INTL-EN • 03|23 • 7th edition - Rev

HOW TO COBIAX

Contact:
Cobiax Deutschland GmbH
Am Stadtholz 56
33609 Bielefeld
Germany

info@cobiax.com

cobiax.com

HOW TO COBIAX

The Quick Guide
to Cobiax SL

Introduction

This Quick Guide is designed to give you a short introduction to the Cobiax technology. Additional information is available upon request or as a download from cobiax.com.

We strongly recommend the use of our free CQL-Softwaretool. Our sales personnel will also be happy to answer your questions.


Cobiax SL (Slim Line): für Deckendicken von 22 bis über 40 cm

Technology and product features

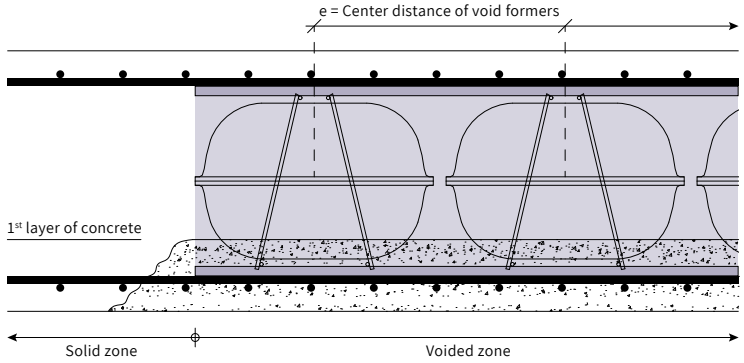
Cobiax technology uses recycled lightweight plastic void formers to replace the heavy concrete inside a slab where it is not required.

The resulting savings of up to 35% in concrete and weight has a positive effect on the construction of the slab itself (e.g. less deflection, larger spans or thinner slab thickness) and hence on the whole building structure.

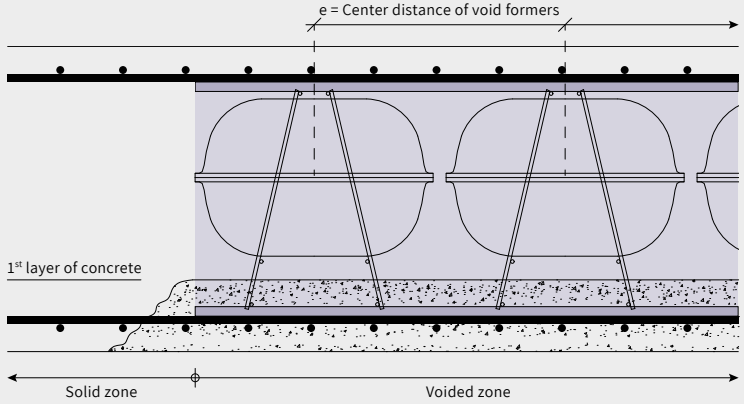
The internationally patented Cobiax SL void formers which are fully approved by the building authorities as well, consist linear fixing elements (FE) made from steel reinforcement fitted with void formers made of 100% recycled postconsumer plastic.

Cross section

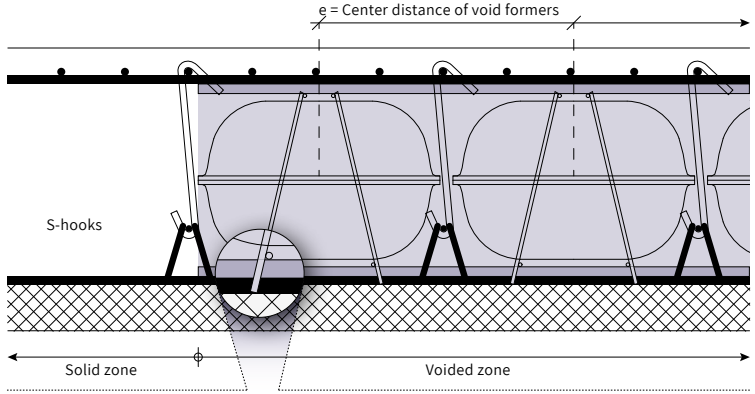
Option 1.1: In-situ construction, Standard void former



Option 1.2: In-situ construction, Void former with increased support height



Option 2: Semi-precast construction



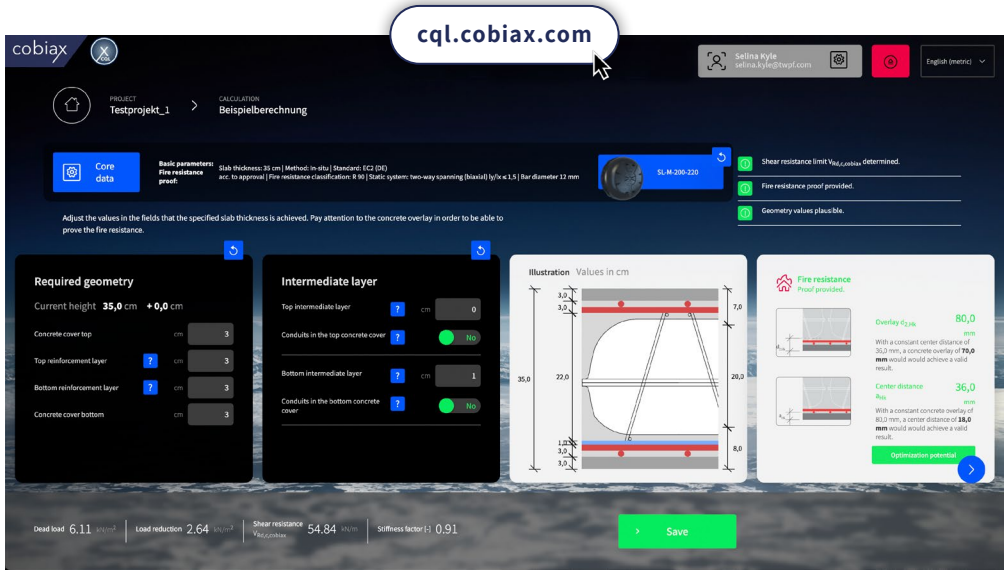
The protruding crossbars can be extended by up to 6 cm to set up the void former module directly on the semi-precast panel. An additional spacer is not required in this case.

Design and dimensioning

- Any commercially available FEM software is suitable for the calculation, no special software is required.
- Instructions for the calculation of the Cobiax slab is available for various FEM software on request.

Resources

- Project based consulting
- Technology Manual „A Deep-Dive into Cobiax“
- Free online software CQL for determining the cross-section design and the input values for the structural analysis (all required Cobiax-specific verifications are provided).



(1) All application data can be found in the Technology Manual „A Deep-Dive into Cobiax“. (Download area at cobiax.com)
(2) Increased support heights of 3 cm and 5 cm are available and only not shown visually.

What is the difference between .6 and .6E?

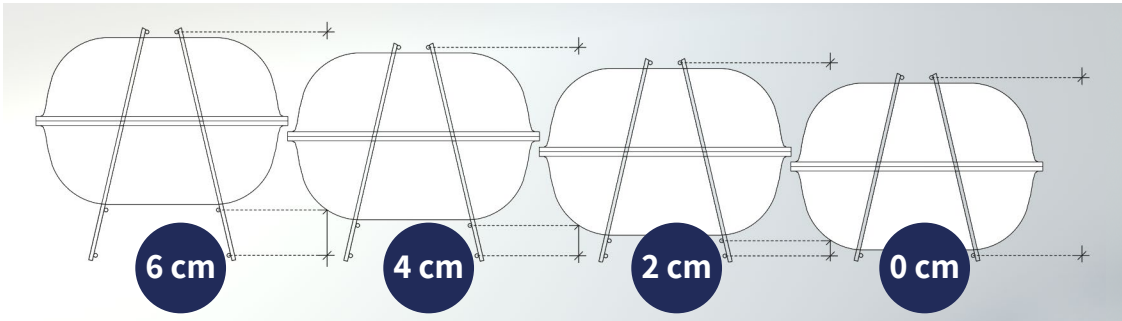
The ranges of fixing elements in the application data are divided into .6 and .6E. The difference is that the number of vertical bars has been nearly halved for the .6E fixing elements.

The use of materials for the bonding reinforcement is thus noticeably optimized, which further increases the profitability of Cobiax.

Why is the optional increased support height of the Cobiax-SL unique?

Cobiax is the only manufacturer of void formers to offer its customers an efficient way to raise the resulting void in the cross-section of the slab. The Cobiax SL system has this function on board and can be ordered as an option. Without additional on-site material input.

Each standard type mentioned in the application data sheet can be positioned 2 to 6 cm higher in the slab.(2).



A schematic illustration of a void former with increased support height in the slab cross-section is shown in option 1.2 on the back of this brochure.

Application data – Excerpt[1]

	Installation element			SL-M-100-120.6 SL-M-100-120.6E	SL-M-120-140.6 SL-M-120-140.6E	SL-M-140-160.6 SL-M-140-160.6E	SL-M-160-180.6 SL-M-160-180.6E	SL-M-180-200.6 SL-M-180-200.6E	SL-M-200-220.6 SL-M-200-220.6E	SL-M-220-240.6 SL-M-220-240.6E	SL-M-240-260.6 SL-M-240-260.6E	SL-M-260-280.6 SL-M-260-280.6E
2	Volume displacement	h_{cx}	m^3/m^2	0,0528	0,0641	0,0754	0,0858	0,0961	0,1055	0,1149	0,1248	0,1348
3	Associated weight reduction (25 kN/m³)	g_{cx}	kN/m^2	1,32	1,60	1,88	2,14	2,40	2,64	2,87	3,12	3,37
4	Support height	h_u	cm	12,0	14,0	16,0	18,0	20,0	22,0	24,0	26,0	28,0
5	Min. slab thickness	$h_{d,min}$	cm	22,0	24,0	26,0	28,0	30,0	32,0	35,0	38,0	40,0
6	Max. slab thickness	$h_{d,max}$	cm	40,0	42,0	44,0	46,0	48,0	50,0	52,0	54,0	56,0
7	Min. thickness of concrete overlay to void (top/bottom)	$d_{2,Hk,min}$	cm	6,0						6,5		7,0
8	Distance void to upper edge of installation element	$h_{dis,o}$	cm	1,0								
9	Distance void to lower edge of installation element	$h_{dis,u}$	cm	1,0								
10	Limit slab thickness for $V_{Rd,c,cobiax}$ calculation	$h_{d,grenz}$	cm	35,0								
11	Shear factor (with $h_{d,min}$)	f_v		0,50					0,45			
12	Stiffness factor (with $h_{d,min}$ and centric position)	f_{EI}		0,95	0,93	0,92	0,91	0,9	0,89	0,89	0,89	0,88
13	Reduced bonding area	$A_{i,red}$		0,30 A_i								
14	Concrete strength class			C20/25 to C45/55								
15	Aggregate for max. grain size		mm	16								
16	Concrete consistency class			F3 to F4								
17	Max. diameter of reinforcing steel		mm	16								
18	CO_2-emission reduction		t/m^2	0,011	0,013	0,016	0,018	0,02	0,022	0,024	0,026	0,028
19	Associated area per installation element		m^2/pc	0,7350								
	Component - Void former			**SL-P-100**	**SL-P-120**	**SL-P-140**	**SL-P-160**	**SL-P-180**	**SL-P-200**	**SL-P-220**	**SL-P-240**	**SL-P-260**
21	Top half-shell type			SL-H-050	SL-H-070	SL-H-070	SL-H-090	SL-H-090	SL-H-110	SL-H-110	SL-H-130	SL-H-130
22	Bottom half-shell type			SL-H-050	SL-H-050	SL-H-070	SL-H-070	SL-H-090	SL-H-090	SL-H-110	SL-H-110	SL-H-130
23	Void height	h_v	cm	10,0	12,0	14,0	16,0	18,0	20,0	22,0	24,0	26,0
24	Diameter / outer dimensions		cm	31,5								
25	Void volume		dm^3/pc	6,470	7,853	9,236	10,507	11,778	12,926	14,074	15,292	16,510
26	Min. center distance of void formers	e	cm	35,0								
27	Min. web width	a	cm	3,5								
28	Void formers per square meter		pc/m^2	8,16								
29	Associated area per void former		m^2/pc	0,1225								
30	Void formers per installation element		pc/pc	6								
	Component - fixing element (.6)			**SL-F-100-120.6**	**SL-F-120-140.6**	**SL-F-140-160.6**	**SL-F-160-180.6**	**SL-F-180-200.6**	**SL-F-200-220.6**	**SL-F-220-240.6**	**SL-F-240-260.6**	**SL-F-260-280.6**
39	Weight per installation element		kg/pc	2,02	2,12	2,24	2,34	2,44	2,54	2,66	2,76	2,86
40	Weight per square meter		kg/m^2	2,75	2,88	3,05	3,18	3,32	3,46	3,62	3,76	3,89
41	Cross-section of transversal bars	$a_{s,vorh,cx}$	cm^2/m^2	9,24								
	Component - fixing element (.6E)			**SL-F-100-120.6E**	**SL-F-120-140.6E**	**SL-F-140-160.6E**	**SL-F-160-180.6E**	**SL-F-180-200.6E**	**SL-F-200-220.6E**	**SL-F-220-240.6E**	**SL-F-240-260.6E**	**SL-F-260-280.6E**
39	Weight per installation element		kg/pc	1,72	1,80	1,86	1,92	1,98	2,04	2,10	2,16	2,22
40	Weight per square meter		kg/m^2	2,34	2,45	2,53	2,61	2,69	2,78	2,86	2,94	3,02
41	Cross-section of transversal bars	$a_{s,vorh,cx}$	cm^2/m^2	5,39								
	Execution with semi-precast panels			**SL-M-100-120.6 SL-M-100-120.6E**	**SL-M-120-140.6 SL-M-120-140.6E**	**SL-M-140-160.6 SL-M-140-160.6E**	**SL-M-160-180.6 SL-M-160-180.6E**	**SL-M-180-200.6 SL-M-180-200.6E**	**SL-M-200-220.6 SL-M-200-220.6E**	**SL-M-220-240.6 SL-M-220-240.6E**	**SL-M-240-260.6 SL-M-240-260.6E**	**SL-M-260-280.6 SL-M-260-280.6E**
43	Volume displacement (-10%)	$h_{cx,ft}$	m^3/m^2	0,0475	0,0577	0,0679	0,0772	0,0865	0,095	0,1034	0,1123	0,1213
44	Associated load reduction (25 kN/m³)	$g_{cx,ft}$	kN/m^2	1,19	1,44	1,70	1,93	2,16	2,37	2,59	2,81	3,03
45	Min. distance void to upper edge of semi-precast panel	$c_{ft,min}$	cm	3,0								