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Innovative shutters: protection with a view

External, rollable sun protection systems made of wire mesh material from GKD – GEBR. KUFFERATH AG protect the extensively glazed second floor of a private residential building in Stuttgart from overheating in summer. At the same time, however, they do not compromise the views of the surrounding landscape from inside the building. With their purist aesthetics they subtly underline the overall architectural concept devised by Behnisch Architekten.

The detached house situated above the city of Stuttgart was completely renovated with the aim of providing increased transparency and lightness. The architects' idea of building an open-plan story on top of the existing first floor instead of a gabled roof met with the approval of the owners. Designed as a glass box, this approximately 150-square-meter structure conveys an open, floating impression. Ceiling-high, triple-glazed windows in narrow wooden frames transform the upper floor into a space flooded with light and offering views of the neighboring forests. Moreover, thanks to the external rollable sun protection elements made of Licorne 13A spiral mesh, a pleasant and relaxing atmosphere is guaranteed all year round. This is because the motorized shutters reliably protect the building from overheating in summer, while in winter they support solar heat gain. The decisive aspect in favor of the innovative solar protection system from GKD was its excellent solar factor: the metal mesh not only reflects solar energy, but also dissipates it in the surrounding environment. As a result, the Licorne 13A mesh type has a normal energy transmission degree of just 0.2, meaning that 80% of incoming solar energy is reflected or scattered diffusely in all directions. In connection with today's typical triple glazing ($U=0.7$, $g=0.5$, $T_e=0.75$), the overall g-value is even reduced to 0.14. This high reduction in



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solar input reduces cooling costs for the rooms to a minimum in summer while preventing them from becoming too cold in winter. As the translucent fabric floods the rooms in a pleasant light, the need for additional artificial lighting is also reduced. Moreover, the unhindered views of the surrounding landscape – even when fully unrolled – convinced the architects and owner of the solar protection system. At the same time, it protects the privacy of the residents during the day by preventing those outside the building from looking in. A total of 120 square meters of aluminium mesh were used for the cable-guided shutters. During their installation, the main challenges were the corner solutions without profiles and the weight of the large elements. Eleven elements, each measuring up to 3.76 meters wide and 2.4 meters high, are arranged in a line, interrupted only by the vertical struts of the window frames, thus underlining the symmetrical design of the object. The corrosion resistance and virtual freedom from maintenance of the aluminium mesh ensure the sustainability of the system, while the simple elegance of the shutters has a timeless quality.



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