

EcoCocon in a Nutshell

01 EcoCocon Straw Wall System

02 Technical Characteristics

03 Ecological Footprint

04 Certificates

Learn more about the many benefits of EcoCocon's natural construction system.

01

EcoCocon Straw Wall System

Having natural buildings going mainstream requires verified solutions that can be easily applied at the building site, combined with creative freedom for the architects.

Why choose EcoCocon?

- » Contains 98% of natural renewable materials
- » Excellent thermic performance
- » Prefabricated in advance
- » Made to measure to fit any design
- » Quick assembly
- » Tested and certified



Create a healthy and comfortable living space

The use of natural materials in the interior is a natural extension of the EcoCocon system. Use of hemp and wood fibre, wool, different woods and clay plaster in all colours and structures completes the system perfectly.

Characteristics

- » Diffusion-open walls
- » Low VOCs
- » Excellent thermal comfort
- » Eliminating draughts, preventing mould
- » Optimal humidity levels thanks to interior clay plaster



Made to measure for every project

- » Possible to adapt to nearly any building design
- » Load-bearing columns are equally insulating as standard panels
- » Inclined surfaces are possible for gable walls
- » Precision-cut prefabricated wall elements are fast to assemble, saving labour costs

Note

- » Elements can be produced in 1 mm increments



02

Technical Characteristics


Technical approvals and performance declaration

EcoCocon panels have been tested and certified by National Lithuanian Authority. A National Technical Approval valid all across Europe and a declaration of performance have been issued.

Characteristics

All values for wall including 30 mm clay plaster and 60 mm wood fibre board:

- » Load for panels: min. 22 kN/m
- » Density of compressed straw: 110 kg/m3
- » Peel strength: 40kPa
- » Flammability: Class B-s1.d0 and Fire Resistance: REI120 and REI120ef
- » Resistance to passage of sound: 54db
- » Thermal resistance: R=8.1 (m2K)/W or U=0.123 W/m2K
- » Diffusion-open



DECLARATION OF PERFORMANCE

DoP no. LT201111-01 A

Product type identification code: External timber frame panel with straw thermal insulation

Panel number and type: see panel project no. 201111-01 A

Technical specification: National Technical Assessment NTJ-01-061:2020

Intended use: Construction of external walls in residential and non-residential buildings

Declared performance:

The declared performance characteristics are achieved if the straw panel is covered by a 6 cm Steico Protect wood fibre board on the external surface and is plastered with a 3 cm thick layer of clay on the internal surface.

Performance	Declared value	Technical specification
Characteristic vertical load-bearing capacity:		
- Without struts	60.0 kN/m	
- With struts	38.5 kN/m	
Under a vertical load of short-term duration and a horizontal load:		
Without struts		
- 1.8 kN/m²	29.5 kN/m	
- 2.1 kN/m²	25.8 kN/m	
- 2.4 kN/m²	22.2 kN/m	LST EN 1990
With struts		LST EN 1991-1-1
- 1.8 kN/m²	18.8 kN/m	
- 2.1 kN/m²	11.1 kN/m	
- 2.4 kN/m²	3.5 kN/m	LST EN 1995-1-1
Characteristic shear load bearing capacity (kN/m):		
- Without struts	0 kN/m	
- With struts	3.5 kN/m	
Reaction to fire classification	B-s1, d0	LST EN 13501-1
Resistance to fire	REI 120 REIef 120	LST EN 13501-2
Thermal resistance R ₀	8.1 (m²K)/W	LST EN 12667 LST EN 12939
Airborne sound insulation indicator R _w (C ₅₀ , C ₅₀₋₅₀₀₀)	54 (-1;-3;0)	LST EN ISO 10140-1 LST EN ISO 10140-2 LST EN ISO 717-1
Water vapour resistance factor μ	14	LST EN ISO 13788 STR 2.01.02.2016
Water impermeability	Ensured on building site	LST EN 12155 LST EN 12154 LST EN 1027 LST EN 12865
Impact resistance	Ensured	LST EN 13497
Air permeability	Ensured	LST EN 12153 LST EN 12152

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Conformity and quality control

Our panels are very exact and precise. This enables quick and reliable assembly on the building site. The surface is even and homogenous and the quality of the production is regularly controlled by an inspection company.

Note

- » Precision of +/- 1 to 2 mm over 3 m length of wall
- » Evenly compressed straw throughout the panel
- » Very flat straw surface saves labor and material for clay plastering





Prefabrication in controlled environment

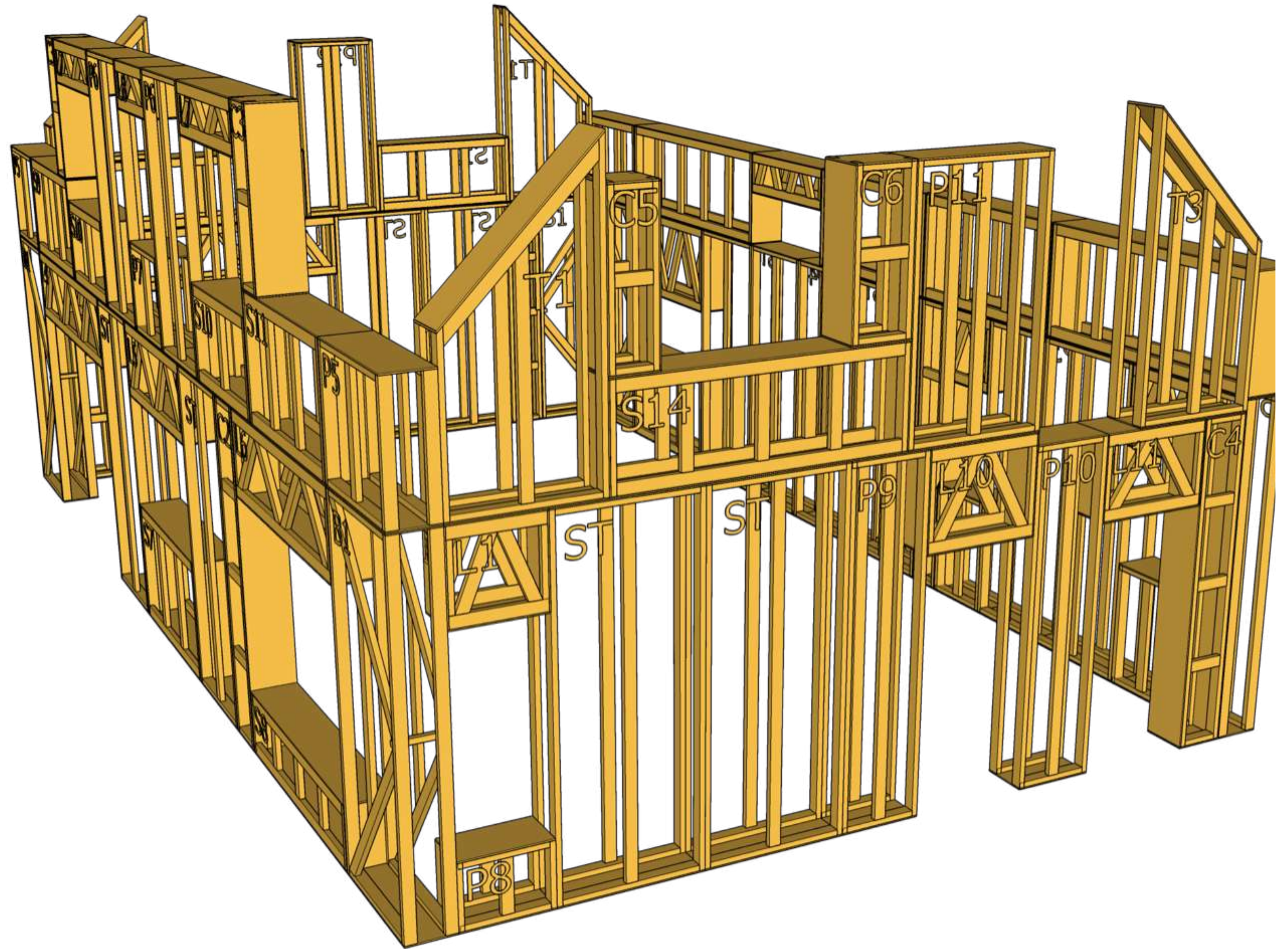
Kybartai, Lithuania

Strong structure for low rise buildings

The double frame of the panels increases the load-bearing capacity and provides a structure to attach the facade easily. The structure is strong enough to support low rise buildings (4-6 stories).

Note

- » Ceiling and roof can be carried by inner, respectively outer frame independently
- » Facade and load-bearing beams can be attached to the outer frame without creating thermal bridges



03

Ecological Footprint

Minimal Ecological Footprint

Characteristics

- » Natural renewable materials with no chemical additives in the production process
- » Straw sourced from local farmers
- » Using as little wood as possible - preserving forests - only FSC-certified timber
- » Positive sequestered carbon balance
- » Cradle to Cradle certification

Note



- » Our goal is a completely sustainable building that has a minimal impact on the environment.



Carbon-storing buildings

EcoCocon panels are made from raw, unprocessed wood and straw - materials that sequester huge amounts of CO2 during growth. Moreover, we use very little energy to produce them. Even long transports by lorry does not change the negative CO2 balance.

Characteristics

- » 97.6 kg of CO2 is sequestered per m² of panel
- » -88.7 kg/m² is the CO2 balance after production
- » >10 t of CO2 sequestered for a standard family house (just walls)
- » Up to 240 kg/CO2 saved per m² of wall through increased thermal insulation over 50 years (compared to a standard building)

EPD: CO2 stored in panel

Table 10. Parameters describing environmental impacts (Product stage and construction stage).

Para-meter	Units in equiv.	A1	A2	A3	A1 -A3	A4	A5	A4 - A5
ADPE	kg Sb	3.78E-03	0	5.20E-03	8.99E-03	0	0	0
ADPF	MJ	99.2	3.25	37.6	140	3.82	1.31	5.1
AP	kg SO ₂	0.351	5.95E-04	8.94E-03	0.361	6.99E-04	1.86E-03	2.56E-03
ODP	kg CFC ₁₁	4.13E-05	0	2.53E-07	4.15E-05	0	0	0
GWP*	kg CO ₂	-91.2	0.216	2.26	-88.7	2.53E-01	0.620	0.874
EP	kg(PO ₄) ³⁻	0.0964	1.56E-04	1.95E-03	0.099	1.83E-04	4.86E-04	6.69E-04
POCP	kg C2H4	0.0293	3.33E-05	3.83E-04	0.0297	3.91E-05	1.85E-04	2.25E-04

Notes: ADPE = Depletion of abiotic resources-elements, ADPF = Depletion of abiotic resources-fossil fuels, AP = Acidification for soil and water, ODP = Ozone Depletion, GWP = Global Warming, EP = Eutrophication, POCP = Photochemical ozone creation.
* Wood materials storing CO₂ during the growth: wood 1.59 kg/kg, Plywood 1.69 kg/kg, straw 1.34 kg/kg and wood fibreboard 1.4 kg/kg. In total stored CO₂ is-97.6 kg

CO2 emissions during transport

	500 km	1000 km	2000 km
CO2 emissions per m²	6 kg	12 kg	24 kg

*The Road Transport calculates with 30 l diesel/100km/truck (2,8 kg CO2/L diesel) and 140 m2 panels/truck

04

Certificates

Energy efficiency and comfort

EcoCocon building system combines the beauty of natural materials with the efficiency of the Passivhaus standard. Sustainable and healthy living should be affordable for everyone. EcoCocon creates a comfortable microclimate during both winter and summer. Details, cost effective solutions, and building physics knowledge is part of the package we provide.

Characteristics:

- » U-value as low as 0.11 W/m²K (using 100 mm wood fibre board)
- » Warm wall surfaces, no drafts
- » Airtight, yet vapour-permeable walls
- » Details with no thermal bridges
- » Passivhaus certified



Passivhaus certificate

Characteristics

- » Certified in April 2016
- » Provides U-values for PH certification
- » Provides pre-calculated thermal bridges
- » Confirms the airtight layer concept

Note

- » An EcoCocon building is not automatically a Passivhaus. It has to be verified with a PHPP calculation.

Documents for download

- » PH Certification Report
- » PH Details including Psi values (Thermal bridge calculations)



Cradle to Cradle Certification

- » Cradle to Cradle is a globally recognized measure for safer, more sustainable products made for the circular economy
- » C2C mimics the regenerative cycle of nature in which waste becomes a resource and is reused
- » It is based on a two distinct material cycles - biological and technical cycle

Documents for download:

- » C2C certification report

