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cobiax

HOW TO COBIAX

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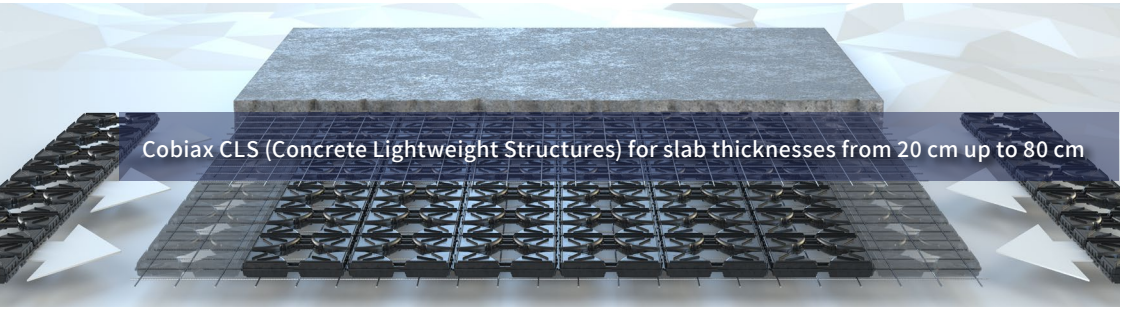
HOW TO COBIAX

The Quick Guide
to Cobiax CLS

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 CQL software tool. Our sales personnel will also be happy to answer your questions.



Technology and product features

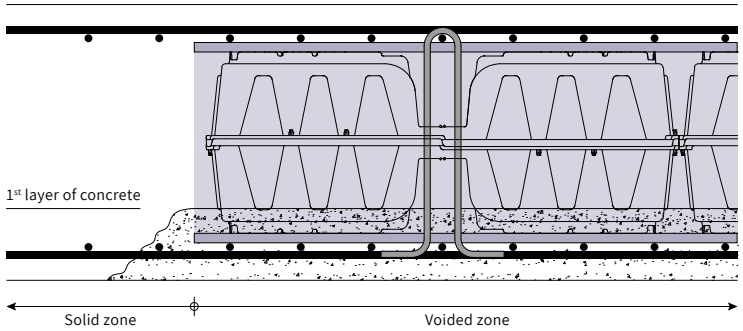
Cobiax technology uses recycled lightweight plastic void formers to replace the heavy concrete inside a slab where it is not required.

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.

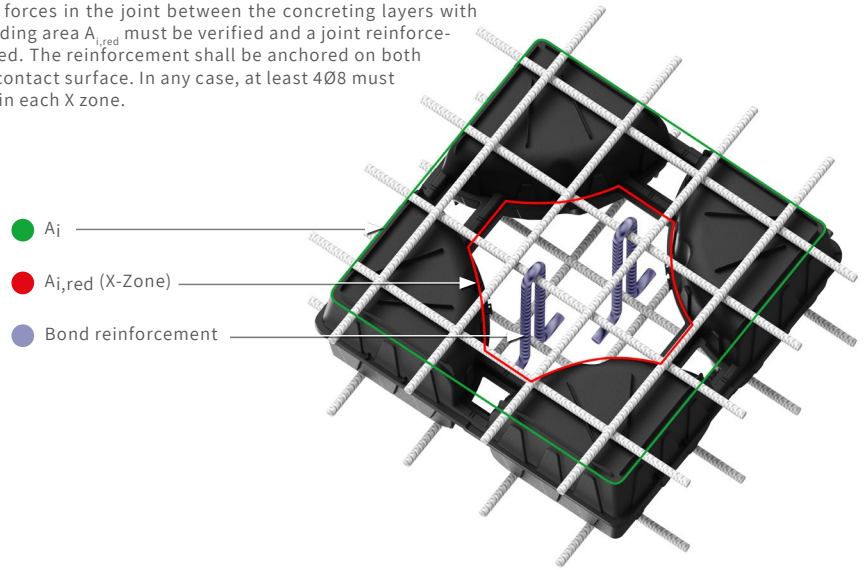
The internationally patented Cobiax CLS structural formers which are fully approved by the building authorities as well, feature a uniform base area of 60 x 60 cm and are made from 100% recycled plastic.

Cross section

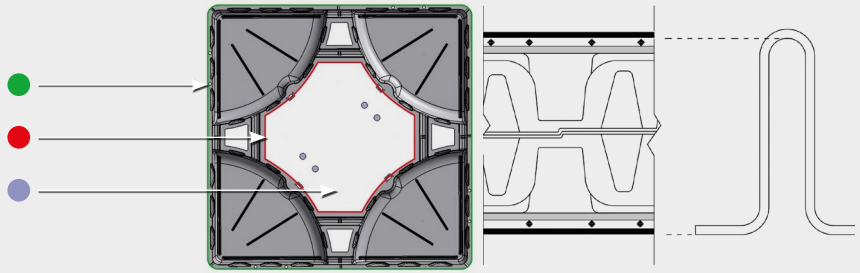
In-situ construction



When casting the concrete in two layers, the transmission of the horizontal shear forces in the joint between the concreting layers with reduced bonding area $A_{i,red}$ must be verified and a joint reinforcement arranged. The reinforcement shall be anchored on both sides of the contact surface. In any case, at least 4Ø8 must be provided in each X zone.



Example of bond reinforcement

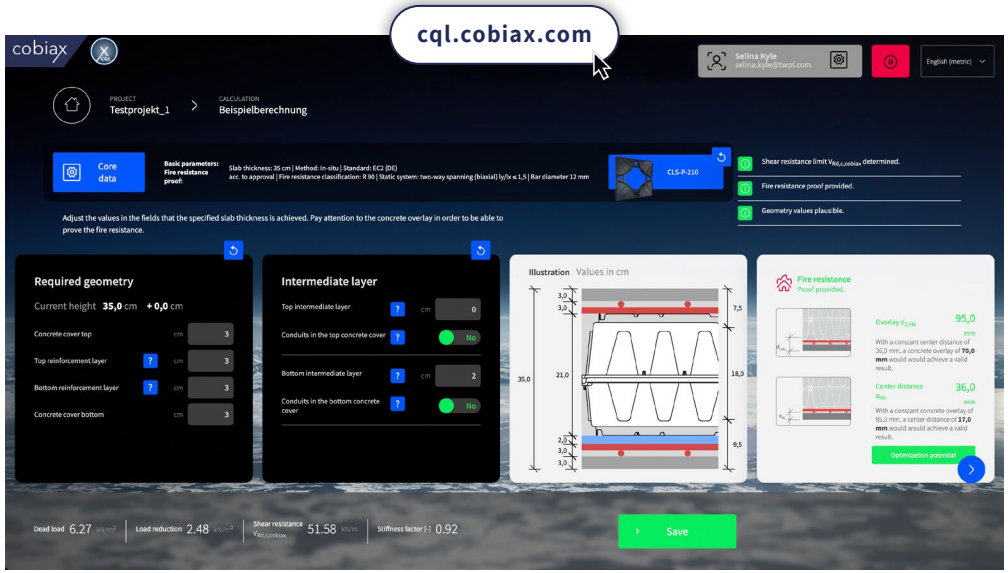


Design and dimensioning

- 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

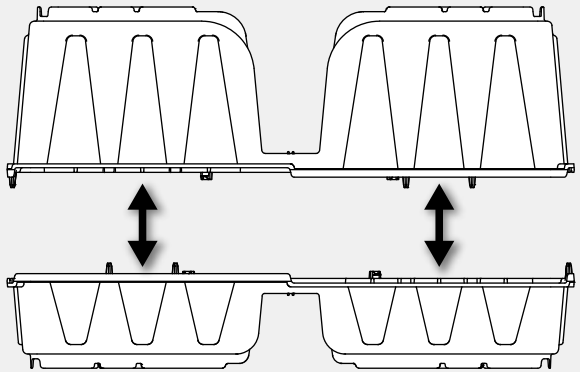
- Project based consulting
- Technology Manual „A Deep-Dive into Cobiax“
- Free online software CQL for determining the cross-section design and the input values for the structural analysis (all required Cobiax-specific verifications are provided).



(1) All application data can be found in the Technology Manual. (Download area at cobiax.com)

What makes the Cobiax CLS so outstanding?

- Our innovative development is optimised for handling on the construction site
- Always delivered in space-saving half-shell stacks
- Extremely fast one-click assembly
- Installation close to each other, therefore fast and uncomplicated
- Extremely stable and safe to walk on



Application data – Excerpt[1]

	Installation element			CLS-P-110	CLS-P-130	CLS-P-150	CLS-P-170	CLS-P-190	CLS-P-210	CLS-P-230	CLS-P-250	CLS-P-270	CLS-P-290	CLS-P-310	CLS-P-330	CLS-P-350	CLS-P-370	CLS-P-390	CLS-P-410	CLS-P-470	CLS-P-530	CLS-P-590
2	Volume displacement	h_{cx}	m^3/m^2	0,0456	0,0569	0,0683	0,0794	0,0906	0,0992	0,1078	0,1167	0,1278	0,1364	0,1436	0,1547	0,1650	0,1639	0,1750	0,1919	0,2189	0,2392	0,2594
3	Associated weight reduction (25 kN/m^3)	g_{cx}	kN/m^2	1,14	1,42	1,71	1,99	2,27	2,48	2,70	2,92	3,20	3,41	3,59	3,87	4,13	4,10	4,38	4,80	5,47	5,98	6,49
4	Support height	h_u	cm	11,0	13,0	15,0	17,0	19,0	21,0	23,0	25,0	27,0	29,0	31,0	33,0	35,0	37,0	39,0	41,0	47,0	53,0	59,0
5	Min. slab thickness	$h_{d,min}$	cm	20	22	24	26	28	32	34	36	38	40	44	46	48	50	52	56	62	70	76
6	Max. slab thickness	$h_{d,max}$	cm	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	74	80	80
7	Min. thickness of concrete overlay to void (top/bottom)	$d_{2,Hk,min}$	cm	6					7					8					9		10	
8	Distance void to upper edge of installation element	$h_{dis,o}$	cm	1,5																		
9	Distance void to lower edge of installation element	$h_{dis,u}$	cm	1,5																		
10	Limit slab thickness for $V_{Rd,c,cobiax}$ calculation	$h_{d,grenz}$	cm	76																		
11	Shear factor (with $h_{d,min}$)	f_V		0,45	0,45	0,44	0,44	0,44	0,43	0,43	0,42	0,42	0,41	0,41	0,40	0,40						
12	Stiffness factor (with $h_{d,min}$ and centric position)	f_{EI}		0,96	0,94	0,93	0,91	0,89	0,90	0,88	0,87	0,86	0,85	0,86	0,85	0,84	0,83	0,82	0,83	0,81	0,80	0,79
13	Reduced bonding area	$A_{i,red}$		0,21 Ai																		
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	0,010	0,012	0,014	0,017	0,019	0,021	0,023	0,025	0,027	0,029	0,030	0,032	0,035	0,034	0,037	0,040	0,046	0,050	0,054
19	Associated area per installation element		m^2/St	0,36																		
	Component - Void former			CLS-P-110	CLS-P-130	CLS-P-150	CLS-P-170	CLS-P-190	CLS-P-210	CLS-P-230	CLS-P-250	CLS-P-270	CLS-P-290	CLS-P-310	CLS-P-330	CLS-P-350	CLS-P-370	CLS-P-390	CLS-P-410	CLS-P-470	CLS-P-530	CLS-P-590
21	Top half-shell type			CLS-H-055	CLS-H-075	CLS-H-075	CLS-H-095	CLS-H-095	CLS-H-115	CLS-H-115	CLS-H-175	CLS-H-175	CLS-H-175	CLS-H-235	CLS-H-235	CLS-H-175	CLS-H-295	CLS-H-295	CLS-H-235	CLS-H-235	CLS-H-295	CLS-H-295
22	Bottom half-shell type			CLS-H-055	CLS-H-055	CLS-H-075	CLS-H-075	CLS-H-095	CLS-H-095	CLS-H-115	CLS-H-075	CLS-H-095	CLS-H-115	CLS-H-075	CLS-H-095	CLS-H-175	CLS-H-075	CLS-H-095	CLS-H-175	CLS-H-235	CLS-H-235	CLS-H-295
23	Void height	h_v	cm	8,0	10,0	12,0	14,0	16,0	18,0	20,0	22,0	24,0	26,0	28,0	30,0	32,0	34,0	36,0	38,0	44,0	50,0	56,0
24	Diameter / outer dimensions		cm	60,0/60,0																		
25	Void volume		dm^3/St	16,4	20,5	24,6	28,6	32,6	35,7	38,8	42,0	46,0	49,1	51,7	55,7	59,4	59,0	63,0	69,1	78,8	86,1	93,4
26	Min. center distance of void formers	e	cm	60																		
27	Min. web width	a	cm	6,0																		
28	Void formers per square meter		St/m^2	2,78																		
29	Associated area per void former		m^2/St	0,36																		
30	Void formers per installation element		St/St	1																		
	Bond reinforcement			CLS-P-110	CLS-P-130	CLS-P-150	CLS-P-170	CLS-P-190	CLS-P-210	CLS-P-230	CLS-P-250	CLS-P-270	CLS-P-290	CLS-P-310	CLS-P-330	CLS-P-350	CLS-P-370	CLS-P-390	CLS-P-410	CLS-P-470	CLS-P-530	CLS-P-590
40	Weight per square meter		kg/m^2	1,45	1,54	1,62	1,71	1,80	1,89	1,98	2,06	2,15	2,24	2,33	2,41	2,50	2,59	2,68	2,77	3,03	3,29	3,56
41	Cross-section of transversal bars	$a_{s,vorh,cx}$	cm^2/m^2	5,59																		