conscious solar living spaces - economically, sustainably and aesthetically.

Planning advice

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

KALZIP ALUPLUS SOLAR ON TRAPEZOIDAL STEEL LINER



- ① PV-Laminate
- ② Kalzip Profiled sheet 50/444
- ③ Kalzip E type Composite Clip

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

TECHNICAL DATA

ELECTRICAL CHARACTERISTICS

Name	12 x 2M
Power	120 Wp
Isc	9,48 A
Voc	16,43 V
Impp	8,89 A
Vmpp	13,56 V

HIGH RELIABILITY

25 year performance guarantee in accordance with our guarantee conditions
10 years product guarantee
Maximum system voltage: 1000 V
Maximum current: 20 A
All data under STC/standard test conditions (1000 W/m ² , 25 °C)

TECHNICAL DATA

Solar cells	24 5BB Monocrystalline Solar Cells
Solar cell characteristics	156 mm x 156 mm, 3 Busbars
Front	Polymer film with high permeability
Top embedding foil	Proprietary fibre-reinforced plastic
Cell embedding	EVA
Junction box	TÜV-certified (IP 67/68) with one bypass diode (12 A)
Output cable	2 x 4 mm ² , 500 mm
Connector	PV compatible connector
Dimensions (L x W x H)	2035 mm x 377 mm x 2 mm
Laminate weight	3.3 kg/m ²

CERTIFICATIONS

Standard module examination	IEC 61730
Type test	IEC 61215
Voltage induced degradation test	IEC 62804-1
Salt Fog Corrosion Test	IEC 61701
Ammonia corrosion test	IEC 62716
B _{roof} (t1) „flying fire test“	EN 13501-5
Protection class II	2400 Pa according to EN IEC 61215

TEMPERATURE CHARACTERISTICS

Operating temperature range	-40 bis 85 °C
Ambient temperature range	-45 bis 45 °C
Temperature coefficient of P _{mpp}	-0,38 %/°C
Temperature coefficient of Voc	-0,36 %/°C
Temperature coefficient of Isc	+0,07 %/°C

KALZIP SOLARCLAD

The lightweight & flexible retrofit solution for Kalzip standing seam roofs

Kalzip SolarClad is a PV retrofit solution which is suitable for a wide range of metal roofing (e.g. barrel roofs) due to its low dead weight and narrow geometry.

The Kalzip retrofit solution can be installed vertically parallel to the roof or horizontally parallel to the roof, contour-following or elevated, and can be attached to a Kalzip roof without penetration using Kalzip fastening clamps approved by the building authorities. Existing roof landscapes are thus transformed into solar power plants.

Notes for glass-framed PV modules

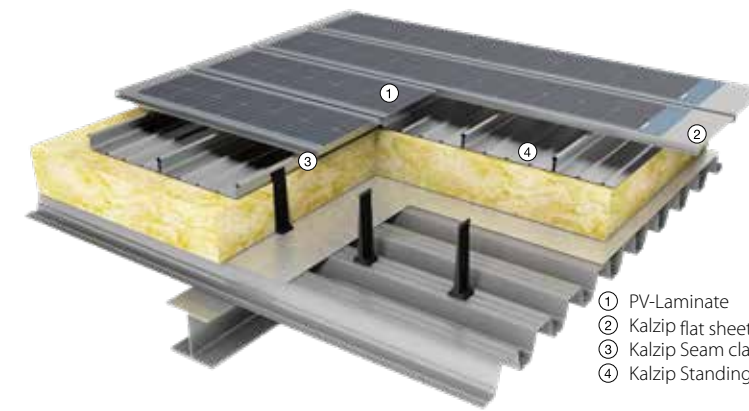
Glass-framed PV modules may only be fixed to the flanges of Kalzip standing seam profiled sheets using Kalzip fixing clamps approved by the building authorities.

The additional load due to PV rooftop solutions must be statically verified. If necessary, a smaller span of the Kalzip profiled sheets must be expected.

Planning information

- Recommended roof pitch from 1.5°
- Application in complete building envelope or façade after Consultation with the technical department
- Design (electrical) in accordance with Kalzip Solar Systems installation guidelines)
- Delivery of a pre-assembled Cable system for module interconnection

KALZIP SOLARCLAD



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

TRUMPF, Ditzingen (GER), Architect: Barkow-Leibinger Berlin, Installer: Haller Industriebau GmbH, Product: Kalzip 65/444



RESIDENTIAL, Seligenstadt (GER), Installer: Ruhland + Riegler GmbH



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

KALZIP & DICONAL

THE PERFECT SYMBIOSIS FOR ONE SUSTAINABLE ENERGY SOLUTION!

Innovation meets sustainability

The new FA PV solution is a combination of Kalzip® mounting clamps and an aluminium profile as an interface to the DICONAL® PV mounting system! The new FA PV seam clamp combines innovation, quality and sustainability and now gives you even more options for extending a new or existing Kalzip roof with a PV solution.

With this future-oriented solution, you can utilise the full potential of your Kalzip roofs and supplement them with the

high-quality PV mounting system from DICONAL. An intuitive, flexible and powerful system that more than fulfils the needs of modern energy generation.

Simple installation

The links between the two products, the DICONAL® aluminium profiles, enable the entire DICONAL PV system to be installed safely and easily. This offers a precise adjustment of the PV modules to your Kalzip® roof in order to utilise the solar energy to its full extent.

The new FA PV seam clamps, specially designed for installation on Kalzip® roofs, offer maximum stability and durability.

Maximum efficiency, sustainable values

Rely on the combination of DICONAL® and Kalzip® - a reliable and efficient solution for the installation of PV modules on your Kalzip® roofs. In this way, you actively contribute to environmental protection while at the same time increasing the profitability and value of your buildings. Two top products in one - for a bright and sustainable future!

The advantages:

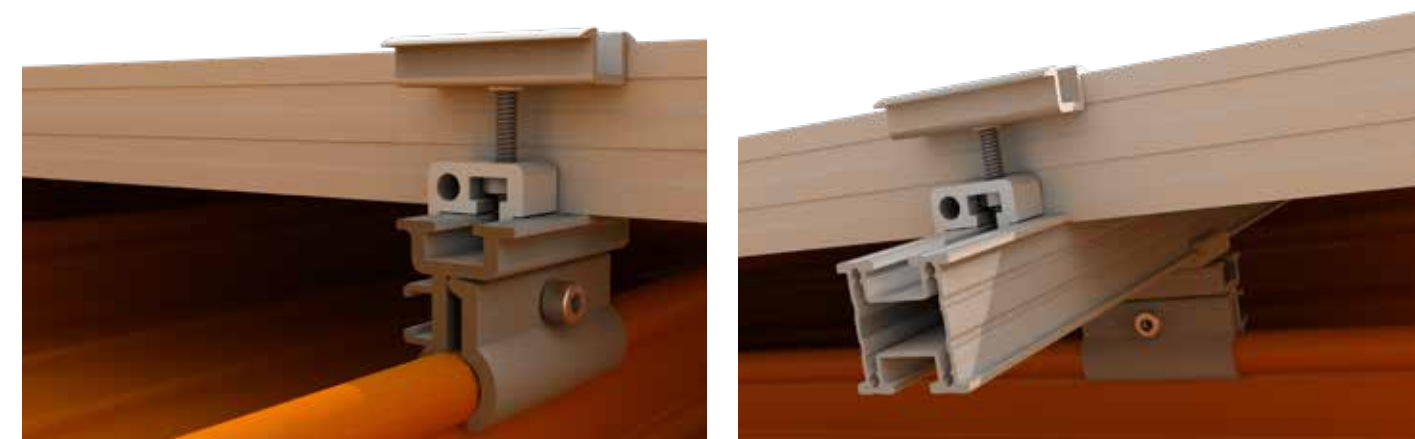
- The „new“ system offers the option of mounting PV modules with or without a continuous profile level.
- The modules can be mounted directly on the FA PV seam clamp using the DICONAL® module clamp:
 - simple, fast + firm
 - less use of material
 - lower costs in comparison
- A DICONAL® P-40 profile can be installed on the FA PV clamps using a DICONAL® KV-40 cross connector:
 - A continuous profile level

distributes the load evenly

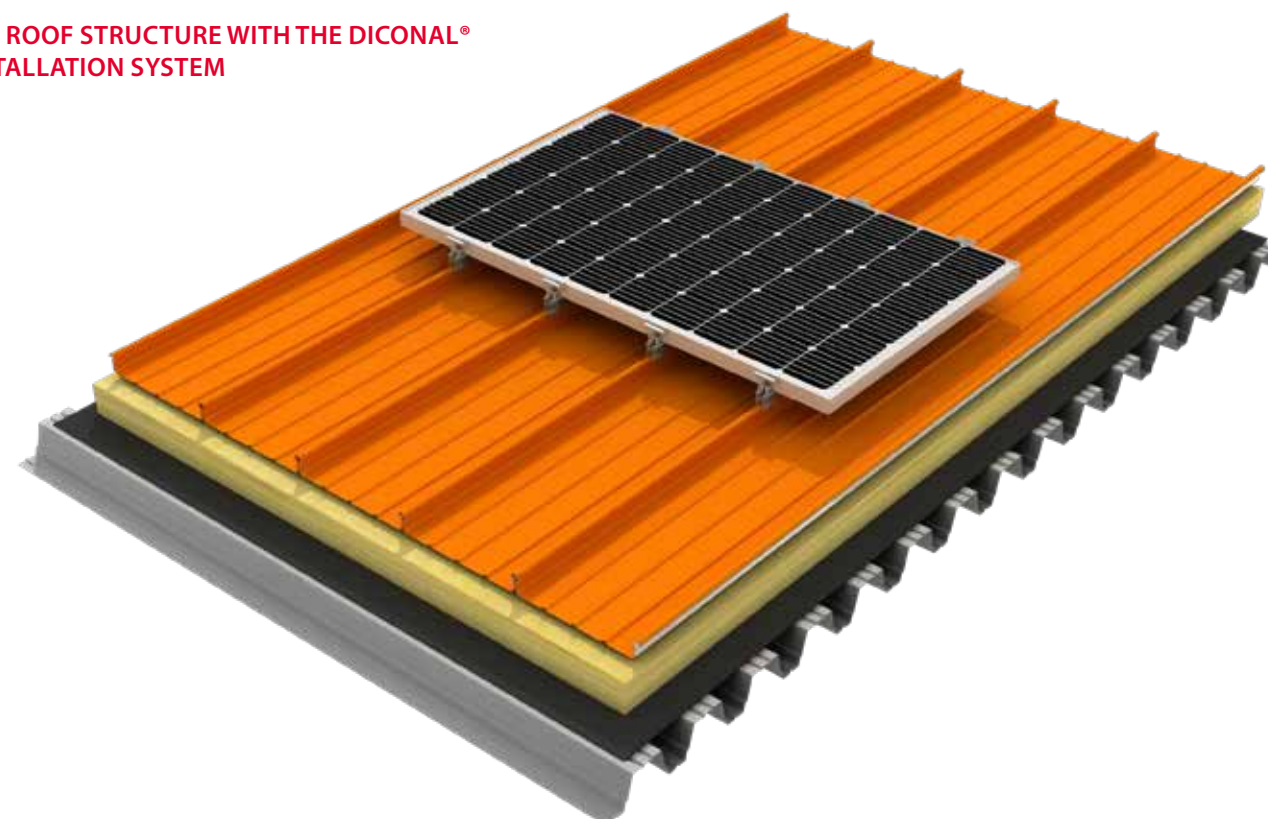
- the orientation of the modules can be rotated by 90
- The new FA PV seam clamp offers two products in one
- The „interface“ is compatible with the entire DICONAL® PV mounting system, i.e. all module clamps, cross connections with profile levels or elevations can be used direct

DICONAL®

THE FA PV SEAM CLAMP FROM KALZIP® & DICONAL®



KALZIP ROOF STRUCTURE WITH THE DICONAL® PV INSTALLATION SYSTEM

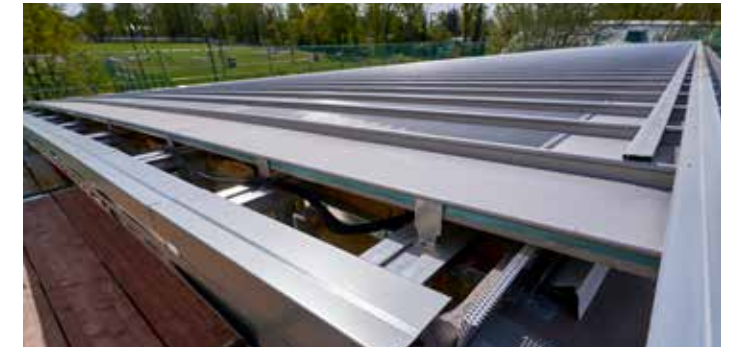




KINDERGARTEN ODILOSTR., Ingolstadt (GER), Architect: ZOOMARCHITEKTEN GmbH, Installer: Binder & Sohn GmbH



REFURBISHMENT GYMNASIUM, Kremmen (GER), Installer: Klaus Scheufler Dachklempnerei GmbH, Products: Kalzip Vario LB with Kalzip 50/444 AluPlusSolar



HIGH PERFORMANCE WITH KALZIP

Compact information on system planning

Location and orientation

The average annual solar irradiation in Europe is between 1,752 kWh/m² in southern Spain and 876 kWh/m² in the north of Great Britain. In Germany, the mean value is around 1,000 kWh/m².

Solar panels

The photovoltaic effect is the creation of an electrical voltage and a current induced by the absorption of light. Solar cells make use of this effect: solar cells are semiconductor components that convert light energy directly into electrical energy.

Photovoltaic systems

Every photovoltaic system essentially consists of the solar modules, which produce direct current when exposed to sunlight. In the generator junction box, the module cabling is brought together, fused and, if required, provided with lightning protection. The inverter converts the direct current of the modules into grid-standard alternating current, which can be used by the user or fed into the public grid.

ROOF REFURBISHMENT 2.0

Strong partners! Roof refurbishment with Vario LB and Solar Systems

Large sums of money are spent every year on the repair and maintenance of dilapidated flat roofs.

With the Kalzip roof refurbishment system Vario LB, a system has been developed that ensures sustainable building protection. Complete roof scapes can be refurbished economically and durably without interrupting operations.

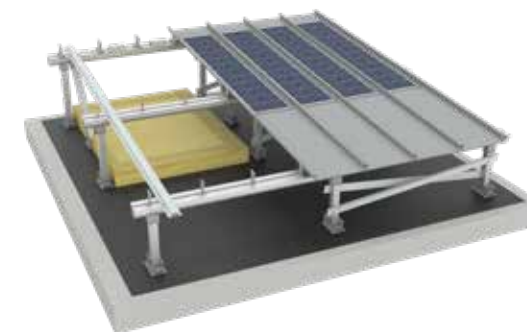
The use of a roof-integrated Kalzip AluPlusSolar system also provides the opportunity to secure financing for the entire construction project through appropriate subsidy measures.

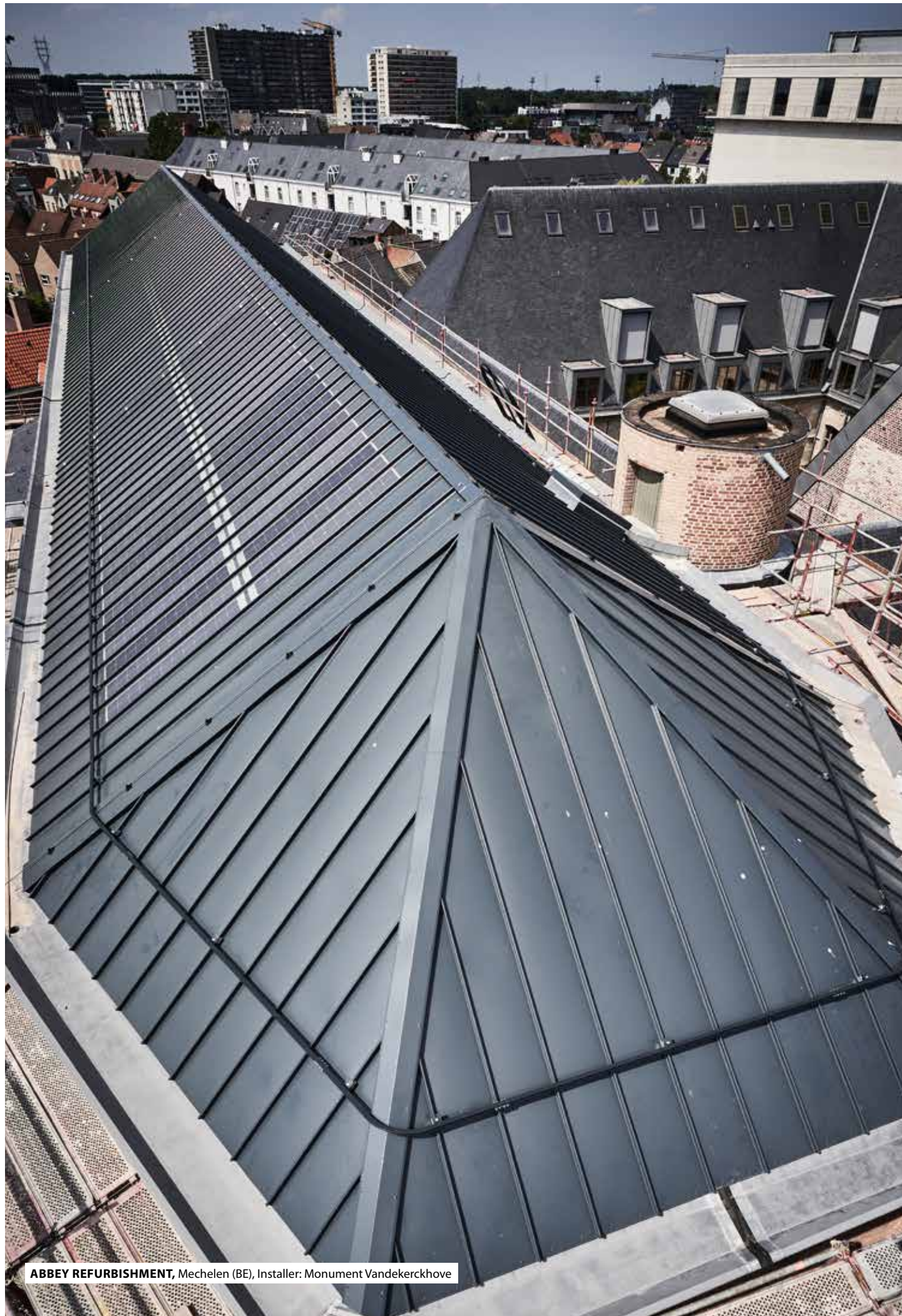
A roof refurbishment of this kind offers the perfect solution for increasing the value of buildings and actively protecting the environment - now and in the future.

The advantages

- Long-lasting, almost maintenance-free building protection without follow-up costs
- No interruption to the operating process
- High degree of design freedom
- No disposal costs for the existing roof waterproofing
- Protecting the environment through optional additional equipment such as solar technology or green roofs

KALZIP VARIO LB ROOF REFURBISHMENT SYSTEM





ABBEY REFURBISHMENT, Mechelen (BE), Installer: Monument Vandekerckhove



COURTYARD HOUSE, Vorarlberg (AT), Product: Kalzip AF 65/537 AluPlusSolar

KALZIP SERVICE

FOR SOLAR REQUIREMENTS

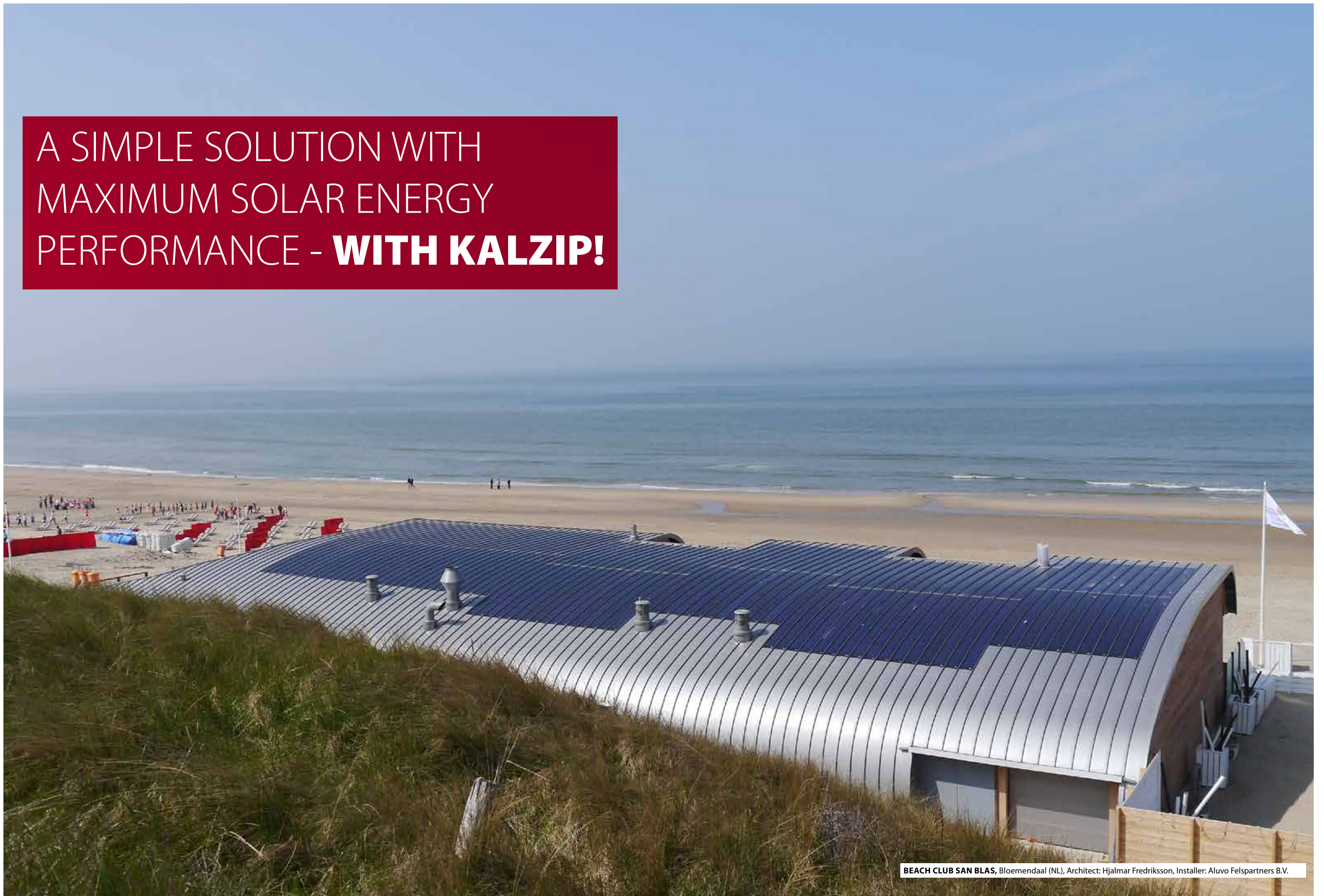
Kalzip customer service – Optimal support and individual service

Zu unseren Komplettlösungen für Kalzip Solar Systeme und Dachsanierung bieten wir Ihnen weitreichende Service- und Beratungsleistungen an. Unsere kompetenten Fachberater unterstützen Sie bereits in der frühen Planungsphase.

Sie haben Fragen oder wünschen eine detaillierte, persönliche Beratung? Sprechen Sie mit dem für Sie zuständigen Verkaufsbüro. Auf unserer Website finden Sie den für Sie zuständigen Gebietsverkaufsleiter oder auch weitere Informationen zu den Kalzip Solar-Systemen oder andere Dach- & Fassadenanwendungen: www.kalzip.com

Unser Know-How aus fast 20 Jahren Kalzip Solar Systeme geben wir an Sie weiter, damit Sie das bestmögliche Projekt realisieren können. Egal ob kleine oder große Projekte, Kalzip hat für jede Anwendung die passende Lösung für Sie.

A SIMPLE SOLUTION WITH
MAXIMUM SOLAR ENERGY
PERFORMANCE - **WITH KALZIP!**





WWW.KALZIP.COM

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