Eco-materials for low-carbon construction

• Wall panels for new build and retrofitting

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Wall panels for new build and retrofitting

There are two situations for using panels to isolate in construction:
• New construction.
• Retrofitting of a present building.
Wall panels for new build and retrofitting

What do we look for when using a panel?

• Thermal properties.
• Structural strength.
• Hygrothermal properties.
• Limited weight to facilitate to handle it.
• Limited cost (at least comparable to traditional solutions).
Thermal properties

Important to consider and measure the thermal bridges, pay attention to the structural parts:
Thermal properties

It is a good idea to include an isolation core to control the isolation. The junctions have to break the thermal bridge.
Structural strength

The structure has to be made of a material with a thermal resistance comparable with the material in the core.
Hygrothermal properties

There are critical places inside the panels that are the most likely places in which the moisture can condense and thus, can create mould. A threshold can be considered at 80%.
Limitations in costs.

- It has to be considered all the benefits from the panel for including in the cost the full functionality of the panel.
- It has to be considered the maintenance.
- It has to be considered the disposal of the building when its lifetime concludes.

Considering all this, bio-based materials are not only environmentally responsible but also economically competitive.
Having all this in mind, we designed three different panels:

- New construction.
- Internal retrofitting
- External retrofitting.

That will be tested during the next months in Seville and in Bath.
Panels in ISOBIO project

**New construction.** A whole system for construction of new buildings. All the functionality has to be provided by this system.
Internal retrofitting. A system for retrofitting a building in its inner surfaces. The thickness will determine its commercial viability.
**Panels in ISOBIO project**

**External retrofitting.** A system for retrofitting a building in its external surfaces of the façade.

![Diagram of the external retrofitting system](image)

- Existing wall
- Massive wood stud 145*45mm
- Biofib Trio 145mm
- Rigid insulation panel 50mm
- BCB render 30mm
Bio-based materials for panels

There are several opportunities using bio-based materials for assembling panels.

- They are carbon negative.
- The technology for the assembly is not very complex.
- The materials usually are local.
- It can use waste from other industries and to valorize it.
Thanks a lot for the attention!!

Should you have any question, I will be happy to answer them, now, or by mail:

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