



Cobiax goes UN

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Campus of the United Nations in Bonn - a new lighthouse project, implemented with our unique void former technology.

In Bonn, between Langer Eugen and the World Conference Center Bonn (WCCB), the new UN high-rise building with 17 floors and three basement floors to cover the space requirements of approx. 330 employees is currently being under construction. With a floor area of around 680 m² for a high-rise building, the planners are also providing a new work environment on a gross floor area of around 13,500 m² with minimal impact on the existing nature/environment, due in no small part to the four protruding conservatories.

The winning design (top picture) by the STEFAN LIPPERT ARCHITEKTEN architectural office has given sophisticated architecture and sustainability a new space on the banks of the Rhine through a respectful approach to nature. The building is being built as a further extension of the United Nations site in an exposed location on the UN campus.

Among other offices, the Climate Change Secretariat is located there.

Rank 5 of the high-rise buildings in Bonn

With a total height of around 68m, the building ranks fifth next to the World Conference Hotel among the tallest buildings in Bonn. This keeps it at a respectful distance from Langer Eugen, a well-known landmark of the city.

R&P Ruffert Engineering, with its ingenious static concept and the implementation planning based on it, is responsible for the realisation of the sophisticated architecture. With intelligent ceilings and a sophisticated supporting structure that takes into account design, ecological and energy aspects, the Limburg-based engineering office is the perfect

solution for the building. The standard floor slabs consist of wide-span reinforced concrete flat slabs that span between a stiffening, decentralised core and reinforced concrete columns arranged at the edges.



Alignment and securing of the first row of void formers S120-140c
(Source: Fritz Meyer GmbH)

In order to keep the weight on the load-bearing structure as low as possible and at the same time enable a filigree construction, an optimised and lightweight ceiling system has been implemented. The ceiling concept envisaged the thinnest possible flat ceiling on all upper floors, which was to be optimised using void former modules.

The void formers serve on the one hand to optimise the required thickness of the floor slabs and on the other hand to limit the load on the conductive components. Void former technology was then used in the planning stage. In coordination with the engineers of Heinze Cobiax Deutschland GmbH, among others, an economical, efficient and above all sustainable ceiling solution was developed.

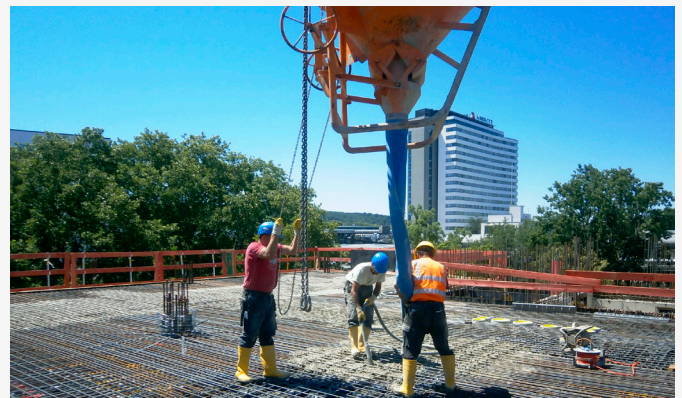
Life cycle assessment - a major factor

Mr Lippert (STEFAN LIPPERT / ARCHITEKTEN) justified the use of the void former technology with the crucial aspects of sustainability and filigree supporting cross sections. In particular, the aspect of sustainability, which guides the entire construction project and is at the core of the work of the UN Framework Secretariat on Climate Change, and taking into account stricter standards of Sustainable Building (BNB), has a positive effect.

„An important factor here is the lifecycle assessment, in

which high-mass building materials are particularly evident. Here, the void formers significantly reduce the mass fraction of the concrete and thus help to achieve the highest BNB „Gold“ rating,“ said Mr Lippert from Heinze Cobiax Deutschland GmbH in response to our enquiry.

To ensure that the necessary building technology for air conditioning and supply of the extraordinary high-rise building with passive house standard does not impair the height and flexibility of the subsequent use of the space, all pipes were fitted in the small slab cross section. In addition to the void formers of the Slim-Line series type S120-140c2 (Fig. 2) and S140-160c2, which were installed in the 33.0cm thick ceilings, electrical ducts, sprinkler piping and an additional concrete core activation system could also be fitted in the slab cross section. For this purpose, appropriate installation levels were created in the slab cross section so that the individual tradespeople could have their own work areas.



Installation of the first concrete layer in the area of the void formers
(Source: Fritz Meyer GmbH)

The company Fritz Meyer GmbH from Altenkirchen was recruited to carry out the structural work. The detailed cross sectional structure of the ceiling, to be used by the various contractors, was effortlessly implemented and integrated into the construction work.

Concrete and CO₂ pollution significantly reduced

According to calculations by Heinze Cobiax Deutschland GmbH, the dead load reduction for the previously described types of void formers and applications with normal concrete is between 1.6-1.8 kN/m². All in all, the concrete requirement

for the extension building of the United Nations was reduced by approx. 240 m³ fresh concrete due to the application of Cobiax technology. This meant that CO₂ emissions could be reduced by approx. 50 tons. Taking into account the EPD (Environmental Product Declaration) available for the Cobiax void former ceilings, this leads to a significant contribution to the desired highest BNB valuation standard „Gold“.



Void former in installed condition / 1st concreting
(Source: Fritz Meyer GmbH)

Void formers made of 100% recycled plastic that are built into 22 to 70 cm thick reinforced concrete ceilings enable the construction of lightweight, economical and particularly sustainable ceiling structures thanks to Cobiax technology.

Further informations

Heinze Cobiax Deutschland GmbH
Otto-von-Guericke-Ring 10
65205 Wiesbaden
Germany
Tel. +49 (0)6122 918 45 00
Fax +49 (0)6122 918 45 40
info.de@cobiax.com
www.cobiax.com

Heinze Cobiax Schweiz GmbH
Schwertstrasse 4
8200 Schaffhausen
Switzerland
Tel. +41 (0)52 260 09 00
Fax +41 (0)52 260 09 09
info.ch@cobiax.com
www.cobiax.com

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