



cobiasx[®] lightweight concrete slabs

efficient economic sustainable

Maximising the use of space

The Zollverein School on the site of the Zollverein Coal Mine Industrial Complex in Essen stands out from the crowd thanks to its striking architecture and innovative design. With floor span lengths of up to 16 metres and a maximum floor height of almost 10 metres, Cobiax enables room sizes of gigantic proportions.

Architecture // SANAA/Heinrich Böll
Structural planning // Bollinger und Grohmann
Design // Schäfer Bauten

Dr.-Ing. Karsten Pfeffer
Executive Director



Dear readers,

Nowadays, more and more building owners, architects and technical planners wish for their property to be used in a flexible manner that saves both energy and resources. However, energy efficiency is no longer the sole concern when it comes to heating, air conditioning, ventilation and façades. Sustainability and the efficient use of resources are becoming increasingly important as market factors, particularly in the construction phase. That's where our Cobiax system comes in.

For several years now, our void former modules have been used in applications where sustainable building construction is considered important. Our idea is simple, yet ingenious: a lightweight void former made from recycled plastic is used in place of the solid concrete within a reinforced slab. This not only saves valuable materials and energy, but also offers a range of static advantages – which in turn benefits our customers. Thanks to a global network of sales partners, our innovative products are now available all over the world.

From the very beginning, we have followed one central vision: offering the best slab construction methods for sustainable building structures. If you want proof that we have achieved our goal, just look at the figures: more than 10 million square metres of Cobiax voided flat slabs have been implemented to date, saving over 1.5 million tonnes of concrete. This also resulted in a reduction in CO₂ emissions to the tune of about 130,000 tonnes.

What's more, we were the world's first and, at the time, only company to receive a general building supervision certification from the German Institute for Structural Engineering (DIBt) for our patented void former system – an accolade we consider to be a true reflection of our achievement. Have a look through the following pages and see the benefits of our Cobiax system for yourself!

We hope you enjoy and find some fresh inspiration!



Dr.-Ing. Karsten Pfeffer
Executive Director

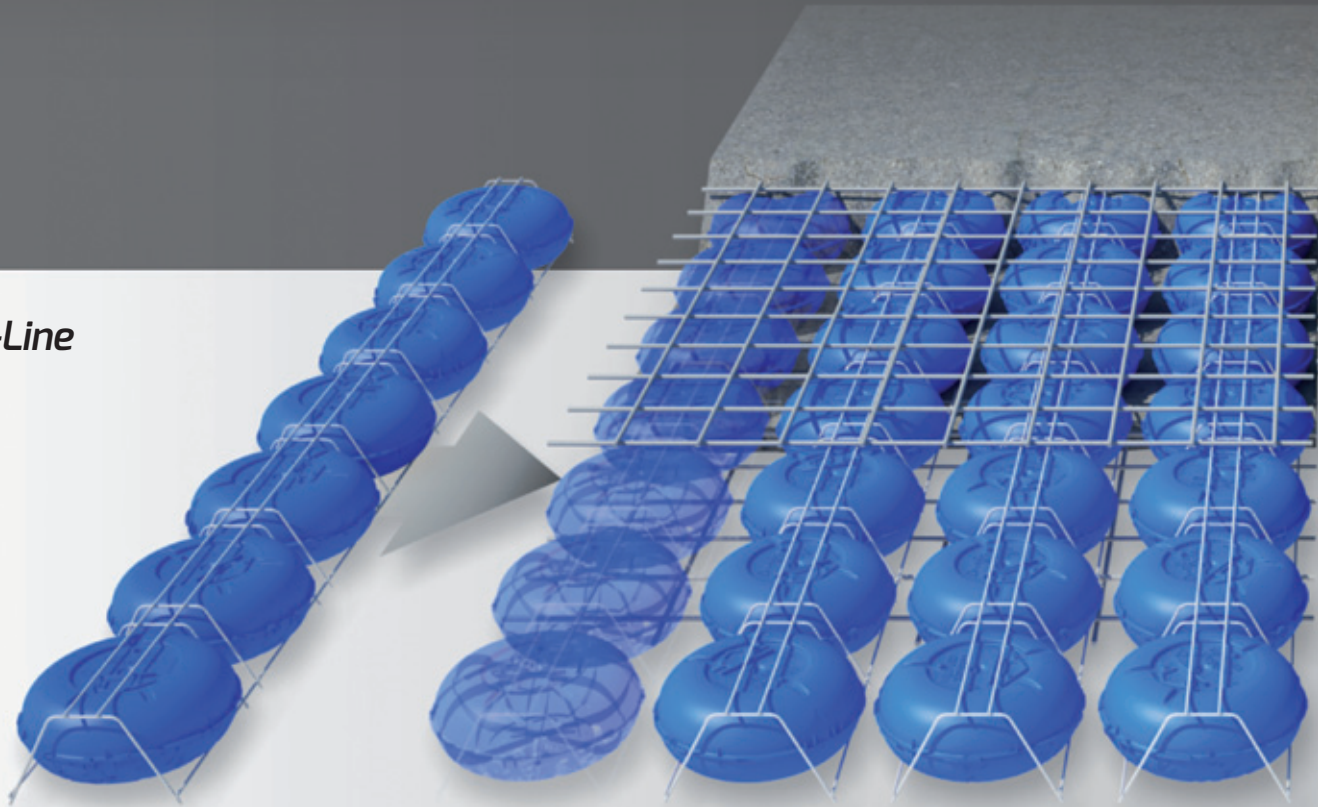


Dipl.-Ing. Volkmar Wanninger
Executive Director

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Executive Director

Cobiax technology

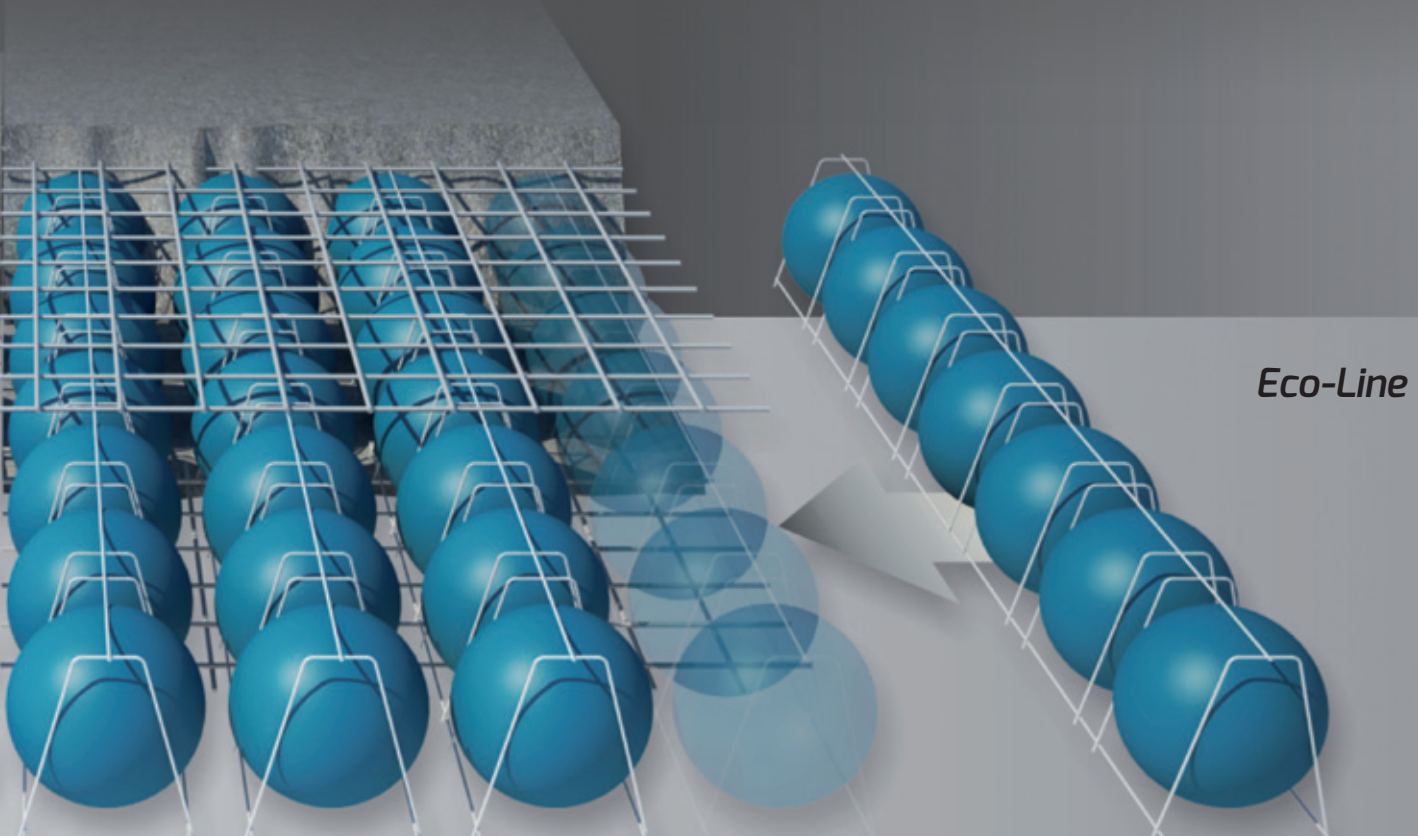
Slim-Line



Our core principle – sustainable and effective

At the centre of the Cobiax system is a void former made from plastic, which takes the place of the solid concrete within the reinforced slab. This not only reduces the weight and the amount of concrete used, but also makes it possible to construct buildings using thinner slabs and boasting significantly larger span lengths. The Cobiax system also enables a load transfer in two directions, meaning that the static performance and the external appearance of our Cobiax voided flat slabs remain fully preserved. As less material is used, there is also a cost reduction for the entire support structure of a building.

As a result of their reduced weight and improved level of efficiency, Cobiax voided flat slabs also enable the dimensions for the load-bearing elements of a building to be lowered, making them the ideal solution for use in optimising the initial foundation, in the event of a poor substructure and for the economical renovation and restoration of existing buildings. Furthermore, the environment is protected, as our void formers use less material and are made entirely from recycled plastics.



Eco-Line

Our products – practical and efficient

The patented Cobiax system comprises linear fixing elements, into which the void formers are integrated. The practical modules are available in two versions: Eco-Line and Slim-Line. With the Eco-Line system, the void formers are spherical in shape and boast slab thicknesses ranging from 40 cm to 70 cm. In contrast, the slimmer void formers in the Slim-Line system are ideally suited for slab thicknesses ranging from 20 cm and 45 cm.

A Cobiax voided flat slab can be designed and customised by structural engineers in accordance with their respective national standards. It also boasts a general building supervision certification from the German Institute for Structural Engineering (DIBt). The installation is carried out on-site by the contractor at no additional cost. In accordance with the Cobiax installation plan, the void former modules will be installed between the upper and lower reinforcement layers. This can be done using pure in-situ concrete or a prefabricated construction method. Cobiax technology can also be easily combined with pre-stressing and building element temperature management.

Vodafone Campus

Architecture // HPP
Structural planning // Schwarzbart + Partner
Design // Zechbau/Ed. Züblin

Flying high

The new Group headquarters of Vodafone Germany in Dusseldorf is comprised of three building segments, a 19-storey office block and an attached car park. In order to reduce weight and save material, Schwarzbart und Partner, the contracted planning agency for the supporting structure, relied on Cobiax technology when constructing the office block.

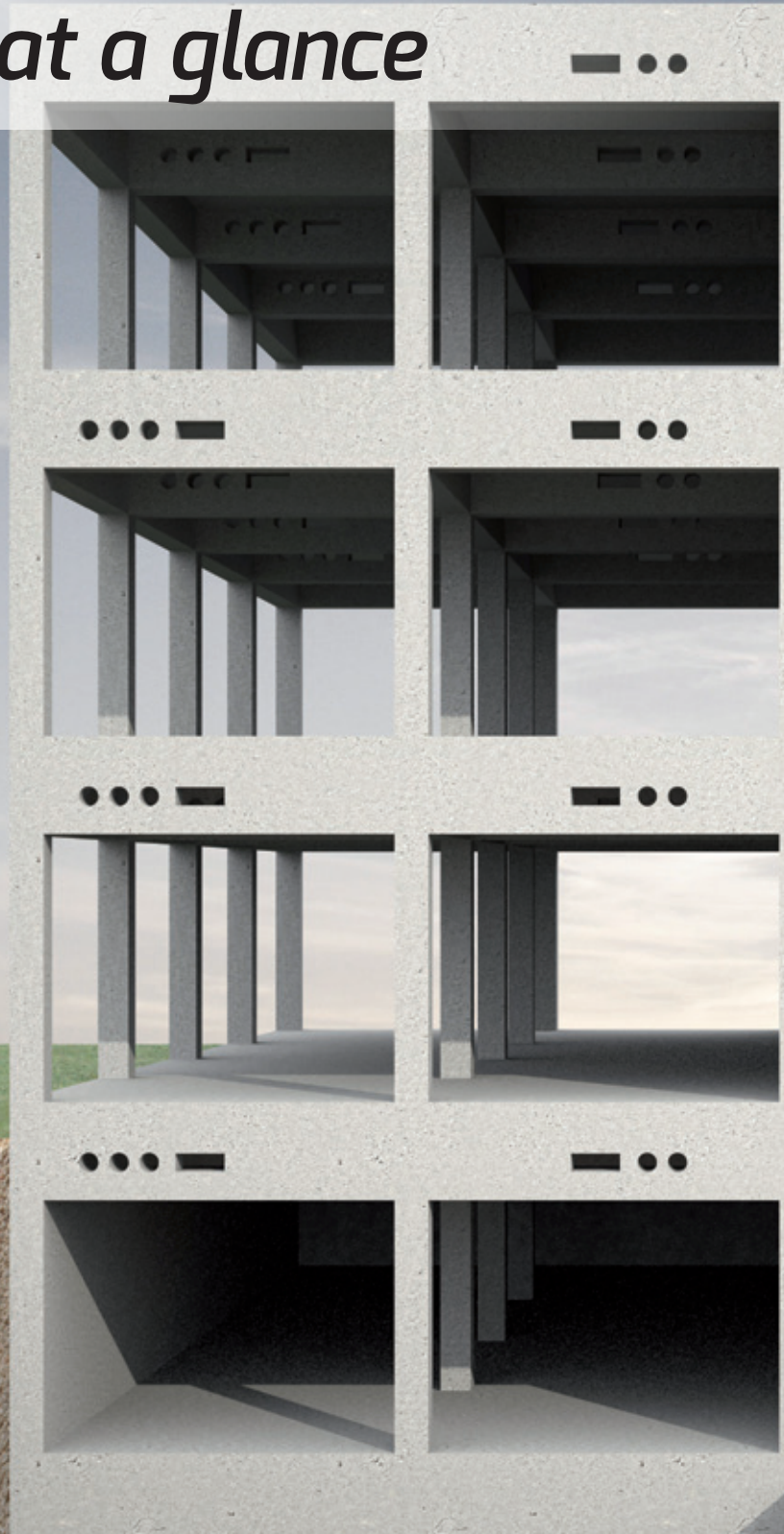
“Using our Slim-Line void former modules, we were able to reduce the overall weight of the office block – which boasts an overall slab surface length of 14,000 square metres – by 1,600 tonnes. **As less material was used, it was also possible to simultaneously reduce CO₂ emissions by 140 tonnes.**

Our voided flat slabs have played a significant role in our commitment to sustainability, for which the new Group headquarters of Vodafone was **awarded with the internationally recognised LEED Gold sustainability certification.**”

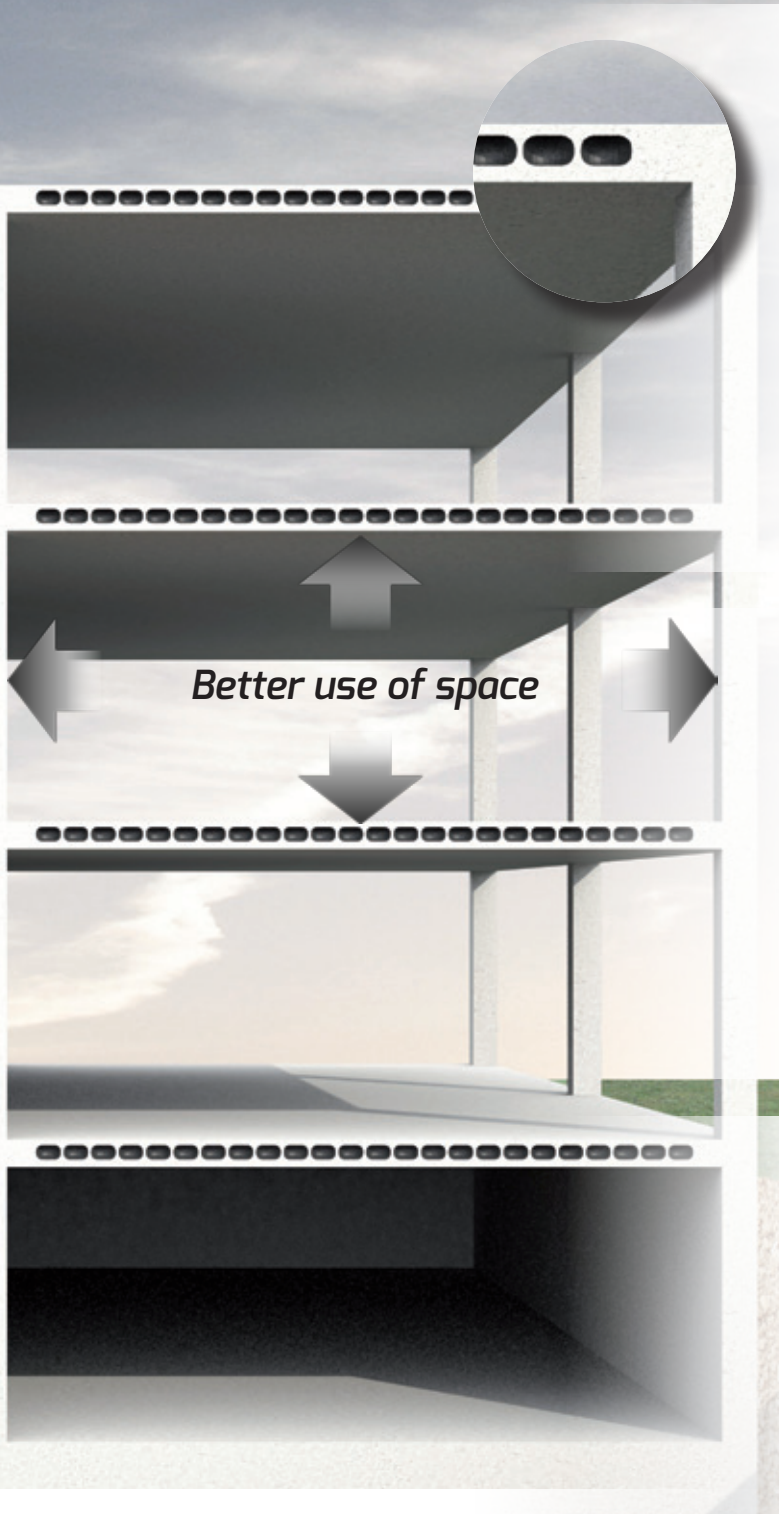
Dipl.-Ing. Barbara Staab
Project Management/
Sales and Marketing



Your benefits at a glance



Conventional construction



Optimised construction with Cobiax

efficient

Due to their efficient use of materials, Cobiax voided flat slabs are up to 35 percent lighter than reinforced solid concrete slabs. This makes it possible to employ thinner slab thicknesses and larger span lengths, resulting in significant maximisation of space. There is also a decreased risk of deformations and cracks. Cobiax voided flat slabs do not require any girders and are therefore suitable for all types of buildings. The decreased weight also proves advantageous for the static analysis of the entire supporting structure, including the initial foundation of a building. This also applies for (as an example) the detection of earthquakes.

economic

In contrast to conventional reinforced concrete slabs, Cobiax voided flat slabs are typically more cost effective due to the fact that less material is used. In addition, the dimensions for the foundations and the entire supporting structure are reduced, saving additional costs and increasing the available surface area. The positive impact of sustainability certificates, such as DGNB, LEED and BREEAM, also serves to increase the value of a property.

sustainable

Cobiax void former modules boast an excellent 'eco-balance' level. The material-efficient construction process can lead to savings of up to 35 percent for concrete and 20 percent for reinforcing steel. At the same time, emissions of environmentally toxic pollutants, such as CO₂, are reduced by up to 20 percent. The void formers are made entirely from recycled plastics. Cobiax also holds an Environmental Product Declaration (EPD) for its entire range of voided flat slabs.

Pérez Art Museum



Architecture // Herzog & de Meuron
Structural planning // ARUP Inc.
Design // John Moriarty & Assoc.

World-class museum

Spanning a surface area of around 18,000 square meters, the new Pérez Art Museum Miami (PAMM) is home to numerous priceless works of art. It also boasts an in-house art school. The building was designed by the architectural firm Herzog & de Meuron in Basel. The planning and consultancy firm ARUP Inc., with headquarters in New York, was responsible for the statics.

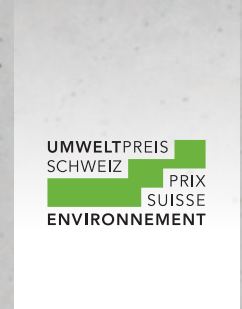
“The challenging design by Herzog & de Meuron, which called for large span lengths and flat slab undersides – not to mention the city of Miami’s strict environmental policy – resulted in the structural engineer dropping us a line. Our solution: **using Cobiax void formers of various sizes, a total of 800 cubic metres of concrete could be replaced.** This corresponds to a reduction in the weight of the slabs totalling around 2,000 tonnes and helps to eliminate 164 tonnes of CO₂ emissions. **The Pérez Art Museum Miami was awarded a LEED Silver certification.**”

Jan Cote,
M.Eng.
Project
Management/
Sales and
Marketing

Sustainability

Cobix void formers are made entirely from recycled plastics, resulting in an excellent 'eco-balance' level. Our void former modules also help to reduce emissions of environmentally toxic pollutants, such as CO₂, from concrete slabs by up to 20 percent, due to their decreased use of the energy-intensive materials concrete and steel. The consumption of primary energy can even be reduced by up to 22 percent, while additional material savings can be made within the building's structure. This was confirmed by a life-cycle analysis intended to assess the product from the manufacturing stage through to deconstruction. We therefore set new standards for a sustainable construction process.





In recognition of the ongoing positive reputation CobiX is developing in terms of building certifications, such as DGNB, BREEAM and LEED, we have summarised our values in an Environmental Product Declaration (EPD). We were one of the first companies to have our products listed from their inception in the Navigator of the German Sustainable Building Council (DGNB).

CobiX void formers have been honoured several times in the last few years for their environmental effectiveness and sheer innovation and received numerous international awards, including the Swiss Environmental Award and the German Material Efficiency Award.

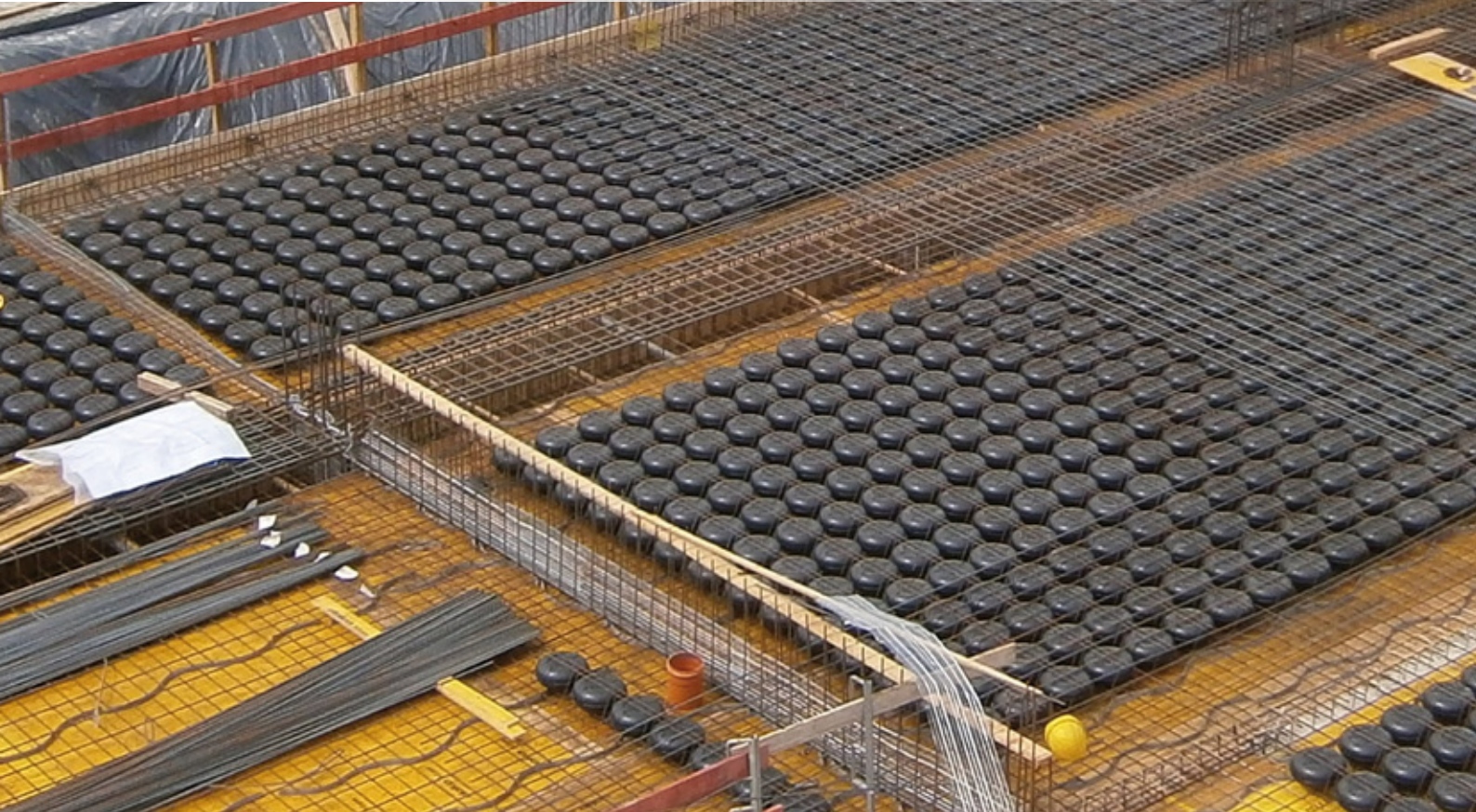
Headquarters of Microsoft Germany – LEED Gold



The highest sustainability standards are being employed for the new construction of Microsoft Germany's seven-storey headquarters in Munich. **Our goal is to attain LEED Gold certification.**

CobiX is playing an important role in the realisation of this extraordinary building. **Thanks to the use of CobiX technology, including approx. 26,000 m² of voided flat slabs, the total load of the building can be reduced by around 4,400 tonnes, which in turn leads to the optimisation of the supporting structure. As less building materials are being used, this also enables CO₂ emissions to be reduced by around 370 tonnes.**

Cobiax on-site



Secure

Cobiax void former modules delivered to the construction site in batches.



Simple and efficient

Laying one of the individual void former module by hand as outlined in the Cobiax installation instructions.



Lightweight concrete slabs

Cobiax void former modules don't just make the slab lighter. A Cobiax voided flat slab is easy to make. The void former module can be easily installed between the upper and lower reinforcement layers, where they replace the concrete and simultaneously provide support for the upper layer.

The void former areas and the remaining solid areas must be removed in accordance with the Cobiax installation plan. This will be drawn up by the structural engineer based on the slab statics. Applying concrete to two sections of the void former area ensures a smooth installation of the void formers within the material-effective concrete slab.

And this with a high degree of logistical efficiency: all it takes is a single truck-load of prefabricated void former modules to visit the building site, in contrast to the seven cement mixers that would otherwise be required.



Precise and flexible

Assembly of the void former modules on the lower reinforcement layer using an installation aid.



Certified quality

The lightweight and material-efficient concrete slab and the void former modules are cemented together.



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