Solar protection provides a face for visionary research

Metal mesh interprets forms of motion

The Ecole Polytechnique Fédérale de Lausanne (EPFL) ranks among the world's best universities. The emblematic buildings on the campus reflect this. The design highlights of internationally renowned architects include the *Pôle de bio-ingénierie* developed by Dominique Perrault. With its three-dimensional zigzag façade made of metallic mesh from GKD – GEBR. KUFFERATH AG, it provides a multi-faceted face for the Robotics, Orthopaedics and Neuroprosthetics departments. The exceptional look has been created by integrating 630 movable horizontal solar protection elements made of Escale spiral mesh, which are arranged at varying angles and cater to the changing requirements of the usage areas.

Each of these panels, arranged in groups of three, measures 1,100 x 3,600 millimetres. Two of the three elements are motorised and can move on rails behind the fixed panel. Extending in alternation from above or below, they form a zigzag pattern that runs vertically and horizontally, spanning the entire building. The Escale 7 x 1 aluminium mesh, anodised in a natural colour, was used to create a stable frame construction and attached with clip bolts. On the ground floor, the Escale 7 x 2 mesh provides protection from vandalism thanks to its 2 mm-thick flat wire reinforcement. Perrault selected the same mesh type for the entrance area, but made of stainless steel for static reasons. The Escale mesh gets its appearance from 7 mm-wide and 150 mm-long spirals. Despite their mechanical robustness, these spirals lend an air of elegance and sophistication. By reflecting light and the surrounding environment, they underline the lightness of the frame construction. Without

back-anchoring of the panels, the façade is capable of bearing the forces of both the frame and the mesh. The delicate lateral bars and thin, round supports on which the frame is mounted on one side carry enormous loads at the canopy. To allow for the snow and wind, central fastening fixtures were added to the panels at the overhang and fixed to the mesh using special brackets.

Alongside its visual and mechanical qualities, the semi-transparent spiral mesh contributes to the energy efficiency of the building. The panels guarantee a pleasant indoor climate and glare-free workplaces by reducing solar input. Daylight permeability and unrestricted outward views make the building a pleasant place for both employees and students. The reduced need for artificial lighting and climate control helps reduce the building's energy requirements. Since the panels can be individually adapted to the room usage or solar input, they support the all-encompassing sustainability of the building. Thanks to their metallic shimmer and extravagance of movement, they lend the façade a technical and experimental character, thereby providing an expressive face for the visionary research undertaken at the establishment.

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