



# SOLAR SYSTEM FOR DOUBLE STANDING SEAM ROOFING

ARCHETYPAL DESIGN WITH A MODERN  
INTERPRETATION



PROJECTREPORT





## CLASSIC BRIGHT-ROLLED WITH LARCH WOOD

**The new construction of a single-family home in Vienna features a classic house with a gable roof in a contemporary design concept. The larch wood façade and the titanium zinc roof create a sharp, precise volume into which the particularly flat PV system fits without detracting from the clear geometry.**

The view of the city of Vienna from the Heuberg is breathtaking, but the steep slope is also a challenge for any new building. Especially given the fact that the plot only had 80 m<sup>2</sup> of buildable area and a limited construction height for the private single-family home. The design by pedit & partner architekten from Vienna, called "House h", addresses this with a split-level solution that perfectly harmonises the slope in terms of the spatial requirements and the relationship to the garden. A central staircase inside connects six staggered

storey levels, each with access to the garden. The highlight is the room that opens up into the gable roof with a kitchen-living room and seating area, which leads to the balcony in front and the spectacular vista.

### **Compact contours**

The different levels add up to 175 m<sup>2</sup> of usable area, which can hardly be seen from the outside of the compact building. The archetypal form of a house with a gable roof was created using solid timber construction. The clear surfaces of the larch wood façade and the roof made of bright rolled RHEINZINK titanium zinc with double standing seam roofing emphasise the precision of the angular volume, into which the functional and built-in parts also elegantly blend. In close consultation with DI Wilfried Rubenz from the RHEINZINK application engineering, a particularly low installation position for the skylights was realised, rendering a virtually flush





view. The ventilated ridge is in keeping with the same idea of creating an undisturbed design. It is set back slightly from the verge on both sides, and is therefore no longer visible from the ground in the normal view perspective. The gain is evident when viewed from the front, which depicts a classic, geometrically unambiguous gable triangle.

In line with the basic architectural concept, the solar modules on the southern side of the roof should not be "overbearing" and stick out as foreign objects, but rather blend in visually with the low installation height. This was achieved with RHEINZINK-PV, an extremely flat, roof-parallel solar solution specially adapted to the double standing seam roofing.

#### **Clear roof lines through equal system widths**

To achieve visually inconspicuous integration of the RHEINZINK-PV solar system, the module widths must be harmonised with the spacing of the double standing seam. The semi-finished formats of the coils result in typical

panel widths of 430 or 530 mm on the roof, for each of which there is an adapted module type. This creates a harmonious installation pattern in which the standing seams of the roof covering and the joints between the modules always form a common line that is not disturbed by offsets.

For the "House h" in Vienna, the tinsmith made 430 mm wide titanium zinc panels from a 500 mm coil. The corresponding FL 20 modules reflect this system width and consist of 20 monocrystalline solar cells each with an output of 100 W<sub>peak</sub>.

### ***Extremely flat roof-parallel solar solution specially designed for double standing seam roofing.***

The frameless glass-foil laminates are 1640 mm long and are thus a manageable format that is aesthetically appealing even on small roofs. On larger roof surfaces, 530 mm panel width and the matching FL 30 modules



can be used as an alternative. At the same length, they achieve 150 W<sub>peak</sub> with 30 monocrystalline solar cells.

### **Flat installation with combined folding and module clamp**

Together with the coordinated module widths, the extremely flat installation position of RHEINZINK-PV also contributes to its architectonic integration. The special developed seam and module clamp of the system is decisive for this. It is mounted to the seams with only one screw and also fixes the frameless solar modules in the same screwing process. This results in a mounting height of approx. 40 mm, so that the glass modules are only slightly above the standing seam with a height of approx. 25 mm. This completes the aesthetic triad of the solar solution: modules without visually conspicuous frames, whose width is matched to the panels and which, despite rear ventilation, hardly protrude above the covering.

The exact number of module clamps to be used depends on the wind loads, which have to be determined for each individual building. In Vienna, it was possible to work with the minimum quantity of three clamps per module

side, which were quickly installed with just one screw.

When this hexagon socket screw is tightened, the clamping hook is placed against the seam from below and fixes both the clamp and the module. Thanks to this patented form of force transmission, there is no horizontal clamping on the sliding clips in the seam, which would prevent free play when the panels expand or contract. Unlike with many existing clamping systems for metal roofs, a secure, sufficiently strong clamping effect is achieved at the seam, which, however, does not introduce any lateral forces into the base of the clip. In this way, the RHEINZINK-PV system clamp sustainably ensures the possibility of thermal length change of the panels.

### **"Photovoltaics definitely have to be considered".**

The photovoltaic system of the House h on Vienna's Heuberg is part of an overall concept that is geared towards sustainability and energy efficiency. This basic principle is reflected in the choice of materials: the timber construction, the

## **RHEINZINK-PV INTEGRATED IN THE ROOF**







predominant use of insulating materials made from renewable raw materials, and the avoidance of PVC for windows, doors and interior fittings.

"Thanks to the compact construction method and the high level of thermal insulation of the building envelope, a building with a heating requirement of only 38.0 kWh/m<sup>2</sup>a has been created," explains architect Mag. Arch. Veit Pedit.

"The heating is provided by a geothermal heat pump with deep boreholes. In view of the electricity demand of the heat pump, it was obvious to equip the building with a PV system – which, in my opinion, should also be part of contemporary energy efficiency in any case." Surplus electricity is currently fed into the public grid, but the installation of an electricity storage system is being prepared.

***The photovoltaic system is part of an overall concept oriented towards sustainability and energy efficiency.***

## Construction panel

### Project:

New construction of a private single family house in Vienna

### Architect:

pedit & partner architekten, Wien

### Projectteam:

Veit Pedit, Bettina Lalics, Georg Gruber, Philipp Stiasny

### Roof:

RHEINZINK-CLASSIC bright-rolled, Double Standing Seam

### Contractor:

Bosnjak-Dach GmbH, Horitschon/Burgenland

### PV-System:

RHEINZINK-PV – 31 frameless FL 20 modules, mounted with system-specific seam and module clamps

PV installation: Elektro Palmeshofer GmbH, Zwettl/Lower Austria

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