CERTIFICATE

Certified Passive House Component

ID: 1722cs05 valid until 31. December 2025

Passive House Institute
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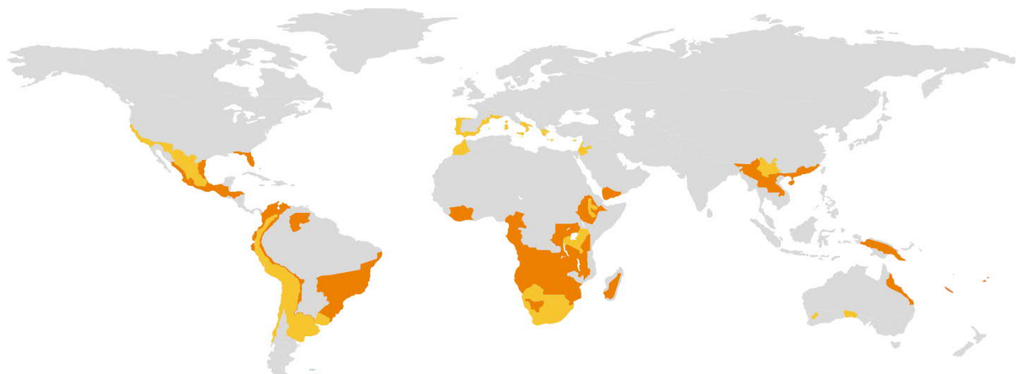

Category	**Construction system | Lightweight timber construction**
Manufacturer	**LAB Design** **Woolgoolga (NSW)** **Australia**
Product name	**LAB Design Construction System (Pilot certification for warm climate zone)**

This certificate for the warm climate zone was awarded based on the following criteria

Hygiene criterion

The minimum temperature factor of the interior surfaces is	$f_{Rsi=0,25m^2K/W} \geq$	**0.55**

Comfort criterion

The U-value of the installed windows is	$U_{W,i} \leq$	**1.25** W/(m²K)

Efficiency criteria

Heat transfer coefficient of building envelope	$U*f_{PHI} \leq$	**0.50** W/(m²K)
Temperature factor of opaque junctions	$f_{Rsi=0,25m^2K/W} \geq$	**0.74**
Thermal bridge-free design for key connection details	$\Psi \leq$	**0.01** W/(mK)

An airtightness concept for all components and connection details was provided

warm climate

CERTIFIED COMPONENT

Passive House Institute

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Opaque building envelope

With the LAB Design Construction System the winter time thermal insulation of buildings can be ensured. The system is constructed out of timber studs, battens and bulk insulation.

The construction system is built on an insulated [Mineral wool 0.035 W/(mK)] suspended timber floor [Pine wood 500 Kg/m³ 0.13 W/(mK)] over a well ventilated crawl space. The wall structure is made out of timber studs and battens with bulk insulation [Mineral wool 0.035 W/(mK)] which allows for any cladding system as a rain screen. Roof construction is comprised by timber truss and bulk insulation [Mineral wool 0.035 W/(mK)] at the truss top chord level. A breathable membrane is installed on top of the timber truss prior ventilated layer and metal sheet roof.

The certification does not take into account point thermal bridges caused by structural columns or e.g. balcony connections, which must to be assessed separately. As investigated, the system is deemed suitable for passive houses in the warm climate zone, as the regular U-values of the exterior components are below 0,50 W/m²K and the connections meet the criteria of 'thermal bridge free'. The surface temperature of all connections (with the exception of window connections) meet the hygiene requirements.

Windows

The certifacation was achieved with Logikwin 68 series for window and entrance door, both using Multitech Spacer. Although the threshold cut used for certification purposes does not reach the minimum surface temperature limit value, at the point where the construction system meets the threshold the hygiene criteria has been verified.

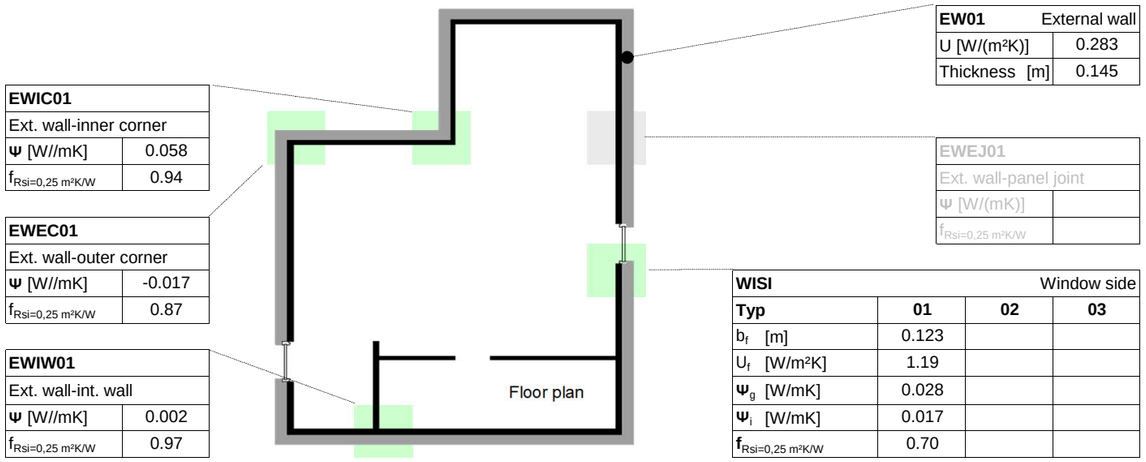
Airtightness concept

The system uses an external airtightness strategy which is suitable for many warm climate locations. Moisture analysis using WUFI should be considered for locations not yet tested. Airtightness of the system is achieved in the following way: windows and doors are installed with permanently elastic sealing materials and suitable airtight connection membranes and profiles. Airtightness in the opaque connections and build-ups is achieved through several suitable products from Proclima. The airtightness layer of the walls is the external airtight breathable membrane. The membrane is wrapped over the truss to form a continuous airtight envelope. Airtightness of the floor slab is achieved by the particle board flooring taped at all joins and connections with suitable tape. The connection between the windows and the airtight layer is made by multi function sealing strips.

Explanatory notes

The Passive House Institute has defined international component criteria for seven climate zones based on hygiene, comfort and affordability criteria. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. Their use might make economic sense in certain circumstances.

Thermal bridge not calculated
Criteria achieved
Efficieny criteria not achieved
Hygiene or comfort criterion not achieved



EWIC01	
Ext. wall-inner corner	
Ψ [W//mK]	0.058
$f_{Rsi=0,25\ m^2K/W}$	0.94

EWEC01	
Ext. wall-outer corner	
Ψ [W//mK]	-0.017
$f_{Rsi=0,25\ m^2K/W}$	0.87

EWIW01	
Ext. wall-int. wall	
Ψ [W//mK]	0.002
$f_{Rsi=0,25\ m^2K/W}$	0.97

EW01 External wall	
U [W/(m²K)]	0.283
Thickness [m]	0.145

EWEJ01	
Ext. wall-panel joint	
Ψ [W/(mK)]	
$f_{Rsi=0,25\ m^2K/W}$	

WISI Window side			
Typ	**01**	**02**	**03**
b_f [m]	0.123		
U_f [W/m²K]	1.19		
Ψ_g [W/mK]	0.028		
Ψ_i [W/mK]	0.017		
$f_{Rsi=0,25\ m^2K/W}$	0.70		

ROVE01	
Verge	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

ROIW01	
Roof-internal wall	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

RWSI01	
Roof window top	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

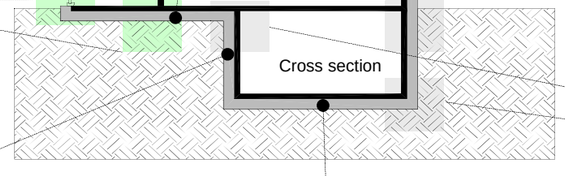
WITO Window top			
Typ	**01**	**02**	**03**
b_f [m]	0.123		
U_f [W/m²K]	1.19		
Ψ_g [W/mK]	0.028		
Ψ_i [W/mK]	0.01705		
$f_{Rsi=0,25\ m^2K/W}$	0.70		
WIBO Window bottom			
b_f [m]	0.123		
U_f [W/m²K]	1.20		
Ψ_g [W/mK]	0.028		
Ψ_i [W/mK]	0.02166		
$f_{Rsi=0,25\ m^2K/W}$	0.70		
$U_{W,i}$ [W//m²K]	**1.25**		

EWCE01	
Ext. wall-ceiling	
Ψ [W//mK]	0.034
$f_{Rsi=0,25\ m^2K/W}$	0.86

RO01 Roof	
U [W/(m²K)]	0.26
Thickness [m]	0.14

WITH01	
Window threshold	
b_f [m]	0.124
U_f [W/m²K]	1.69
Ψ_e [W/mK]	0.029
Ψ_i [W/mK]	0.011
$f_{Rsi=0,25\ m^2K/W}$	0.62
$U_{W,i}$ [W//m²K]	**1.19**

FS01 Fl. slab	
U [W/(m²K)]	0.24
Thickness [m]	0.34



BWBC01 Bsmnt w.-bsmnt c.	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

FSIW01	
Fl. slab-int. w.	
Ψ [W//mK]	-0.001
$f_{Rsi=0,25\ m^2K/W}$	0.94

BWFS01 Bsmnt w.-fl. slab	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

FSBW01 Fl. slab-bsmnt w.	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

BW01 Basement wall	
U [W/(m²K)]	
Thickness [m]	

FS02 Fl. slab	U [W/(m²K)]		Thickness [m]	

ROEA01 Eaves	
Ψ [W//mK]	-0.009
$f_{Rsi=0,25\ m^2K/W}$	0.86

RWBO01 Roof window bttm	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

RWTO01 Roof window side	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

RORI01 Ridge	
Ψ [W//mK]	-0.018
$f_{Rsi=0,25\ m^2K/W}$	0.89

FRAW01	
Flat roof-asc. wall	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

TC01 Cold roof	
U [W/(m²K)]	
Thickness [m]	

ROJU01 Junction	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

FR01 Flat roof	
U [W/(m²K)]	
Thickness [m]	#VALUE!

EO01 Overhang	
U [W/(m²K)]	
Thickness [m]	

TCEA01 Cold roof-eaves	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

BC01 Basement ceiling	
U [W/(m²K)]	
Thickness [m]	

EWEO01 Ext. wall-overhang	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

EWEO02 Ext. wall-overhang	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

BCEW01 Bsmnt clg-ext. wall	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

FRRP01 Roof parapet	
Ψ [W//mK]	0.000
$f_{Rsi=0,25\ m^2K/W}$	

FSEW01 Fl. slab-ext. wall	
Ψ [W//mK]	-0.071
$f_{Rsi=0,25\ m^2K/W}$	0.79

FSBW02 Fl. slab-bsmnt w.	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	

BCIW01 Bsmnt clg-int. wall	
Ψ [W//mK]	
$f_{Rsi=0,25\ m^2K/W}$	