

The background of the entire page is a low-angle, upward-looking photograph of a modern building's roof. The roof is covered with dark blue, monocrystalline solar panels. The panels are separated by white, curved, metallic-looking railings or gutters. The sky above the roof is a clear, bright blue. A thick, curved line, colored red on the left and black on the right, arches across the upper portion of the image, partially obscuring the sky and the top of the roof.

## **Kalzip® Solar Systems**

Roof-integrated PV solution for solar architecture



# KALZIP SOLAR SYSTEMS – THE SYNTHESIS OF DESIGN AND FUNCTION

Port 8 - Rostock Warnemünde (GER)  
Produkt: Kalzip 65/400 & Kalzip AluPlusSolar AF 65/537



# KALZIP SOLAR SYSTEMS – ESTABLISHED SYSTEMS SINCE 2004



Solar technology continues to play a central role in energy generation. Roof surfaces represent great potential for the installation of solar systems. The requirement of architects and planners is to place PV systems harmoniously in the context of the existing architecture.

Kalzip building systems meet the highest building physics and design requirements for the realisation of small and large projects.

With AluPlusSolar, Kalzip offers an elegant solution that can be flexibly adapted to almost any roof shape. This roof-integrated solar solution has proven itself over the years. This means that the classic freedom of design is also available for solar systems.

As a retrofit solution, Kalzip offers you SolarClad, a system for existing standing seam systems. This system is then applied to the seam using Kalzip seam clamps.

With its solar systems, Kalzip offers a contemporary solution for sophisticated solar construction.

# EXPERIENCE. INTERNATIONAL.

Facility Building, Prestwick (UK)  
Product: Kalzip 65/400 with Kalzip AluPlusSolar  
Installer: Fowler McKenzie Ltd & Gribben Solar Ltd

**Kalzip can look back on over 50 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 - BiPVco - with its high energy yield while being ultra-light and flexible. The modules weigh 3kg/m<sup>2</sup> and thus simplify the requirements for the substructure. In addition, the flexibility enables application on all roof geometries.

AluPlusSolar and SolarClad with the Kalzip-specific connection technology are internationally proven in practice and make important contributions to environmental protection and the conservation of resources.

## Flextron - The flexible PV Solution

The solar module used by Kalzip - FLEXTRON is a multi-purposed 'peel and stick' module with integrated solar cells. Modules are attached to the approved substrate to create a roofing system that can be installed in the same way as a conventional roof.

Flextron is available in three standard forms; 125, 245 & 370 nominal Watts but also available in intermediate non-standard sizes from 43 to 360 Watts of nominal power rating.

Our Solar Partner:



# Kalzip AluPlusSolar - roof-integrated, regenerative

## Energy generation for aesthetic solar architecture

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

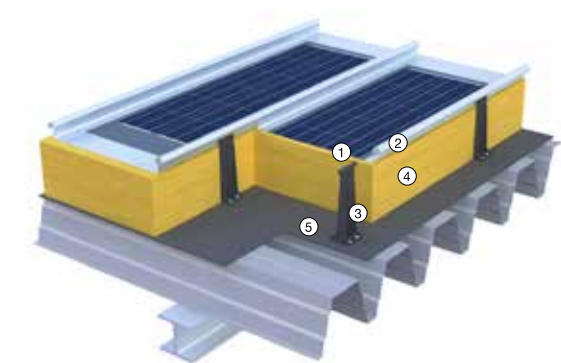
The module is applied to polyester-coated Kalzip profiled sheets in RAL 9006 and is available in straight or curved profile shapes

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

### Planning advice

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

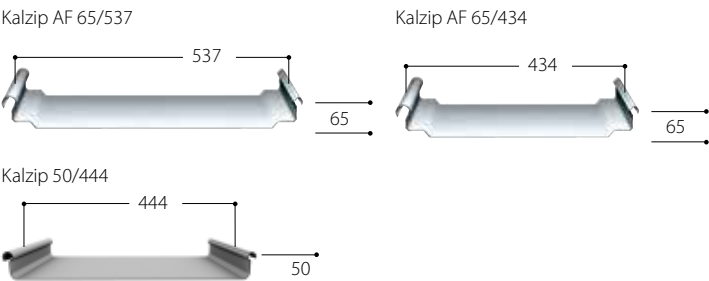
Kalzip AluPlusSolar on trapezoidal steel liner



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

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

Kalzip AluPlusSolar sheet options





# TECHNICAL DATA

Electrical Performance at STC			
Front Contact	F13F125B1	F15F245B1	F33F370B1
Rear Contact	F13R125B1	F15R245B1	F33R370B1
Nominal Power	125 W	245 W	370 W
Power Output Tolerance		+ / -3%	
Maximum Power Voltage	31.75 V	63.50 V	95.25 V
Maximum Power Current	3.86 A	3.86 A	3.86 A
Open Circuit Voltage	38.92 V	77.84 V	116.76 V
Short Circuit Current	4.38 A	4.38 A	4.38 A
Maximum Series Fuse Rating		10 A	
Maximum System Voltage		1000 V	
Cell Efficiency		15.5%	
Watts Per Square Metre	128 W/m <sup>2</sup>	132 W/m <sup>2</sup>	139 W/m <sup>2</sup>
Cells / Bypass Diodes Per Module	56 / 28	112 / 56	168 / 84
Standard Test Conditions (STC): 1000 W/m <sup>2</sup> , 25°C cell temperature, AM 1.5 spectrum			

Physical & Mechanical Specifications			
Length	2609 mm	5067 mm	2609 mm
Width	358 mm	358 mm	990 mm
Module Area	0.934 m <sup>2</sup>	1.81 m <sup>2</sup>	2.58 m <sup>2</sup>
Thickness, Maximum at J-Box, Module		19 mm	
Thickness, laminate without adhesive		2.5 mm	
Thickness, laminate with adhesive		3.5 mm	
Weight (Module without adhesive)	2.08 kg	4.05 kg	5.76 kg
Weight (Module with adhesive)	3.56 kg	6.91 kg	9.84 kg
Weight / Area (Module without adhesive)		2.23 kg / m <sup>2</sup>	
Weight / Area (Module with adhesive)		3.81 kg / m <sup>2</sup>	
Junction Box Type		IP67	
Cell Type	Copper Indium Gallium Diselenide (CIGS)		
Certification	IEC 61730-1, IEC 61730-2, IEC 61646, KIWA		
MCS	MCS 017 (TUV SUD / BABT)		
Quality System	ISO 9001 (SGS)		
Warranty	5 year product, 10 / 25 year performance		

Thermal Characteristics	
NOCT	56.2 [°C]
Temperature Coefficient of P <sub>MPP</sub>	-0.268 [% / °C]
Temperature Coefficient of V <sub>OC</sub>	-0.209 [% / °C]
Temperature Coefficient of I <sub>SC</sub>	-0.0007 [% / °C]
Module operating range	-40 to +85 [°C]

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

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

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

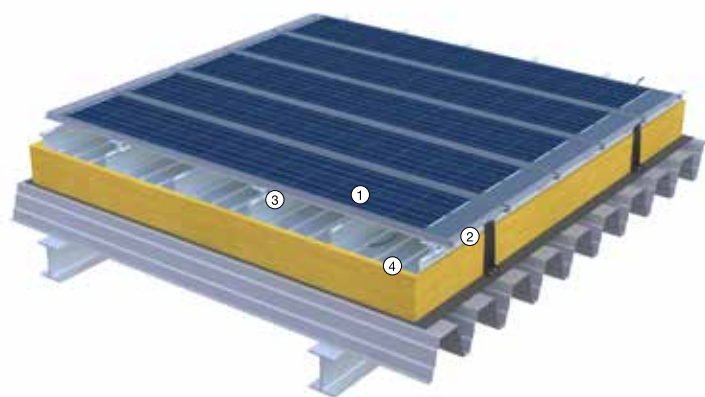
### Planning advice

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

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

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

### 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/...





## High performance with Kalzip Solar systems - Compact information on system planning

### Location and orientation

The average annual solar irradiation in Europe is between 1,752 kWh/m<sup>2</sup> in southern Spain and 876 kWh/m<sup>2</sup> in the north of Great Britain. In Germany, the mean value is around 1,000 kWh/m<sup>2</sup>.

### 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.



# KALZIP SERVICE FOR SOLAR REQUIREMENTS



## **Kalzip customer service –** **Optimal support and individual service**

In addition to our complete programmes for Kalzip Solar Systems and roof renovation, we offer you extensive service and consulting. If you wish, our expert consultants can support you right from the early planning stage.

Do you have questions or would you like detailed, personal advice? Talk to the sales office responsible for you. On our website you will find the area sales manager responsible for you or also further information on the Kalzip Solar System or other roof & façade applications:  
**[www.kalzip.com](http://www.kalzip.com)**

We pass on our know-how from almost 20 years of Kalzip solar systems to you, so that you can realise the best possible project. Whether your project is small or large, Kalzip has the right solution for every application.



Line Housing building at Cwrt Pen-Capel (UK)  
Product: Kalzip AluPlusSolar AF 65/537

Video reference





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



[www.kalzip.com](http://www.kalzip.com)

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