3XN DEVELOPS A SHADING STRATEGY

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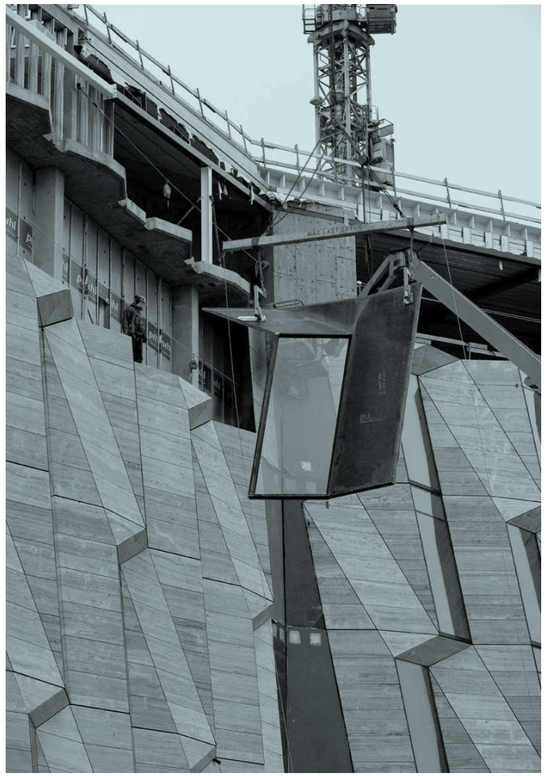
Photos **3XN / Adam Mørk**

FLOOR-TO-CEILING WINDOWS FACILITATE THE PASSAGE OF INDIRECT NATURAL LIGHT.



CONCRETE FLOOR PLATES HAVE BEEN POURED SO THAT THEIR PERIMETER ANGLES CORRESPOND DIRECTLY TO THE PANELS FASTENED TO THE PLATES.

'We cooked it down to a few key ingredients,' says architect Kasper Guldager Jorgensen, head of GXN, the newly formalized research and development arm of Danish architects 3XN. Each fibreglass and travertine sandwich panel on the Horten Building in Copenhagen's Tuborg South area looks unique, but the geometry has been rationalized using parametric modelling tools and optimized to maximize solar shading while allowing natural light into the building. The distinctive projecting windows also give the offices a view to the canal.

The structural panels are self-supporting and therefore do not rely on the building's primary vertical structure. Walking around the site, the observer sees a building that seems to open and close to the sun, revealing linear floor-to-ceiling windows that catch indirect light and are shaded by the relief of the three-dimensional façade. To the north and south the panels are flat, but on the east and west façades the geometries vary, with two panel types on each side.

THE HORTEN BUILDING'S FAÇADE NOT ONLY SHADES THE INTERIOR FROM THE SUN BUT ALSO PROVIDES THE STRUCTURE OF THE BUILDING.

THE GEOMETRY OF THE BUILDING ELIMINATES THE NEED FOR ADDITIONAL SHADING MECHANISMS.

THE DISTINCTIVE PROJECTING WINDOWS GIVE THE OFFICES A VIEW TO THE CANAL.

Rather than adding louvres to the building, the architects opted for a geometry that allows the façade to shade itself while creating an integrated energy-efficient design solution. Extra effort and consultation during the design phase enabled the architects to develop a low-maintenance shading strategy for users and to experiment with the architectural design of the self-supporting façade. Jorgensen, who worked with local manufacturers, believes that developing the new façade panel through iterations of mock-ups was beneficial to the design team, which gained know-how on industrial production methods and design expertise from the exercise. The G in GXN stands for both green and geometry, and Jorgensen sees this headquarters for local law office Horten as an encouraging test case – the result of two years of research and development in façade design and sustainability rationalizing complex geometry.

www.3xn.dk

EACH FAÇADE PANEL IS COMPOSED OF LAYERS OF FIBREGLASS AND FINISHED WITH A LAYER OF TRAVERTINE.