



TIMBERVATION

CLT - FACTORY - USA

BY HILLENBRAND DEVELOPMENT INC. /
HOLZPLUS GMBH

Finance

how we calculate

raw material

structure element		
20%	300	60
20%	300	60
20%	300	60
20%	300	60
20%	300	60
100%	\$/m³	300

yield	78-80%	75%
by-prod.	4	396
sale	\$/m³	1000
cost of sale		40%

glue

glue	\$/m³	40
portion	6-8%	7%

energie

electricity	\$/kWh	0.07
connected lo	kW	1500
simultaneously factor		45%
cost/h	\$/h	47
shift hrs	8	378

fixed assets

machinery	7	11000000
buildings	39	16000000
land	500000 ??	1000000
interest		8%
total		28000000

personnel expenses

CEO	
quantity	1
costs	155

administration	
sales	
quantity	10
costs	33
finance / human resources	
quantity	2
costs	59
enginiering	
quantity	2
costs	90

production		
foreman		
quantity	shift 1	2
	shift 2	4
	shift 3	6
costs		78
lower qualified workers		
quantity	shift 1	12
	shift 2	24
	shift 3	36
costs		45

fabrication days	251
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Aircondition		
hall	length	250
	width	50
	height	8
	m³	100000
power	W/m³	30
	kW	3000
consumption	\$/h	210
	hrs/day	12
	fd	251
costs	day	2520
	year	632520

CNC joinery		
simple	40%	40
complex	60%	80
\$/m³	100%	64
ordered	80%	51.2

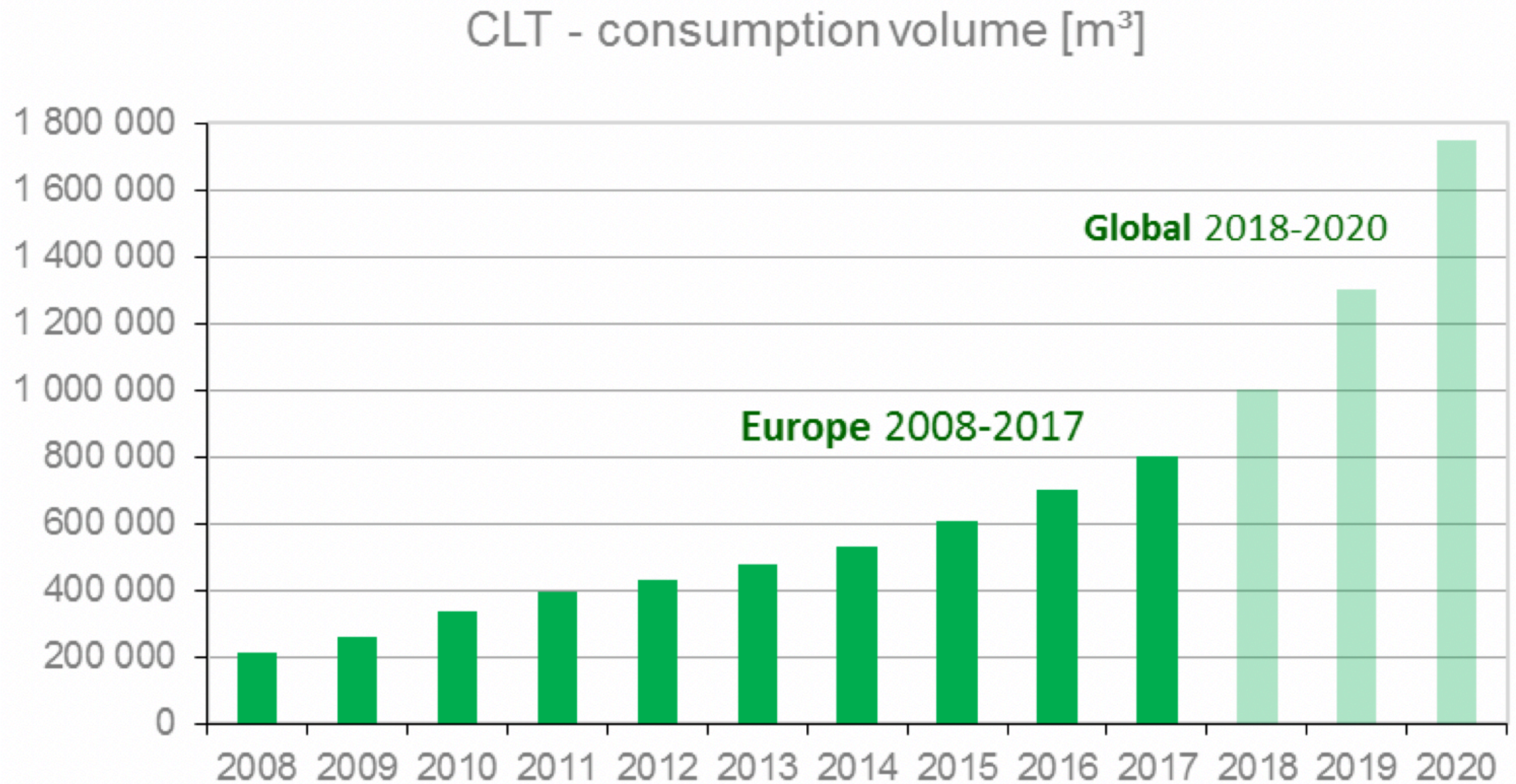
Finance overview

CLT plant - in advance -

profit and loss				factor [\$1000]	shifts	1	shifts	2	shifts	3
nature of expense method				raw wood dry [1000 m ³]		33		66		100
				clt elements [1000 m ³]		25		50		75
1.	revenues: pine residential quality AB [\$ / m ³]		1000			24,750		49,500		75,000
2.	CNC joinery					1,267		2,534		3,840
3.	deposit investor									
4.	other operating income -saw dust and other waste					99		198		300
5.	sales plus changes in inventories					26,116	100%	52,232	100%	79,140
6.	cost of materials and services									
a)	cost of materials -raw wood dry: AB, C, CL [\$ / m ³]		300	300	300	- 9,900	-38%	- 19,800	-38%	- 30,000
b)	cost of materials -glue approx. 6-8%					- 990	-4%	- 1,980	-4%	- 3,000
c)	cost of energy - electrical production and A/C					- 727	-3%	- 822	-2%	- 917
d)	other cost of materials and services	2%				- 522	-2%	- 1,045	-2%	- 1,583
e)	personnel expenses produktion					- 696	-3%	- 1,392	-3%	- 2,088
7.	gross profit					13,280	51%	27,193	52%	41,552
8.	personnel expenses					- 783	-3%	- 783	-1%	- 783
9.	depreciation and amortisation of fixed assets (machinery, buildings)		11,000	16,000		- 1,982	-8%	- 1,982	-4%	- 1,982
10.	other operation expenses	4%				- 1,045	-4%	- 2,089	-4%	- 3,166
a)	selling and distribution costs	4%				- 1,045	-4%	- 2,089	-4%	- 3,166
11.	earnings before interest and tax (EBIT)					8,426	32%	20,250	39%	32,456
12.	investment income / expense									
13.	fixed assets 8% current assets 4%			month	2	- 2,240		- 2,240		- 2,240
14.	other financial income / expense									
15.	earning before tax (EBT)					6,186		18,010		30,216
16.	taxes on income	28%				- 1,732		- 5,043		- 8,460
17.	profit for the period (P/P)					4,454		12,967		21,755
18.	+ depreciation and amortisation of fixed assets					1,982		1,982		1,982
19.	cash-flow p.a. before investment					6,436		14,949		23,737
20.	Return on Capital (ROC)					30%		72%		116%

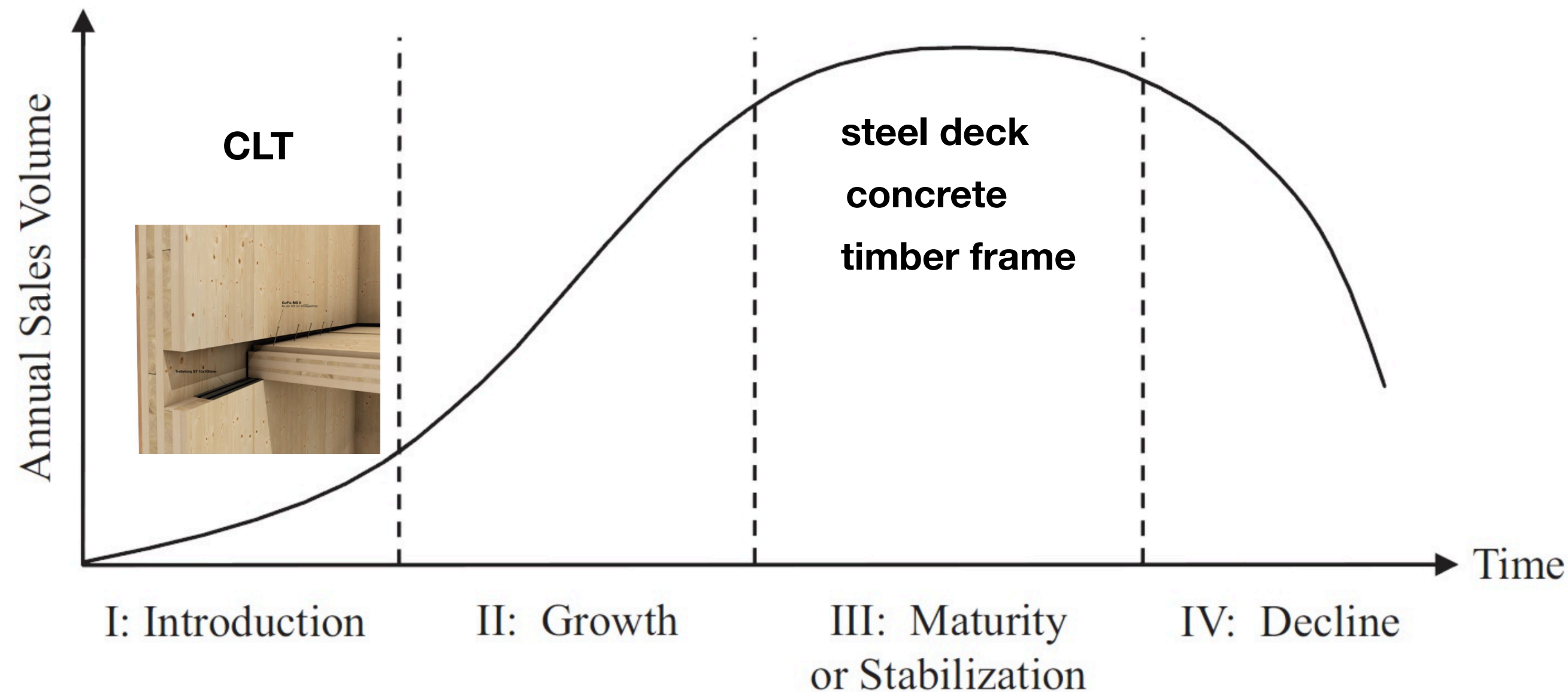


Market growth



Source: Expert Market Research, Holzkurier BSP special, Nov. 2017

CLT in future



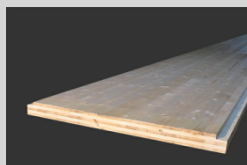
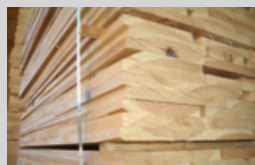
Factory - production line

CLT production line

width 125 cm

length up to 24 m

climate 20°C, 65%



kiln, grade

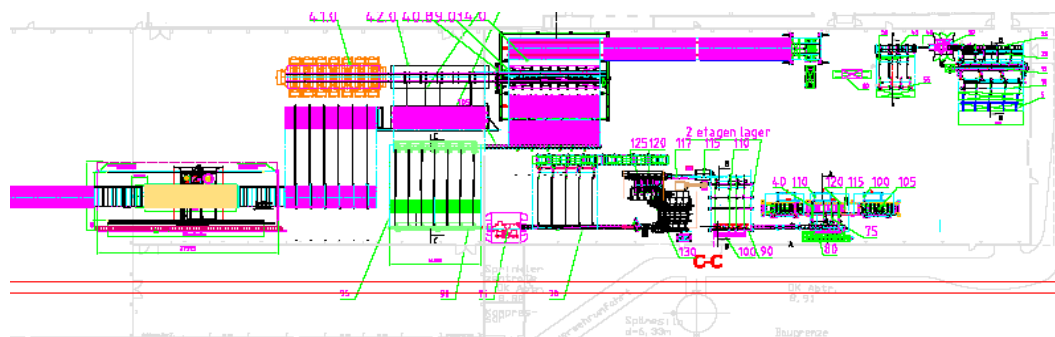
T>55°C, t>48hrs, HF 12%, visual or mechanical: C16, C24

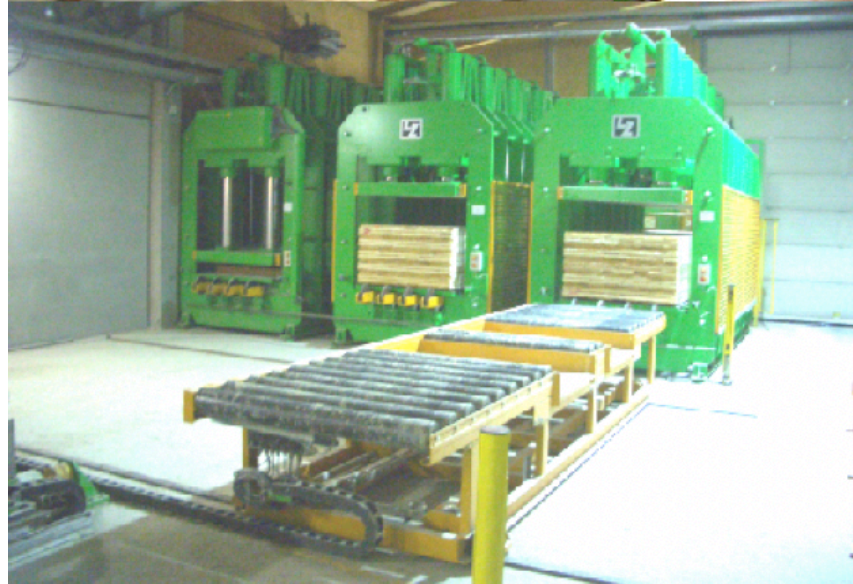
LL-Production

CL-Production

Power Press Line

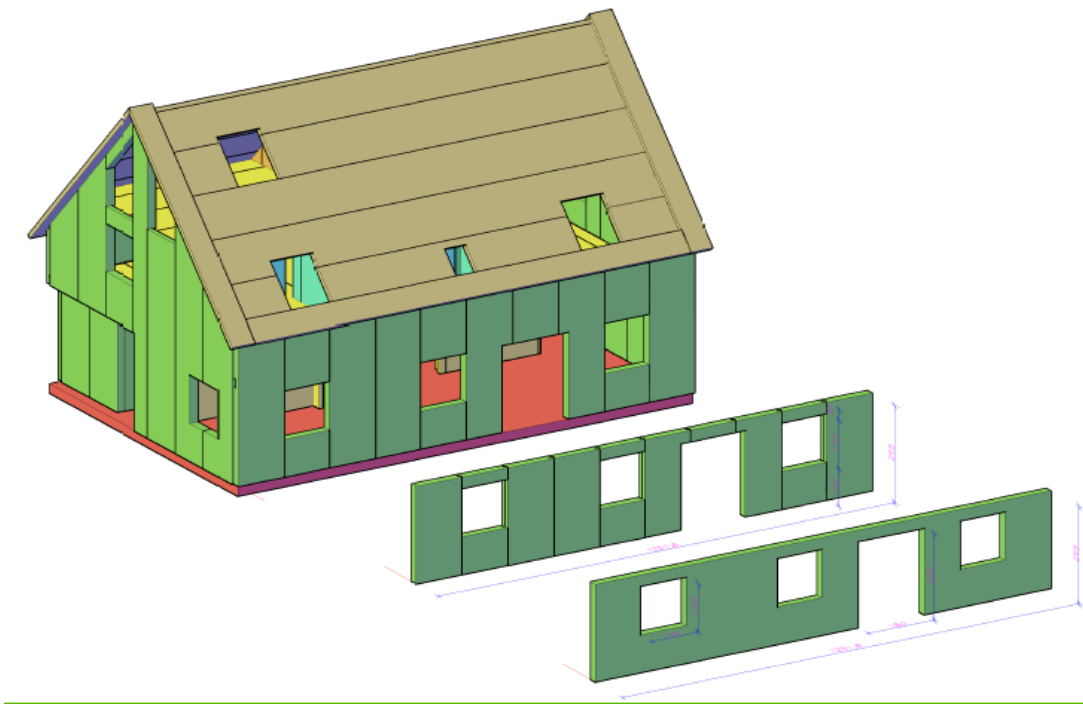
General Finger Joint



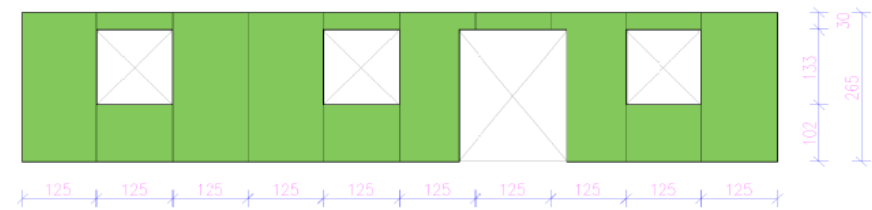


CLT - in detail

or what we do different

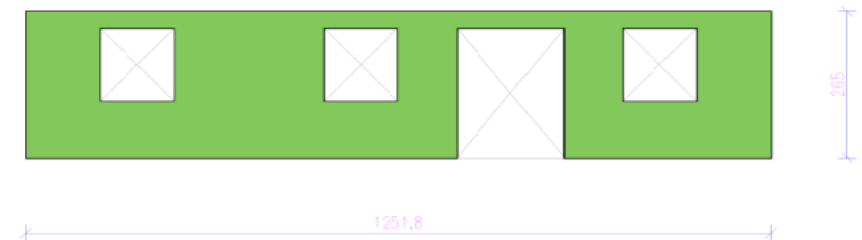


standardized -125



25.2m² = € 1,460

individual - XL



34.7m² = € 2,000 **+ 37%**



industrial C to residential AB possible

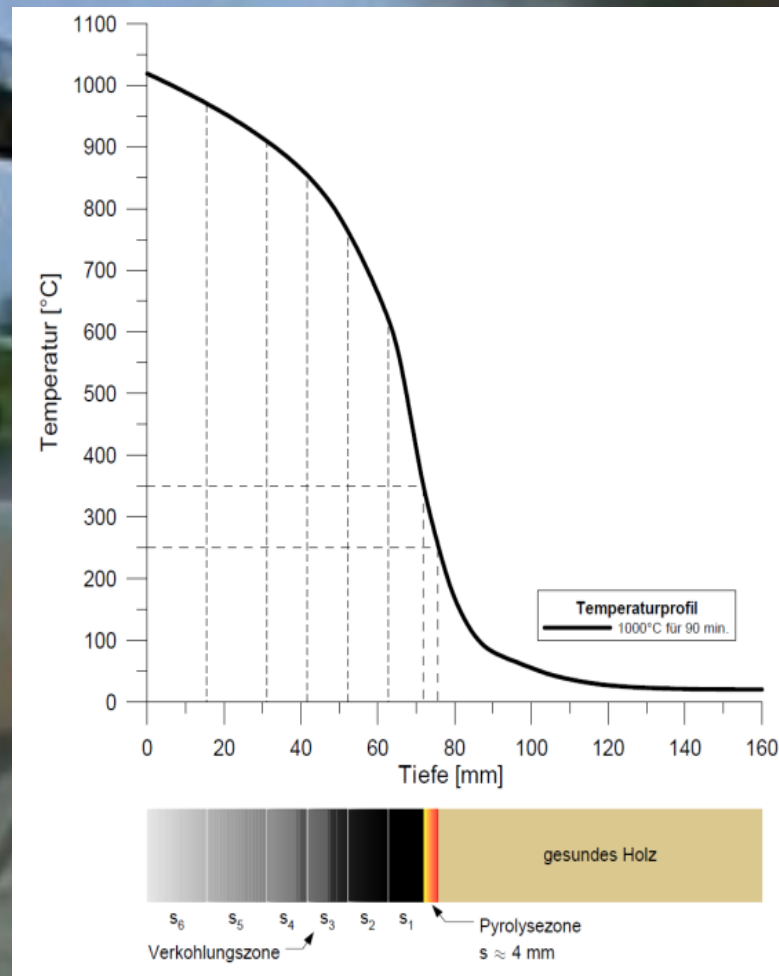
high quality surfaces possible

CLT - technical



Fire test

Fire - capsule effect



Energy - get stored

+ 2,100°F

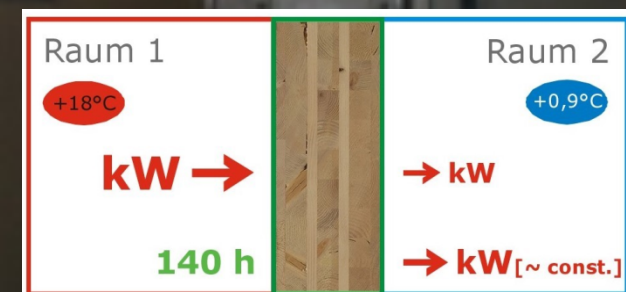
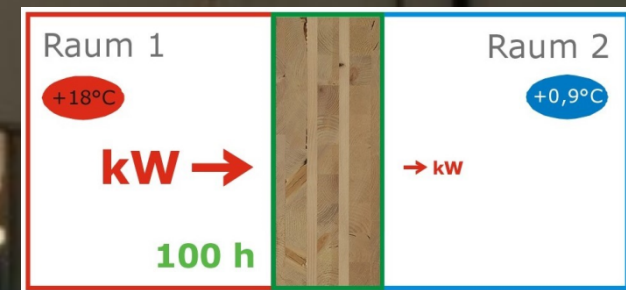
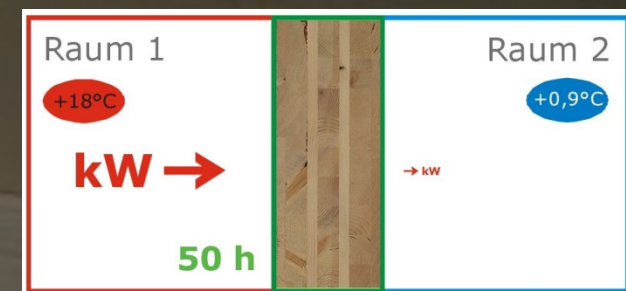
after 60min
50°F more

- safe construction
- fire and gas stay in room
- constant burn rate ≈ 0.27inch/min

You like it in summer cool in winter warm ?

U-Value EN ISO 8990 - regulated hot box

Heat flows from warm to cold
Calculation of U-Value is: If heat flows = constant



Stationary conditions = Laboratory conditions
Effect of heat storage is totally disregarded

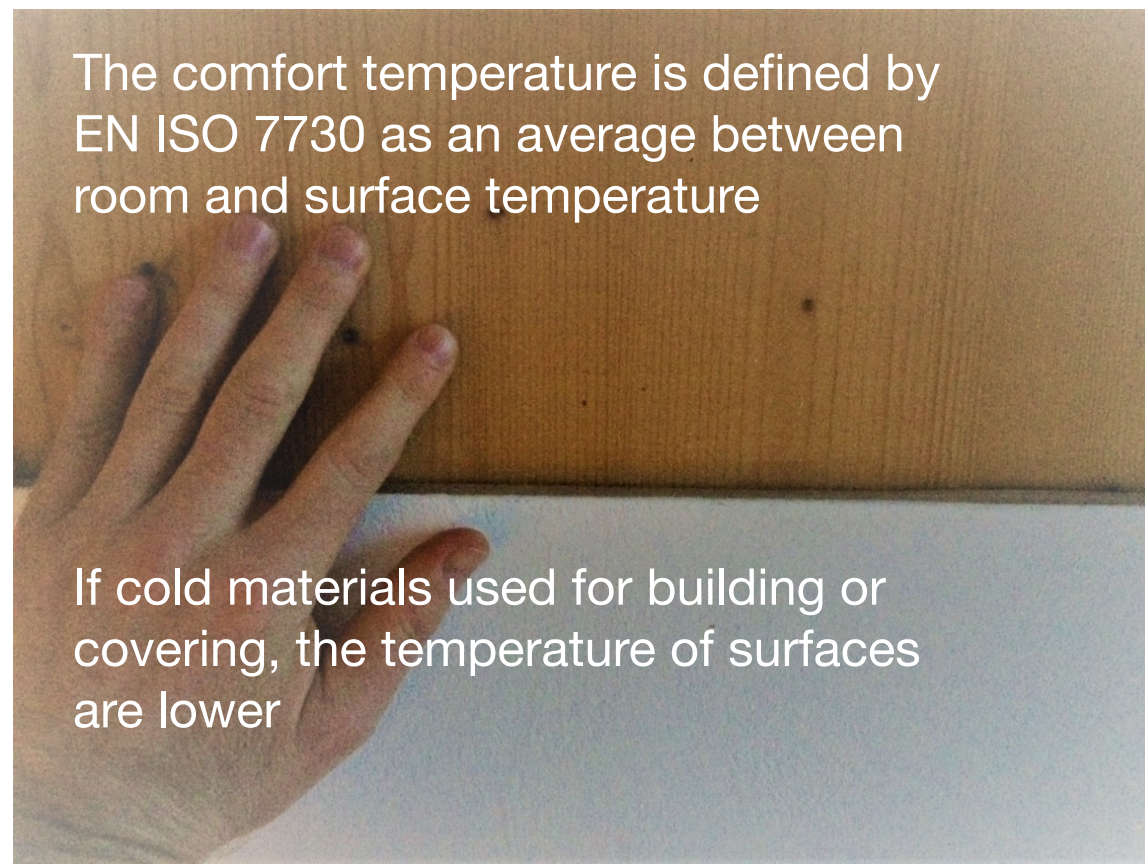


Does wood insulate?



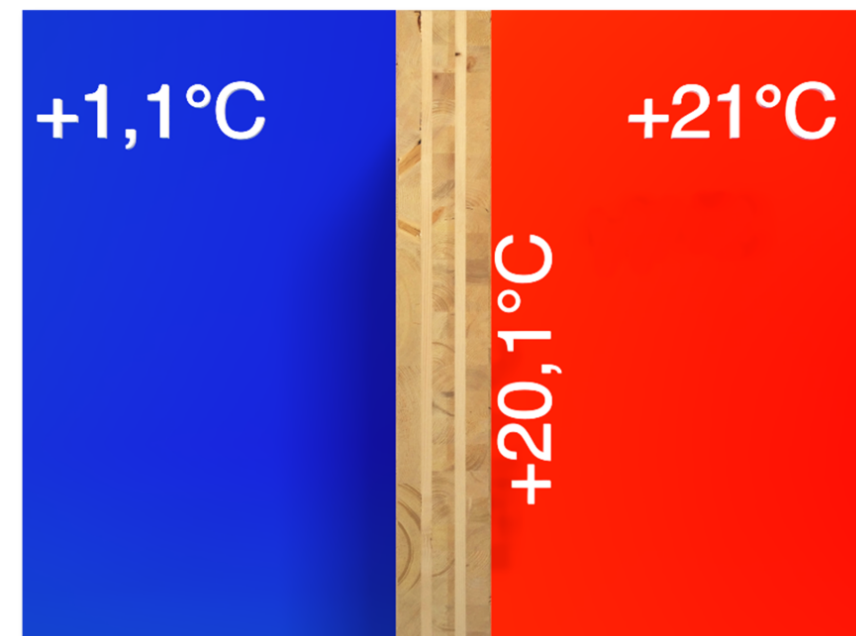
TIMBERVATION

Comfortable living



To reach the same comfort temperature of **20,5°C**, the room temperature has to be increased approx 2-3°C

In comparison to CLT surfaces you have **higher heating costs!**



Test at the Fraunhofer Institut:
 $(21 + 20) / 2 = 20,5^{\circ}\text{C}$

Cracking test

CLT 5-Layers - width 49.21 inch - length 98.4 inch



thickness 3.8 inch

≈ 342,377 lb



thickness 9.7 inch

≈ 1,102,311 lb

Earthquake vs. Hurricane

stiff on one hand **elastic** on other hand and also **impact resistant**

Planned CLT in USA

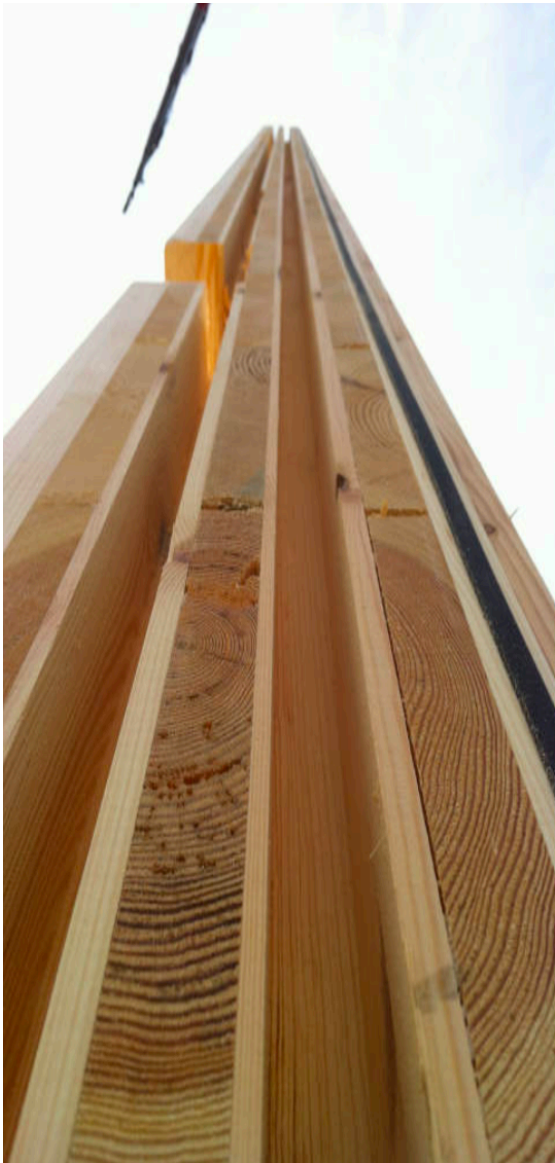
types of wood spruce - **pine** - larch - swiss stone pine

dimensions width 4 feet
length max. 52 up to 80 feet
thickness 2-12 inch

humidity $12 \pm 2 \%$

glue polyurethane
no habitable toxins
open against diffusion

quality residential AB
industrial C
joints glued



Advantages

smaller element sizes

less production costs in comparison to XL wall element

flexibility in design / wiring in element

better dimensional tolerance / high precision

standardized elements

larger customer base

flexible machining for clients

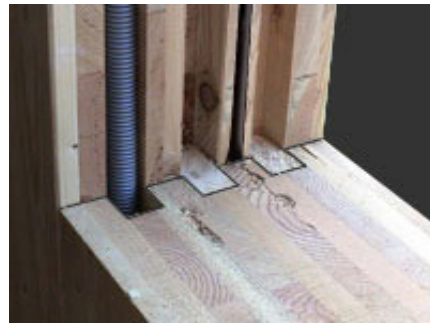
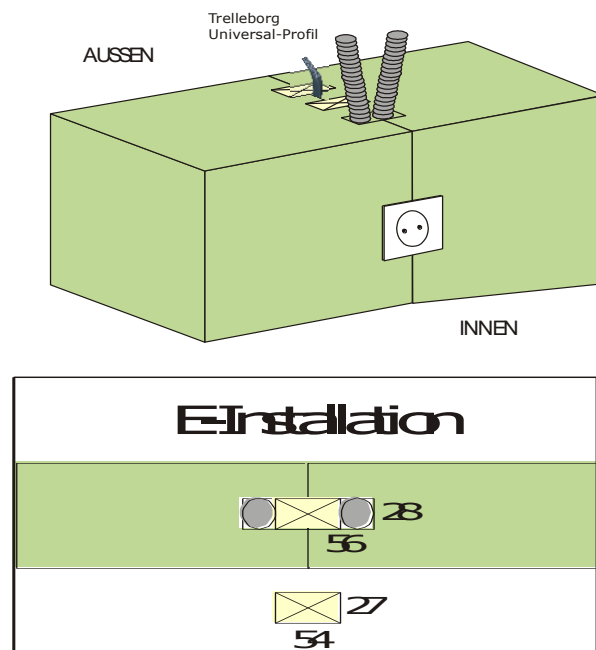
flexible pre fabrication

high quality surfaces

finished surfaces inside and outside possible

different types of wood

Wiring



Examples



Examples



Examples



Examples



Examples



Examples



Examples

