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A bit of all white
Giving concrete a visual impact

Lightweight aggregate enhances concrete appearance

The interiors of modernist buildings in Munich have been constructed using cast stone. A lightweight glass aggregate helped improve the visual impact of the concrete.

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The ensemble of buildings in the Kustermann Park on Rosenheimer Straße, built in the 1990s based on the urbanistic concept of the City of Munich from the 1980s, was structurally upgraded and made fit for the needs of today's users and inhabitants.

During the all-out modernisation, the office buildings were equipped with new windows, and the previously separate entrances were combined to form a lobby spanning two floors. At the same time, changes to the units were implemented and fire protection was updated.

The lobby now connects the buildings 116, 116A and 116B and provides access to the casino via a built-in staircase. To this end, the three former entrances were combined, the ceiling of the ground floor was partly removed and the areas were extended.

Thanks to the spatial expansion, the lobby dimensions are impressive. For a wall area of 156m², the architecture team from Munich wanted a panelling with a curtain-like profile. Apart from appearance, there were also constructional, chemical, ecological and fire protection requirements to be met. Only one material was able to meet all



A 156m² massive curtain of lightweight concrete with optic, acoustic and biological effects.

the demands according to the architects' technical specifications – Stuccolith.

Stuccolith is an artificial stone material developed by REC Bauelemente from Berlin. During the tendering phase, REC could additionally score with extensive reference projects such as the Corbusier House in Berlin and shop fittings from Berlin to Moscow and Shanghai. The interior design wall and floor plates by REC, manufactured with the low-weight aggregate Poraver, have been proving their worth over many years.

Specifications

The panelling with its curtain-like profile was to be split into individual plates of 3m x 0.7m or 0.5m, with irregular changes in profiling. The elegant surface textures were required to have a gently matte surface structure and an attractive beauty.

The mass per unit area was limited to 50kg/m². The plate material was required to be ecologically sound, open for diffusion,

recyclable, permanently white, easy to clean and non-flammable. The plates as well as the edges were to be manufactured to have high impact resistance, with tension-free material and crack-free absorption of movements of the carrier construction. In case plate repair should become necessary, work could be carried out on-site.

Requirements

Thanks to the mineral low-weight Poraver aggregate, the mass per unit weight could be limited to approximately 27kg/m² for a plate thickness of 10–45mm. In spite of the widely differing material thicknesses, all plates were produced distortion-free. Here, a crucial factor is the constant grain-size distribution of the aggregate, as well as the low water absorption.

Photocatalytically active titanium dioxide was also integrated into the formulation. This affects oxidation of organic media coming into contact with the wall surface. This

(Photo: Ezard Probst.)



Above and left: The built-in staircase leads from the lobby directly to the casino.

includes direct soiling by touching as well as odours, micro-particulates, viruses and bacteria in the ambient air. The effect, initiated by the daylight, continues indefinitely. Together with the ability to regulate ambient humidity, the 'Stuccolith curtain' improves the atmospheric environment in the lobby. In addition, the strong surface curvature and the matte surface structure affect room acoustics.

Connection to the casino

For the staircase – the direct connection from the lounge to the casino – a highly robust, non-slippery and stably bright, almost white, lining were required.

REC Bauelemente was able to meet these special material requirements too. To this end, 65 angular steps with an element length of 2.5m and a material thickness of 25mm were produced. The steps were cast from Betonlith, which is a high-performance concrete, based on Dyckerhoff Flowstone. Compressive strength exceeds 110MPa and bending tensile strength 15MPa. Here, too, Poraver foamed glass granulates were used.

Poraver's processing properties additionally support manufacturing, improve the rheological characteristics of the fresh material and the self-compaction of the concrete. The extreme weight reduction of the massive angular steps became fully apparent only during transport and installation.

The architects were impressed by Poraver's positive effect on the appearance of the concrete. Thanks to the lightweight aggregate, the concrete surfaces of the angular steps are the same colour throughout. ■

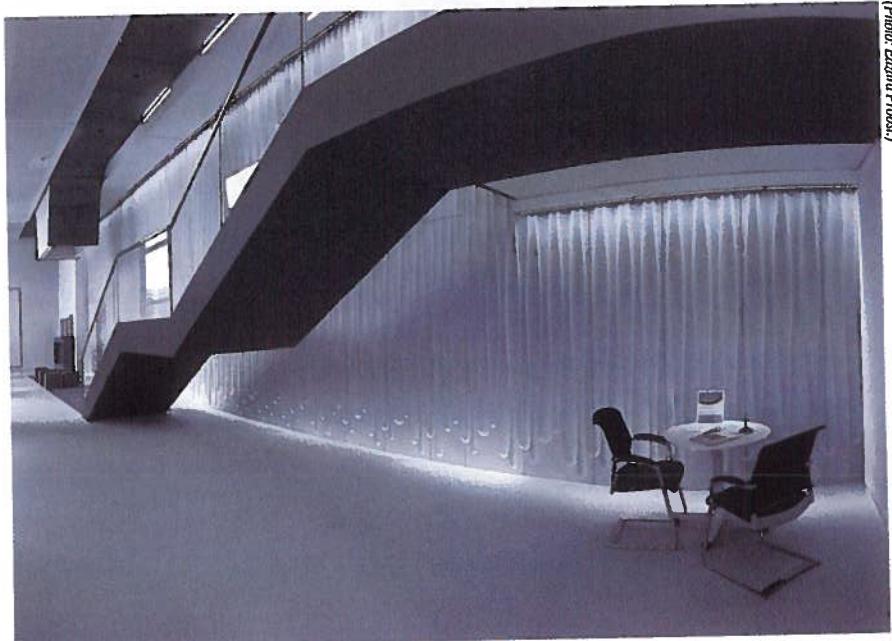


(Photo: Edzard Probst.)

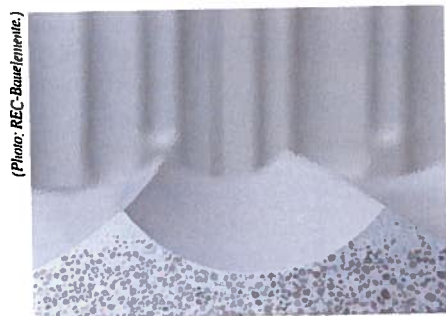


(Photo: REC-Bauelemente.)

Above: Visual inspection of the 'curtain plates' manufactured in Berlin.



(Photo: Edzard Probst.)



(Photo: REC-Bauelemente.)

Above: The cross-section exemplifies the mixture of materials, displaying the high percentage of Poraver.

Top right and middle: For a wall area of 156m², the architecture team from Munich wanted a panelling with a curtain-like profile.

Right: The ensemble of buildings in the Kustermann Park on Rosenheimer Straße was structurally upgraded and made fit for the needs of today's users and inhabitants.



(Photo: Edzard Probst.)