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European Technical Assessment

ETA-24/1188 of 04.02.2025

General part

Technical Assessment Body issuing the European Technical Assessment	Österreichisches Institut für Bautechnik (OIB) Austrian Institute of Construction Engineering
Trade name of the construction product	Hasslacher Holz-Beton Verbundsystem
Product family to which the construction product belongs	Wood-concrete composite slab kits
Manufacturer	HASSLACHER Holding GmbH Feistritz 1 9751 Sachsenburg AUSTRIA
Manufacturing plants	Manufacturing plant 1 and 2
This European Technical Assessment contains	16 pages including 3 annexes which form an integral part of this assessment.
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) 130018 00 0303 “Wood-concrete composite slab kits”.

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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Specific parts

1 Technical description of the product

1.1 General

This European Technical Assessment (ETA) applies to the wood-concrete composite slab kit "Hasslacher Holz-Beton Verbundsystem". Hasslacher Holz-Beton Verbundsystem is composed of slab-like timber members with special milling profiles for the shear resistant connection between the base and the concrete material.

The following base materials are part of the kit:

- Cross laminated timber according to European Technical Assessment ETA-12/0281[1] with minimum 3 crosswise arranged layers. Minimum strength class of lamellas for cross laminated timber is T11, average strength class of lamellas is at least T14 according to EN 338[2], or
- Glued laminated timber of strength class GL24c or better according to EN 14080[3] arranged slab-like.

The base materials are provided with special (rectangular) milling profiles according to CEN/TS 19103[4], Clause 10.3.4.1, for direct application of concrete.

In addition, the wood-concrete composite slab kit contains the following component not necessarily supplied by the manufacturer but as part of assembled system at the building site:

- Reinforced concrete slab (concrete strength class C30/37 or better according to EN 206[5], grain size ≤ 16 mm, min. steel Ø ≥ 6 mm and $f_{y,k}$ ≥ 450 MPa) with min. thickness 60 mm according to standards and regulations in force at the place of use.

Finished floor or ceiling covering as well as possible sound reducing courses are not part of the kit.

The principle structure of the wood-concrete composite slab kit is shown in Annex 1, Figure 1 and Figure 2.

The wood-concrete composite slab kit and the components for its manufacturing correspond to the specifications given in the Annexes 1 and 2. The material characteristics, dimensions and tolerances of the wood-concrete composite slab kit, not indicated in these Annexes, are given in the technical file[6] of the European Technical Assessment.

Timber which is treated or will be treated with wood preservatives or flame retardants is not subject of the European Technical Assessment. No recycled materials are used.

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1 ETA-12/0281 of 27.03.2024 for „HASSLACHER CROSS LAMINATED TIMBER"

2 EN 338:2016

3 EN 14080:2013

4 CEN/TS 19103:2021

5 EN 206:2013+A2:2021

6 The technical file of the European Technical Assessment is deposited at Österreichisches Institut für Bautechnik and, in so far as is relevant to the tasks of the notified product certification body involved in the assessment and verification of constancy of performance procedure, is handed over to the notified product certification body.

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1.2 Components of the kit

1.2.1 Base material

The following base materials are part of the kit:

- Cross laminated timber according to European Technical Assessment ETA-12/0281 with minimum 3 crosswise arranged layers. Minimum strength class of lamellas for cross laminated timber is T11, average strength class of lamellas is at least T14 according to EN 338, or
- Glued laminated timber of strength class GL24c or better according to EN 14080 arranged slab-like.

The base materials are provided with special (rectangular) milling profiles according to CEN/TS 19103, Clause 10.3.4.1, for direct application of concrete.

The characteristics of the base material are given in Annex 2, Table 2.

Wood species is European spruce or equivalent softwood.

1.2.2 Concrete

Reinforced concrete slab cast on site or prefabricated at the factory (concrete strength class C30/37 or better according to EN 206, grain size ≤ 16 mm, min. steel Ø ≥ 6 mm and fy,k ≥ 450 MPa) with min. thickness 60 mm according to standards and regulations in force at the place of use for the finalisation of the wood-concrete composite slab kit.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

2.1 Intended use

The wood-concrete composite slab kit is used as load-bearing element in buildings.

The wood-concrete composite slab kit shall be subjected to static and quasi-static actions only. The product shall not be subjected to fatigue loading.

The wood-concrete composite slab kit is intended to be used in service classes 1 and 2 according to EN 1995-1-1[7].

2.2 General assumptions

The wood-concrete composite slab kit is manufactured in accordance with the provisions of the European Technical Assessment using the manufacturing process as identified in the inspection of the manufacturing plant by Österreichisches Institut für Bautechnik and laid down in the technical file.

The manufacturer shall ensure that the requirements in accordance with the Clauses 1, 2 and 3 as well as with the Annexes of the European Technical Assessment are made known to those who are concerned with planning and execution of the works.

Design

The European Technical Assessment only applies to the manufacture and use of the wood-concrete composite slab kit. Verification of stability of the works including application of loads on the products is not subject to the European Technical Assessment.

The following conditions shall be observed:

- Design of the wood-concrete composite slab kit is carried out under the responsibility of an engineer experienced in such products.

[7] EN 1995-1-1:2004 +AC:2006 +A1:2008 +A2:2014

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- Design of the works shall account for the protection of the wood-concrete composite slab kit.
- The wood-concrete composite slab kit is installed correctly.

Design of the wood-concrete composite slab kit can be according to EN 1995-1-1 and CEN/TS 19103 taking into account of Annex 2 of the European Technical Assessment.

Standards and regulations in force at the place of use shall be considered.

Packaging, transport, storage, maintenance, replacement and repair

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

Installation

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant items to be considered are e.g.

- definition and verification of the size, spacing and minimum length of support, and demands of serviceability
- fastening of components and eventual restrictions on the application of fixings to the product
- temporary bracing for temporary loads on the construction site during erection.

Damaged products shall not be installed.

The safety-at-work and health protection regulations have to be observed.

2.3 Assumed working life

The provisions made in the European Technical Assessment (ETA) are based on an assumed intended working life of Hasslacher Holz-Beton Verbundsystem of 50 years, when installed in the works. These provisions are based upon the current state of the art and the available knowledge and experience[8].

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA nor by the Technical Assessment Body, but are regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

[8] The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, and the particular conditions of the design, execution, use and maintenance of that works may be outside this ETA. Therefore, it cannot be excluded that in these cases the real working life of the product may also be shorter than the assumed working life.

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3 Performance of the product and references to the methods used for its assessment

3.1 Performance of the product

Table 1: Performance of the product in relation to the essential characteristics

Essential characteristic	Method of assessment	Performance
Basic requirement for construction works 1: Mechanical resistance and stability		
Mechanical resistance and stiffness	EAD 130018-00-0303, Clause 2.2.1	Annex 2, Table 3
Dimensional stability	EAD 130018-00-0303, Clause 2.2.2	Annex 2, Table 3
Basic requirement for construction works 2: Safety in case of fire		
Reaction to fire	EAD 130018-00-0303, Clause 2.2.3	Annex 2, Table 3
Resistance to fire	No performance assessed.	
Basic requirement for construction works 3: Hygiene, health and environment		
Content, emission and/or release of dangerous substances	No performance assessed.	
Basic Works Requirement 6: Energy economy and heat retention		
Thermal conductivity	EAD 130018-00-0303, Clause 2.2.6	Annex 2, Table 3
Air permeability	No performance assessed.	

3.2 Assessment methods

3.2.1 General

The assessment of the essential characteristics in Clause 3.1 of the wood-concrete composite slab kit for the intended use, and in relation to the requirements for mechanical resistance and stability, for safety in case of fire and for energy economy and heat retention in the sense of the basic requirements for construction works № 1, 2 and 6 of Regulation (EU) № 305/2011 has been made in accordance with the European Assessment Document EAD 130018-00-0303, Wood-concrete composite slab kit.

3.2.2 Identification

The European Technical Assessment for Hasslacher Holz-Beton Verbundsystem is issued on the basis of agreed data that identify the assessed product. Changes to materials, to composition, to characteristics of the product, or to the production process could result in these deposited data being incorrect. Österreichisches Institut für Bautechnik should be notified before the changes are implemented, as an amendment of the European Technical Assessment is possibly necessary.

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4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

4.1 System of assessment and verification of constancy of performance

According to Commission Decision 2000/447/EC[9], as amended, the system of assessment and verification of constancy of performance to be applied to Hasslacher Holz-Beton Verbundsystem is System 1. System 1 is detailed in Commission Delegated Regulation (EU) № 568/2014[10] of 18 February 2014, Annex, 1.2., and provides for the following items

(a) the manufacturer shall carry out:

(i) factory production control;

(ii) further testing of samples taken at the manufacturing plant by the manufacturer in accordance with a prescribed test plan[11];

(b) the notified product certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of constancy of performance of the construction product on the basis of the outcome of the following assessments and verifications carried out by that body:

(i) an assessment of the performance of the construction product carried out on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of the product;

(ii) initial inspection of the manufacturing plant and of factory production control;

(iii) continuous surveillance, assessment and evaluation of factory production control.

4.2 Construction products for which a European Technical Assessment has been issued

Notified bodies undertaking tasks under System 1 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 4.1 (b)(i).

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

5.1 Task for the manufacturer

5.1.1 Factory production control

In the manufacturing plant the manufacturer establishes and continuously maintains a factory production control. All data, procedures, and specifications adopted by the manufacturer are documented in a systematic manner in the form of instructions manual (user's guides) and process instructions. Purpose of factory production control is to ensure the constancy of performances of the product with regard to the essential characteristics.

The manufacturer only uses raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials are subjected to controls by the manufacturer before acceptance. Check of incoming materials includes control of inspection documents presented by the manufacturer of the raw materials.

The frequency of control and testing performed within factory production control as well as on the finished product, is in accordance with the determined manufacturing process and the prescribed test plan. The factory production control's results of testing are recorded and evaluated. The

[9] Official Journal of the European Communities OJ L 180, 19.7.2000, p. 40

[10] Official Journal of the European Communities OJ L 157, 27.5.2014, p.76

[11] The prescribed test plan has been deposited with Österreichisches Institut für Bautechnik and is handed over only to the notified product certification body involved in the procedure for the assessment and verification of constancy of performance. The prescribed test plan is also referred to as control plan.

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records are kept at least for ten years after the product has been placed on the market and are presented to the notified factory production control certification body involved in continuous surveillance. On request the records are presented to Österreichisches Institut für Bautechnik. The records shall include at least:

- Designation of the product, the materials and components
- Type of control and testing
- Date of manufacture of the product and the date of inspection of the product, materials or components
- Results of control and examination and, if applicable, comparison with requirements
- Name and signature of person responsible for factory production control

If test results are unsatisfactory, the manufacturer immediately implements measures to eliminate the defects. Products or components that are not in conformity with the requirements are removed. After elimination of the defects, the respective test – if verification is required for technical reasons – is repeated immediately.

5.1.2 Declaration of performance

The manufacturer is responsible for preparing the declaration of performance. When all the criteria of the assessment and verification of constancy of performance are met, including the certificate of conformity issued by the notified product certification body, the manufacturer shall draw up a declaration of performance.

5.2 Tasks for the notified product certification body

5.2.1 Initial inspection of the manufacturing plant and of factory production control

The notified product certification body shall verify the ability of the manufacturer for a continuous and orderly manufacturing of Hasslacher Holz-Beton Verbundsystem according to the European Technical Assessment. In particular the following items shall be appropriately considered

- Personnel and equipment
- The suitability of the factory production control established by the manufacturer
- Full implementation of the control plan

5.2.2 Continuous surveillance, assessment and evaluation of factory production control

The notified product certification body shall visit the factory at least once a year for routine inspection. In particular the following items shall be appropriately considered

- The manufacturing process including personnel and equipment
- The factory production control
- The implementation of the control plan

The results of continuous surveillance are made available on demand by the notified product certification body to Österreichisches Institut für Bautechnik. When the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance is withdrawn by the notified product certification body.

Issued in Vienna on 04.02.2025
by Österreichisches Institut für Bautechnik

The original document is signed by:

Thomas Rockenschaub
Deputy Managing Director

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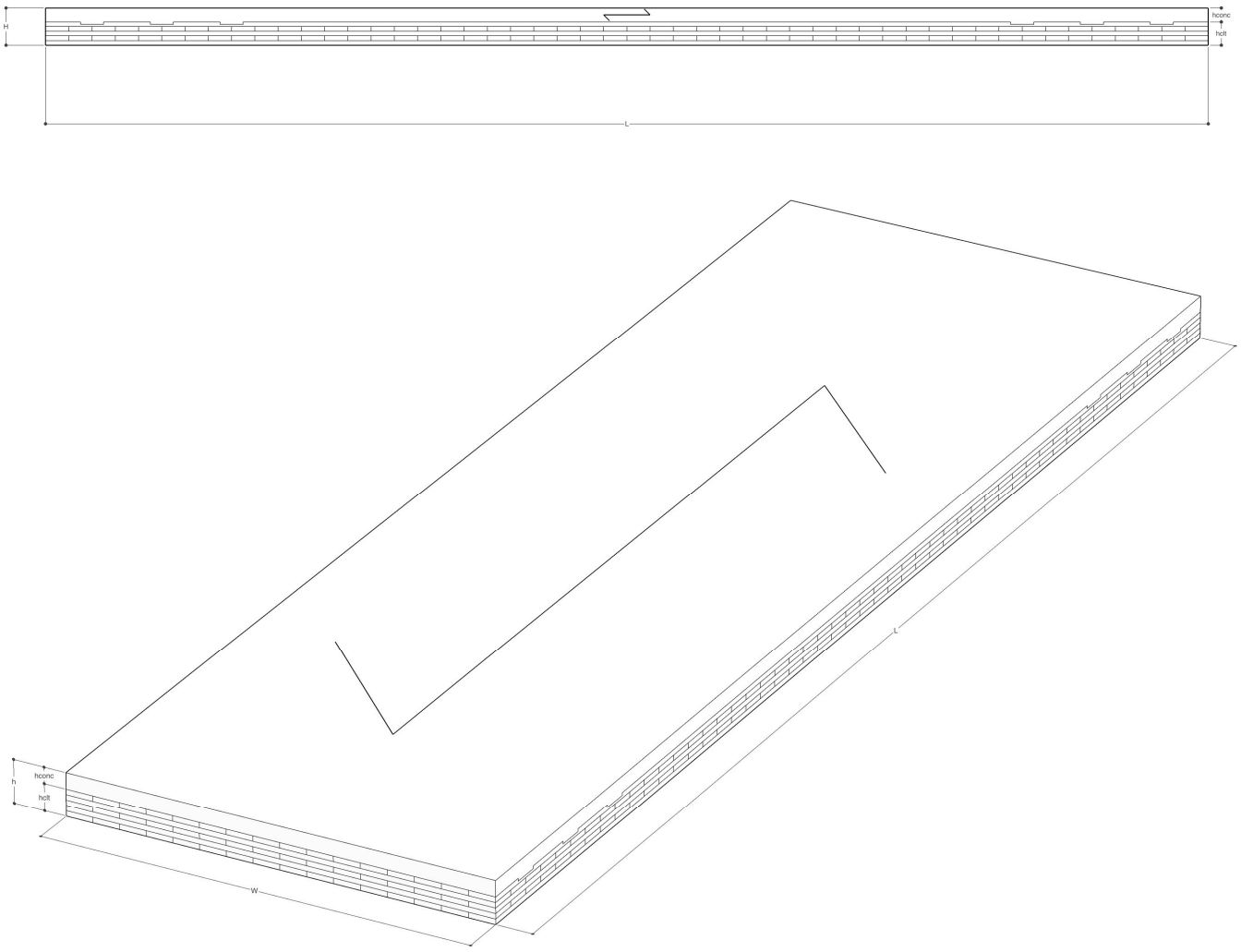
Figure 1: Principle structure of the wood-concrete composite slab kit



Hasslacher Holz-Beton Verbundsystem Structure of the wood-concrete composite slab kit	**Annex 1** of ETA-24/1188 of 04.02.2025

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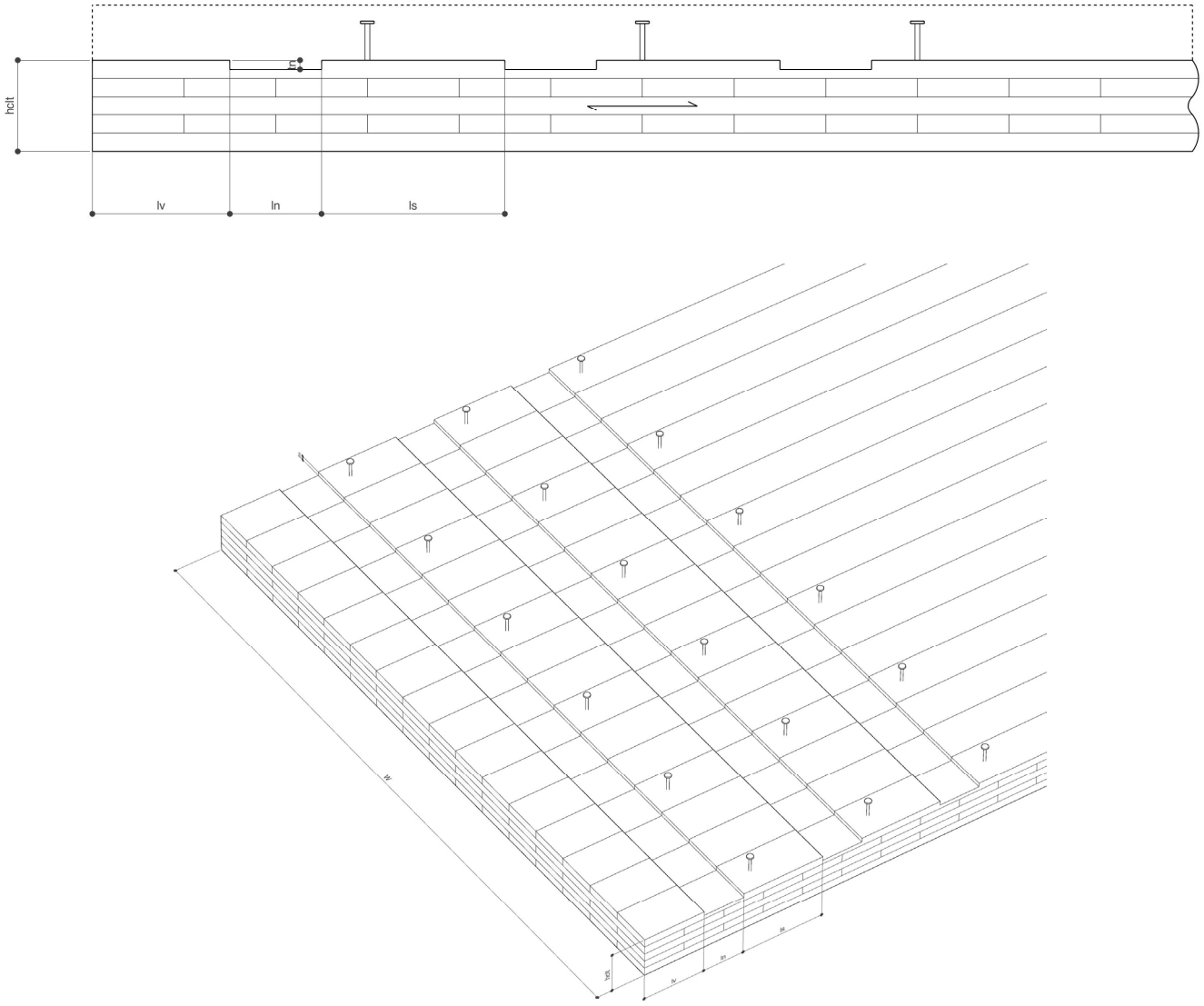
Figure 2: Milling profile in the base material



l_n	200 mm
t_n	20 mm
l_v, l_s	acc. to manufacturer's specification (to be taken into account for design)

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Table 2: Dimensions and specifications

Item	Dimension	Specification
Wood-concrete composite slab kit		
Thickness	mm	160 to 500
Width	m	acc. to manufacturer's specification
Length	m	≤ 13 m Typical span: ≤ 10 m
Base materials		
Cross laminated timber according to ETA-12/0281 provided with special (rectangular) milling profiles according to CEN/TS 19103, Clause 10.3.4.1, for direct application of concrete.	mm	100 mm ≤ t ≤ 280 mm min. 3 crosswise arranged layers min. thickness of cover layer 30 mm
	-	Strength class of cover layers: min. T14 Strength class of inner layers: ≤ 30 % T11, ≥ 70 % T14
Glued laminated timber acc. to EN 14080 arranged slab-like provided with special (rectangular) milling profiles according to CEN/TS 19103, Clause 10.3.4.1, for direct application of concrete.	mm	t ≥ 120 mm
	-	Strength class GL24c or better
Finalisation of wood-concrete composite slab kit		
Reinforced concrete slab	-	acc. to EN 206 strength class C30/37 or better t ≥ 60 mm grain size ≤ 16 mm steel Ø ≥ 6 mm and $f_{y,k}$ ≥ 450 MPa

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Table 3: Product characteristics of the wood-concrete composite slab kit

BWR	Essential characteristic	Assessment method	Level / Class / Description
1	**Mechanical resistance and stability**		
	Mechanical resistance and stiffness		
	Load bearing capacity per milled console $F_{con,k}$	CEN/TS 19103, Equation (10.14)	
	Slip modulus per milling K_{ser}	CEN/TS 19103, Equation (10.12)	
	K_{ser} // k_s	Strength class T14: 1 200 kN/mm/m // 490 kN/mm Strength class T26: 1 450 kN/mm/m // 588 kN/mm	
	Dimensional stability		
	Creep - Concrete - Base material	EAD 130018-00-0303	Creep factor acc. to EN 1992-1-1, Clause 3.1.4 Deformation factor k_{def} acc. to EN 1995-1-1/NA
	Shrinkage/swelling - Concrete - Base material	EAD 130018-00-0303	Shrinkage factor acc. to EN 1992-1-1, Clause 3.1.4 Shrinkage/swelling acc. to EN 1995-1-1/NA
	Max. spans for Hasslacher Holz-Beton Verbundsystem in different configurations	EN 1995-1-1 and CEN/TS 19103	Examples see Figure 3
2	**Safety in case of fire**		
	Reaction to fire		
	Steel, concrete	Commission Decision 96/603/EC, as amended	Euroclass A1
	Cross laminated timber	Commission Delegated Regulation (EU) 2017/2293	Minimum layer thickness 18 mm Mean density ≥ 350 kg/m³ t ≥ 54 mm Euroclass D-s2, d0
	Glued laminated timber	Commission Delegated Regulation (EU) 2017/1227	Mean density ≥ 380 kg/m³ t ≥ 22 mm Euroclass D-s2, d0
6	**Energy economy and heat retention**		
	Thermal resistance, λ	acc. to manufacturers DoP for the respective material	

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Table 4: Input values for calculation of Hasslacher Holz-Beton Verbundsystem in different configurations

Input Values			
number of shear notches	2		for h_{conc} = 80 mm
	3		for h_{conc} > 80 mm
t_n	20		mm
l_n	200		mm
l_s	350		mm
x_1	290		mm
x_2	840		mm
x_3	1390		mm
K_{ser}	1200	1450	kN/mm/m
material			
CLT	**CL26E11.8**	**CL36E14.7**	
$f_{clt,m,k}$	26.4	36	N/mm²
$f_{clt,c,0,k}$	21	24.5	N/mm²
$f_{clt,t,0,k}$	14	19.5	N/mm²
$f_{clt,v,k}$	4	4	N/mm²
$f_{clt,r,k}$	1.5	1.5	N/mm²
$E_{0,DL}$	11800	14700	N/mm²
E_0	11800	11800	N/mm²
concrete	**C30/37**		
$f_{c,k}$	30	N/mm²	
E_{cm}	33000	N/mm²	
final creep coefficient φ_0	2.5		
final shrinkage rate ε_{SH}	0.37	‰	
service class	1		
k_{mod}	0.8		
k_{def}	0.8		
fire			
charring rate in 1. layer	0.65	mm/min	
charring rate ≥ 2. layer	0.8	mm/min	
limit values			
$w_{inst,gr}$	L/300		
$w_{net,fin,gr}$	L/250		

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Figure 3.1: Max. spans for single span girder CCC - CL26E11.8 L 500

	CCC-element	[mm]	180	200	200	220	240	260	200	220	220	240	260	280	240	240	260	280	300	320	320
	CLT (CL26E11.8)	[mm]	30-40-30	40-40-40	30-20-20-20-30	40-20-20-20-40	40-20-40-20-40	40-30-40-30-40	30-40-30	40-40-40	30-20-20-20-30	40-20-20-20-40	40-20-40-20-40	40-30-40-30-40	40-40-40	30-20-20-20-30	40-20-20-20-40	40-20-40-20-40	40-30-40-30-40	40-40-40-40-40	40-30-40-30-40
	conrete C30/37	[mm]	80	80	80	80	80	80	100	100	100	100	100	100	120	120	120	120	120	120	140
	ratio	$\frac{h_clt}{h_concrete}$	1.25	1.50	1.50	1.75	2.00	2.25	1.00	1.20	1.20	1.40	1.60	1.80	1.00	1.00	1.17	1.33	1.50	1.67	1.29
	self-weight	[kg/m²]	250	260	260	270	280	290	300	310	310	320	330	340	360	360	370	380	390	400	440
maximum span [mm]	Category A1: area for domestic and residential activities 2,5 kN/m²	light 1,0 kN/m²	w/o pre-camber	[mm]	4390	4970	4920	5490	5990	6410	4780	5350	5300	5850	6340	6750	5590	5550	6080	6560	6930	7300	7130
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
			w/ pre-camber	[mm]	5140	5830	5750	6440	7030	7530	5640	6300	6240	6890	7460	7930	6560	6500	7140	7690	8130	8560	8320
			pre-camber	[mm]	10.3	11.7	11.5	12.9	14.1	15.1	11.3	12.6	12.5	13.8	14.9	15.9	13.1	13.0	14.3	15.4	16.3	17.1	16.6
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
		heavy 2,0 kN/m²	w/o pre-camber	[mm]	4160	4720	4670	5210	5690	6110	4550	5090	5050	5580	6050	6440	5360	5320	5840	6290	6660	7020	6860
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
			w/ pre-camber	[mm]	4880	5530	5460	6110	6680	7160	5370	6000	5950	6570	7120	7570	6280	6230	6840	7370	7790	8210	8010
			pre-camber	[mm]	9.8	11.1	10.9	12.2	13.4	14.3	10.7	12.0	11.9	13.1	14.2	15.1	12.6	12.5	13.7	14.7	15.6	16.4	16.0
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
	Category B2: office area 3,5 kN/m²	light 1,0 kN/m²	w/o pre-camber	[mm]	4260	4820	4760	5330	5820	6230	4640	5200	5150	5690	6180	6570	5460	5420	5940	6400	6780	7140	6970
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
			w/ pre-camber	[mm]	4990	5650	5580	6240	6820	7310	5480	6130	6070	6710	7270	7720	6400	6340	6960	7500	7930	8350	8140
			pre-camber	[mm]	10.0	11.3	11.2	12.5	13.6	14.6	11.0	12.3	12.1	13.4	14.5	15.4	12.8	12.7	13.9	15.0	15.9	16.7	16.3
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
		heavy 2,0 kN/m²	w/o pre-camber	[mm]	4060	4600	4540	5080	5550	5960	4440	4980	4940	5460	5920	6310	5250	5210	5710	6160	6520	6870	6730
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120
			w/ pre-camber	[mm]	4750	5390	5320	5960	6510	6980	5240	5860	5810	6420	6960	7400	6150	6100	6690	7220	7630	8030	7850
			pre-camber	[mm]	9.5	10.8	10.6	11.9	13.0	14.0	10.5	11.7	11.6	12.8	13.9	14.8	12.3	12.2	13.4	14.4	15.3	16.1	15.7
			REI	[min]	30	30	60	90	120	120	30	30	60	90	120	120	30	60	90	120	120	120	120

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Figure 3.2: Max. spans for single span girder CCC - CL36E14.7 L 500

			CCC-element	[mm]	180	200	200	220	240	260	200	220	220	240	260	280	240	240	260	280	300	320	320
			CLT (CL36E14.7)	[mm]	30-40-30	40-40-40	30-20-20-20-30	40-20-20-20-40	40-20-40-20-40	40-30-40-30-40	30-40-30	40-40-40	30-20-20-20-30	40-20-20-20-40	40-20-40-20-40	40-30-40-30-40	40-40-40	30-20-20-20-30	40-20-20-20-40	40-20-40-20-40	40-30-40-30-40	40-40-40-40-40	40-30-40-30-40
			conrete C30/37	[mm]	80	80	80	80	80	80	100	100	100	100	100	100	120	120	120	120	120	120	140
			ratio	h_Holz / h_Beton	1.25	1.50	1.50	1.75	2.00	2.25	1.00	1.20	1.20	1.40	1.60	1.80	1.00	1.00	1.17	1.33	1.50	1.67	1.29
			self-weight	[kg/m²]	250	260	260	270	280	290	300	310	310	320	330	340	360	360	370	380	390	400	440
maximum span [mm]	Category A1: area for domestic and residential activities 2,5 kN/m²	light 1,0 kN/m²	w/o pre-camber	[mm]		5200		5740	6260	6710		5570		6090	6590	7020	5820		6320	6800	7200	7600	7390
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
			w/ pre-camber	[mm]		6110		6740	7360	7900		6570		7170	7760	8260	6830		7410	7980	8450	8920	8650
			pre-camber	[mm]		12.2		13.5	14.7	15.8		13.1		14.3	15.5	16.5	13.7		14.8	16.0	16.9	17.8	17.3
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
		heavy 2,0 kN/m²	w/o pre-camber	[mm]		4940		5450	5950	6390		5310		5810	6290	6710	5580		6050	6520	6910	7300	7110
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
			w/ pre-camber	[mm]		5790		6390	6990	7500		6260		6840	7400	7880	6540		7100	7640	8100	8550	8310
			pre-camber	[mm]		11.6		12.8	14.0	15.0		12.5		13.7	14.8	15.8	13.1		14.2	15.3	16.2	17.1	16.6
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
	Category B2: office area 3,5 kN/m²	light 1,0 kN/m²	w/o pre-camber	[mm]		5040		5560	6080	6530		5420		5930	6420	6840	5680		6170	6640	7040	7420	7230
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
			w/ pre-camber	[mm]		5920		6540	7140	7660		6390		6980	7550	8040	6660		7230	7790	8250	8700	8450
			pre-camber	[mm]		11.8		13.1	14.3	15.3		12.8		14.0	15.1	16.1	13.3		14.5	15.6	16.5	17.4	16.9
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
		heavy 2,0 kN/m²	w/o pre-camber	[mm]		4810		5310	5800	6230		5190		5680	6150	6560	5460		5930	6390	6770	7150	6980
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120
			w/ pre-camber	[mm]		5640		6230	6810	7310		6110		6680	7230	7700	6400		6950	7480	7930	8360	8150
			pre-camber	[mm]		11.3		12.5	13.6	14.6		12.2		13.4	14.5	15.4	12.8		13.9	15.0	15.9	16.7	16.3
			REI	[min]		30		90	120	120		30		90	120	120	30		90	120	120	120	120

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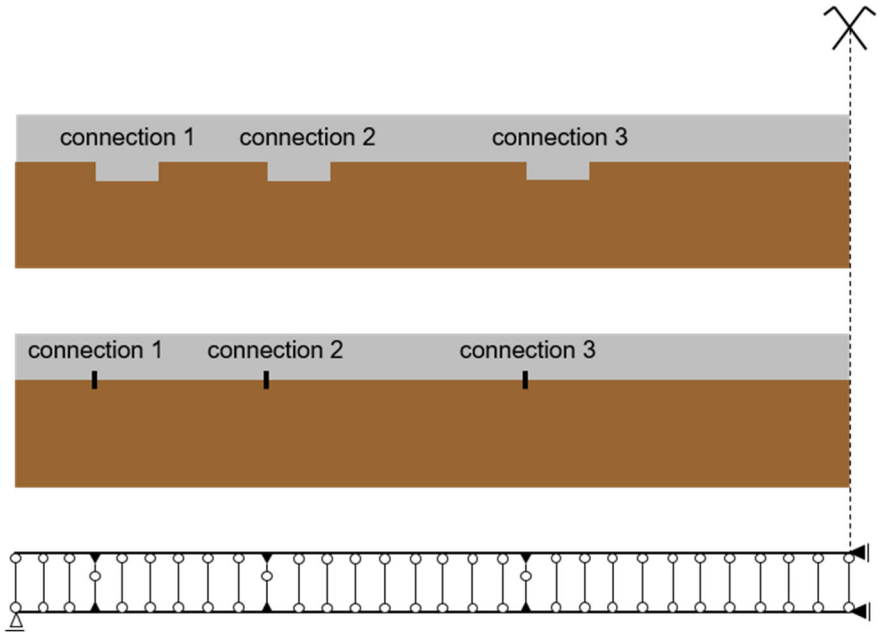
Truss models

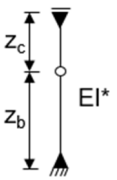
In case of shear resistant connections between base materials and the concrete material arranged discontinuous, truss models may be used. Hereby, the concrete element and the wooden element shall be simulated by trusses oriented in direction of the longitudinal axis, which are coupled by truss elements enforcing the same deflections. In the area of shear resistant connections, the truss elements are provided with an end hinge at the height of the shear resistant connection and the shear rigidity of the shear resistant connection is replaced by the flexural rigidity EI^* of the truss elements.



The flexural rigidity EI^* of the truss elements in the area of shear resistant connections shall be calculated as

$$EI^* = \frac{K_i}{3} \cdot \left(z_c^3 + z_b^3\right)$$

with

K_i Slip modulus of the shear resistant connection in N/mm

$z_{c,b}$ Distance of concrete/base material to shear resistant connection in mm