



## Case study

### German Football Museum, Dortmund

**Client:**

DFB-Stiftung Deutsches Fußballmuseum GmbH

**Architect:**

HPP Hentrich-Petschnigg & Partner, Düsseldorf

**Installer:**

Kalzip PremiumPartner  
B. Schlichter GmbH & Co. KG, Lathen

**Year:**

2015

**Products:**

Kalzip AF 65/434 roofing system  
RAL 9016, Polyester coated





The Ruhr region doesn't just stand for coal and steel, structural change, culture, and its universities, but also for its long football tradition. Nowhere is the density of enthusiastic fans greater than here. That's probably what the initiators were thinking when they decided to make the home town of BVB Dortmund the location for the new German Football Museum. The official opening is on 25 October 2015.

## Harmonizing façade and roof in aluminium

„Our goal was to bring together the wonderful tradition and timeless fascination of football at one special place. Visitors to the German Football Museum can already look forward to an exhibition with extraordinary exhibits and gripping audio-visual presentations,“ announces DFB President Wolfgang Niersbach.

After a three-year construction period over a total area of 7000 square metres, the German Football Museum presents the first permanent exhibition on the history of German football with interactive and multimedia productions as well as with more than 1600 exhibits under the slogan ‚We are football.‘

### An imposing stage for football

HPP architects Hentrich-Petschnigg & Partner from Düsseldorf designed a transparent, functional, dynamic structure in an outstanding location opposite the main train station as a supplement to the city's art and culture district. According to statements from the planner, it celebrates ‚the legend of football

via three basic elements: a podium mediating between adjacent levels; a continuous, light-filled public space with lounge, dining, multi-purpose arena; and temporary exhibition area as well as a closed, apparently floating body located in the permanent exhibition.‘ The Museum forms an elevated, rectangular box with wedge-shaped recesses on the east and west sides through which the structure incorporates the adjacent urban space. The football theme is presented via a perforated metal façade.

### A roof made of Kalzip aluminium profile sheets—functionality and design

The imposing roof structure also consists of metal. ‚More precisely there are two roof areas with slightly modified structures,‘ explains Günter Peters, the responsible foreman with Schlichter GmbH & Co. KG from Lathen, which is assigned the roofing work. The total of around 2200 square metre roof consists of an approximately 1300 square metre flat surface and an approximately 670 square metre roof area inclined at an 18° angle in order to create

the structure's wedge-shaped geometry. The roof structure of the two areas is nearly identical. The bases of the roof construction form trapezoidal profiles, which were fixed to trusses. A cold self-adhesive elastomer-bitumen-vapour-barrier membrane followed on top of that in order to achieve the airtightness. The Kalzip ProDach system was subsequently installed. The uncorrugated Kalzip AF profile sheet was developed in connection with a tread-resistant insulation in order to achieve an unobtrusive surface effect characterized by quiet elegance modelled after the traditional standing-seam roof. Kalzip is offering the ProDach insulation system in cooperation with ROCKWOOL for this purpose. This roof system features a tread- and compression-resistant, water-repellent mineral-wool insulation panel combined with a thermal-bridge-optimized fastener. The insulation panel is non-flammable, highly heat and noise insulating, dimensionally stable, vibration-absorbing, and open to diffusion. The two-ply Prorock insulating panel offers great sub-area resilience and resistance to The

insulation panels are characterized by low thermal conductivity ( $\lambda = 0.036 \text{ W/(m}\cdot\text{K)}$ ) and are accessible by foot for further installation. With its wide-area load-bearing effect, it makes a valuable contribution to the roof covering's static function.

#### **Combined insulation layers for great noise and thermal protection**

Insulation was done in two layers with different mineral-wool insulation materials: A second 80 mm thick compressible ROCKWOOL insulating felt was laid in offset on an initial 100 mm thick layer made of highly insulating, tread-resistant mineral-wool panels. The considerably higher insulating performance of the 'ProDach' system relative to other systems for unventilated metal roofs results from the greatest possible minimization of heat bridges. Penetrating metallic spacing structures such as Z profiles or holders diminish the insulation effect to a considerable degree in traditional roofs with metal coverings. With the 'ProDach' system, the insulating layer is only selectively penetrated by a few system fasteners.

On the inclined roof surface, a second spacing structure with brackets and profiles was

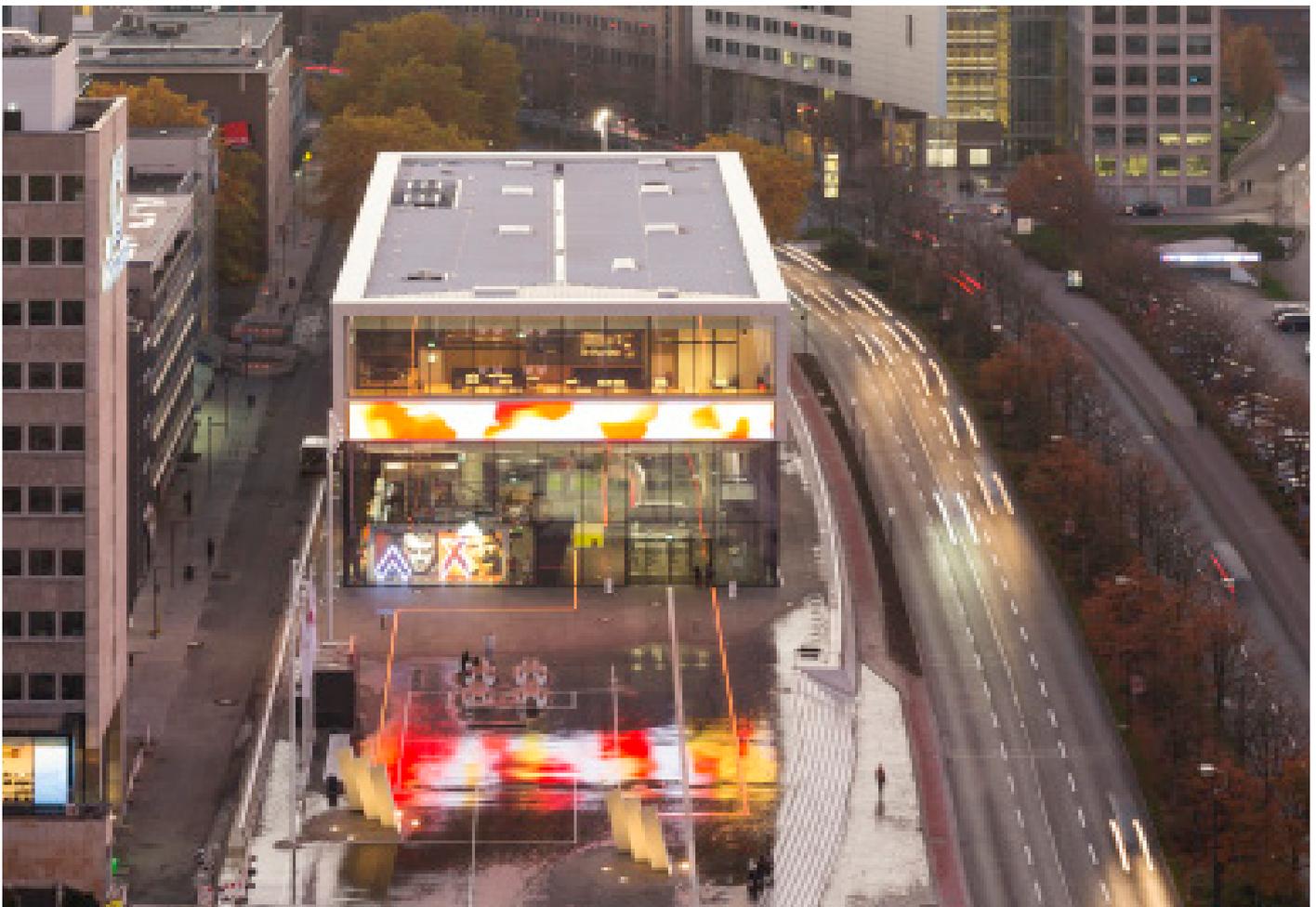
attached to the subsequently mounted Kalzip AF standing-seam covering, and a flat, perforated plate was in turn mounted on this. The roof surface visible from the street thereby obtained an appearance suitably harmonious with the façade.

However for the roof structure beneath, this meant additional loads that have to be borne and borne away. 'Accordingly we've laid the 'ProDach' rails here from the ridge to the eaves at a significantly smaller spacing of 434 mm. Under each aluminium profile panel one fastening rail runs like this over the entire length,' according to Günther Peters. They were mounted on both roof surfaces with 'ProDach' system fasteners on the supporting steel trapezoid profiles. The clips were then set on the rails with self-tapping screws.

Finally, the roofing with the standing-seam aluminium profile panels followed on top of this. These are clicked into the type E5 plastic-composite clips with the small flange, overlapped by the next with its large flange, and then crimped positively with each other. The plastic-composite clips with a galvanized steel inlay allow the profile panels to glide unhindered during thermal changes in length.

The finished roof cladding in polyester-coated, traffic-white RAL 9016 profile panels forms a harmonious supplement to the perforated metal façade on which various football themes are recorded. With its 180 mm thick insulation, the Kalzip ProDach system ensures great energy efficiency as well as combined functionality and design, and continues the architectural language of the façade in connection with the additional perforated plate on the visible, inclined roof surface. The materials chosen here mould the unique character of the German Football Museum to a special degree.

**More information about Kalzip:**  
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English 12/2018

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