

## PRESS RELEASE

### **Frankfurt Trade Fair hall with cantilevered span widths thanks to Cobias**

New construction of a modern, variable and therefore future-orientated trade fair hall on two levels in Frankfurt am Main.

The world's largest trade fair, congress and event organisers with their own grounds are currently receiving a new extension: Hall 12. The new construction, featuring almost 34,000 m<sup>2</sup> of exhibition space, must be completed for the Automechanika in September 2018. As a result of the stringently-scheduled construction period, the high material requirements and the special requirements on design draft specifications, Cobias is supporting the company responsible, ARGE, and the supporting structural engineers from RSP Remmel + Sattler Ingenieurgesellschaft mbH with the application of tried and tested Cobias voided flat plate slab systems.

### **Opulent slab cantilevers characterise the east and west views**

The new construction of this two-storey trade fair hall 12 is characterised on the east and west sides by extensive reinforced concrete slab cantilevers above the ground floor and the upper floor. It is only possible to create these concrete slabs in such a delicate and wide design using Cobias voided flat plate slab technology with prestressing in the slab edge areas.

### **20 participants at the architecture competition**

Ten offices were invited and ten more selected in a public application procedure. The jury decided at the time on the draft by "kadawittfeldarchitektur".

The nine-person jury said of their decision: "The winning draft from "kadawittfeldarchitektur" convinced through its successful harmonisation of the various required functions within a compact structure and its legibility.

### **The supporting structural engineers were involved at an early stage to ensure the stylistically confident implementation of the draft.**



In order to also implement the construction of the winning draft, the engineers from RSP relied on their excellent experience with Cobias. Cobias void former technology was already introduced into the project during the pre-draft planning for the determination of the column positioning and the building element geometries.

The supporting structural engineers from RSP regularly use Cobias void formers made from recycled plastic for the realisation of wide-span slim slabs. As a result of the reduction of the dead load, the ratio of the load capacity to the deadweight is significantly improved, and therefore represents an important contribution which enables the realisation of cost-effective supporting structures.

Accordingly, Thomas Fischer from RSP Remmel + Sattler Ingenieurgesellschaft mbH states: "The spaciousness of the foyer with its extremely wide slabs spanning up to 22.0 m would not have been possible with the same building element dimensions if we had not taken the Cobias slab system into consideration and included these products into the construction".

Fischer adds, "in the case of the Frankfurt Trade Fair hall, the described reduction in slab thickness associated with the reduction of the slab deadweight, which also reduces the load transfer in the columns involved, can only be implemented using the Cobias system. As a result, this permitted more slender column dimensions. The reduced loads also have a cost-reducing effect on the economic construction of the combined pile and raft foundation".

#### **The principle: Void formers replace concrete**

The Cobias technology is based on the creation of closed voids inside a reinforced concrete area or slab. Using these closed Cobias plastic void formers made from recycled material, concrete is replaced wherever it is not essential for constructional purposes.

#### **Targeted use of void formers**

Cobias void formers with a diameter of 45 cm has been used to realize the 3,500 m<sup>2</sup> voided flat plate slab above the ground floor.

In the slab above the upper floor, the individual areas add up to around 2,500 m<sup>2</sup>. To limit deformation, the slab edges have been prestressed using a total of 21 tendons, each featuring 6 wires with a total length of 400 m - which is why plastic void formers are in part installed here.

This results in 320 m<sup>3</sup> less concrete being installed, thus reducing the total building load by 800 tonnes



and reducing the number of concrete mixer journeys by 40.

#### **Practical use of void formers**

The ARGE partners Max Bögl and Ed. Züblin are already longstanding customers of Heinze Cobias. In the case of this project, the concrete engineers were familiarised prior to commencement with the system and the void former installation on the construction site by a sales engineer from Heinze Cobias Deutschland GmbH, and supported with technical knowhow during the construction. This is one of the services provided by Heinze Cobias beyond the supply of the void formers in order to ensure a smooth construction process.

Further renowned projects by Max Bögl and Ed. Züblin in which the Cobias void former technology has also been used, include:

- Coeur Cologne, Breslauer Platz, Cologne
- Moritzplatz 1, Prinzenstraße 85, Berlin
- FrankfurtHochVier, Zeil, Frankfurt
- Liebherr, Memminger Straße, Oberopfingen

#### **Project data**

Project: Trade Fair hall 12 of the Messe (Trade Fair Centre) Frankfurt am Main

Project type: Two-storey multipurpose building with car park

Order values:

Total costs including underground engineering approx. € 250 million

Structural engineering approx. € 189 million

Shell construction approx. € 45 million

Construction begin: 4<sup>th</sup> August 2016

Commissioning: September 2018 (for the Auto-mechanika), construction period: 26 months

In-situ concrete: 60,000 m<sup>3</sup>

In-situ reinforcement steel: 8,000 tonnes

FT steel: 6,000 tonnes

Prestressing steel: VBT mono-strands 400 running metres

Cobias voided flat plate slab technology:

Void former type: Eco-Line E-450

Slab area: 6,000 m<sup>2</sup>

Void former: approx. 7,000 pieces

Architectural draft: kadawittfeldarchitektur, Aachen

Construction documentation: GHP ARCHITEKTEN Schling Vorsmann Weimann, Oberursel

Supporting structure draft: RSP Rimmel + Sattler Ingenieurgesellschaft mbH, Frankfurt/Main

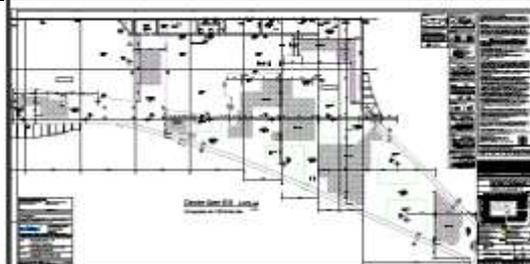
Execution planning: CSZ INGENIEURCONSULT  
Cornelius - Schwarz - Zeitler GmbH, Darmstadt

Specialist planners:  
ENGIE GROUP  
Business Unit Building Services, Dresden

**Construction, ARGE partner:**  
Max Bögl Stiftung & Co. KG, Frankfurt/Main

Ed. Züblin AG  
Directorate Central, Divisions RI & SF2, Frankfurt/Main

### Photos, graphics, image captions:



Cobiax prepared 8 installation plans for a total of 6,000 m<sup>2</sup> cantilevered reinforced concrete slabs and provided support with the detailed planning and calculations.

Cobiax installation plan for the slab above the ground floor, Part A to O, axes A – H

*File name: 12T5TWX0050C01BF*  
*Source: Heinze Cobiax*



Installation of the Cobiax plastic void formers made from recycled plastic on a section of the slab above the ground floor.

*File name: IMG\_0095.JPG*  
*Source: Heinze Cobiax*



Slab edges were prestressed to limit the deflection of the wide-span slab fields.

*File name: IMG\_1629.JPG*

*Source: Ed. Züblin AG*



The cantilevered concrete slab above the ground floor on the east side has already been completed, and the concreting of the slab above the upper floor is in preparation.

*File name: c007big20170303.jpg*

*Source: [https://www.messefrankfurt.com/frankfurt/de/media/das\\_unternehmen/texte/halle-12-hochbau-press.html](https://www.messefrankfurt.com/frankfurt/de/media/das_unternehmen/texte/halle-12-hochbau-press.html)*

#### **Key words**

Heinze Cobiax, Frankfurt Trade Fair hall, span widths, void former installation, Max Bögl Stiftung & Co. KG, Frankfurt, Ed. Züblin AG, supporting structure draft, RSP Remmel + Sattler Ingenieurgesellschaft, architectural draft, kadawittfeldarchitektur, Aachen, execution planning, GHP ARCHITEKTEN, CSZ INGENIEURCONSULT.

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Dipl.-Ing./Ma.-Kfm. Dietmar Haucke

#### **Company information:**

Heinze Cobiax Deutschland GmbH  
Dipl.-Ing. Volkmar Wanninger  
Managing Director  
Otto-von-Guericke-Ring 10  
D-65205 Wiesbaden  
Tel. +49 6122 918 45 00  
Fax +49 6122 918 45 40  
E-Mail [info.de@cobias.com](mailto:info.de@cobias.com)  
[www.cobias.com](http://www.cobias.com)

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Büro für Fachjournalismus, PR & Redaktionsservice  
(Office for Specialist Journalism, PR & Editorial Service)  
Dipl.-Ing./Ma.Kfm. Dietmar Haucke

PO Box 15 59

56139 Boppard

Tel.: +496742 80 676 76

Mobile: +49 163 64 34 0 66

[creativ-pr@creativ-pr.de](mailto:creativ-pr@creativ-pr.de)

[www.creativ-pr24.de](http://www.creativ-pr24.de)