



*Results in Brief, portraits of project innovations*



Challenge the ordinary

## G-Brick-Eco

### biobased structural insulation

*G-Brick-Eco* is a structural insulation panel made of plywood and an eco-insulation material that can be used for load-bearing walls, partitions and roofs in wood construction. Allowing for very short construction times, the panels are very cost, energy and resource efficient.



#### APPLICATION



Modern wooden houses convince with high living comfort, extremely short construction times through off-site prefabrication, and **low environmental impact** of the nature-based building materials. However, many established construction systems still rely on less environmentally sound insulation materials such as artificial foams and fibres, because of their technical properties and affordability.

The alternative wall element *G-Brick-Eco* is a **structural insulation panel (SIP)** developed by Garnica, a Spanish plywood producer and supplier for wood construction materials. The main asset of *G-Brick-Eco* in comparison to conventional SIPs is that the artificial foam insulation material has been replaced by **nature-based wood-fibre insulation** while maintaining the same required technical properties. The wood species used in the structural parts of *G-Brick-Eco* is **locally sourced pine (*Pinus radiata*)** that combines minimised impact of transport and **good physical-mechanical performance**.

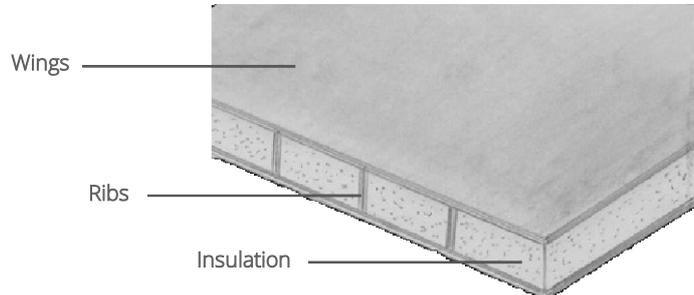
*G-Brick-Eco* constitutes a decisive step towards more affordable nature-based constructions that are characterized by **high living comfort and low-impact on the environment** due to regional value chains and carbon sequestration within the building material.





## ACHIEVEMENT

The innovation is based on the **improvement of the panel's core materials** and on the **enhancement of its design** so that it can be used in **high structural applications**. The core insulation material of *G-Brick-ECO* is an **ecological wood-based product**, replacing the commonly used extruded polystyrene. In addition, **wooden ribs** in the core were included, to make it structurally more resistant and enlarge product's working range.



Successfully tested insulation materials are **cellulosic foam formed panels** developed by BASAJAUN partner VTT and conventional wood fibre insulation panels Pavaflex® from BASAJAUN partner Soprema. For non-load-bearing applications such as partitions, smaller SIPs without ribs are a suitable alternative. These can also be applied to light load-bearing structures such as **tiny houses** where they can be handled by the workers without a crane. In their final application, the SIPs are integrated into **ready to assemble wall elements (2D)** or **entire housing modules (3D)** whose maximum size is eventually determined by the truck capacities for transport.

Being load bearing and insulating at the same time and offering a decorative interior finish, *G-Brick-Eco* allow for **skipping time-consuming working steps** on the construction site. If needed, additional insulation can still be added to the building envelope.

## ✓ 2 Prototypes

- 1- With ribs and low-density bio-insulation material by VTT
- 2- Without ribs and high-density bio-insulation material from Soprema
- Development of simulation tool for SIP physical-mechanical features
- Connection between ribs and wings validated
- Indicative fire protection class of plywood is D/ s2/ do

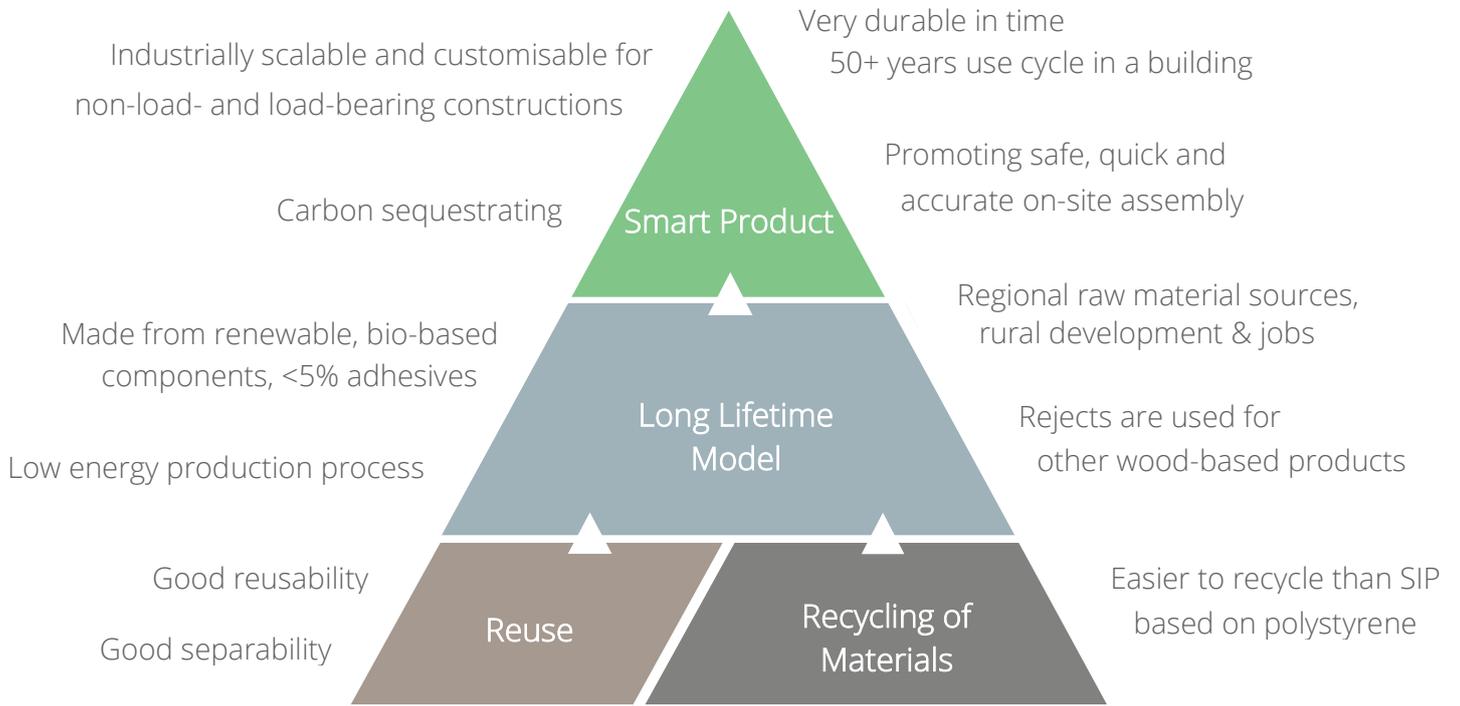
## PRODUCT BENEFITS

- G-Brick-Eco panels are load bearing and thermally insulated building wall elements allowing for very short construction times both in renovation and new built.
- Suitable for diffusion-closed construction systems
- Easy handling on site
- Suitable fire resistance for buildings can be achieved
- When compared to competing products such as Cross Laminated Timber (CLT), *G-Brick-Eco* is much more energy and resource efficient and consequently more affordable





## CIRCULARITY



## FURTHER R&D

The first *G-Brick-Eco* are currently being tested in a set of prototype buildings including the BASAJAUN demo building. Potential improvements can be made by increasing the efficiency of the production process especially regarding the 2-steps of gluing ribs and insulation into the panel. Moreover, it must be monitored during application whether temporary humidity condensation and risk of mould development requires further improvements.



## NEXT STEPS

- Process optimization
- Ribs adhesion process
- Automation of the production process





## CONTACT

### Garnica

Garnica S.A.U. | Logroño, Spain

Juan Albinana | Chief Innovation Officer  
Juan.Albinana@garnica.one



[garnica.one](https://garnica.one)



[garnica-plywood](https://www.linkedin.com/company/garnica-plywood)



[#GarnicaPlywood](https://twitter.com/GarnicaPlywood)

### TECNALIA Research & Innovation

Building Technologies Division | Bilbao, Spain

Javier García Jaca, PhD. | EU project coordinator  
T +34 943 105 300 (International calls)  
[javier.garciajaca@tecnalia.com](mailto:javier.garciajaca@tecnalia.com) | [tecnalia.com](https://tecnalia.com)



[basajaun-horizon.eu](https://basajaun-horizon.eu)



[company/basajaun](https://www.linkedin.com/company/basajaun)



[#basajaunhorizon](https://twitter.com/basajaunhorizon)

The BASAJAUN project has received a 10M€ grant funding from the *EU Horizon 2020 R&I programme*. It includes 29 partners from 12 countries including 8 leading research and technology organizations, 3 universities, 14 companies and 4 other public and sectoral organizations. The team unites strong expertise in wood construction systems and buildings, innovative materials, architecture, forestry, digitalisation, environmental assessment and rural development. It covers regions in Northern, Central and Southern Europe.

