

RIKO Hiše

Product: Sustainable prefab wooden external cladding components

The wooden prefabricated buildings by RIKO HIŠE combine quality living, economy, and environmental friendliness, following sustainable construction guidelines.



An example of RIKO Hiše wood based structure

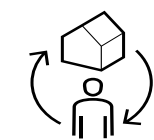
Pilot Measurement & Verification Line 9

Managed by: ZAG

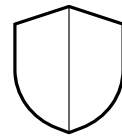


PM&VL9

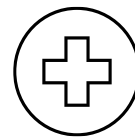
The PM&VL9 is built on a deep understanding of the performance of wood-based envelope elements and structures. It focuses on specific issues, properties, and performances of wooden structures, addressing essential requirements—from fire reaction to sustainability, including environmental footprint considerations.



INTERACTION



SAFETY



HEALTH

Which is the need covered by this service?

The sustainable prefab wooden external cladding components by RIKO Hiše underwent testing, including exposure to accelerated aging. Visual inspections assessed potential deterioration, particularly moisture-related damage around fasteners. Additionally, tests compared the hail resistance and impact resistance of aged versus unaged elements to evaluate durability under different conditions. Most of the methods used are based on existing standards and procedures described in EOTA TRs and EADs but can be adjusted to specific needs and in most cases adapted and further developed to fit to the purpose of the testing for the specific tested product. These comprehensive analyses ensure the high performance and resilience of the cladding components over time.

Design of Experiments

1. Hygrothermal behaviour acc. EAD 040083-00-0404 Paragraph 2.2.6.
2. Impact resistance acc. EAD 040083-00-0404 Paragraph 2.2.8 on aged and on as delivered samples.
3. Hail resistance acc. FM Approvals 4473 on aged and on as delivered samples.



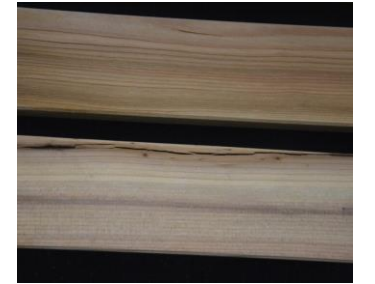
Tested specimens: Tongue and Groove Boards (left) and Wooden Slats with Dilatation (right) by RIKO Hiše

Results

1. Visual inspection after artificial ageing: The wood showed minor colour changes, slight chipping, and raised knots on less than 0.01% of the surface. Traces of water retention were noted at cladding joints, with more moisture observed in the configuration without gaps. No serious wood deterioration was found.
2. Impact resistance: The damage caused by steel ball impacts depends mainly on impact energy, but also on wood quality, and density. Artificial aging has little effect. Edges are most vulnerable, possibly disadvantaging wooden slats with dilatation compared to tongue and groove boards.
3. Hail resistance: The damage caused by ice ball impacts of varying sizes and masses depends more on the wood's quality and density at the impact point than on the ice ball's size or mass. Artificial aging appears to have little effect on the degree of damage. The edges of the wooden claddings are the most vulnerable areas, potentially putting wooden slats with dilatation at a disadvantage compared to tongue and groove boards in terms of hail resistance.



Minor discolorations and chipping after artificial ageing.



Minor dent and discoloration at the point of impact of the steel ball.



Minor dent and edge chipping at the point of impact of the ice ball.

Open Innovation outcomes

The research activity was conducted exclusively between ZAG and RIKO Hiše. The results will be shared in the RIKO Hiše catalogue and on their website, primarily for marketing purposes, rather than with a focus on an Open Innovation approach.

Conclusions

All tests, simulations, and calculations confirmed the tested product's suitability for its intended use. The only unexpected finding was that, during impact and hail resistance testing, the extent of damage was influenced more by the wood's density at the point of impact than by the impact energy.



The sole responsibility for the content of this poster lies only with the authors. It does not necessarily reflect the opinion of the European Union. The European Commission is not responsible for any use that may be made of the information contained therein. The MEZeroE Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953157.

Research partner:



Main author: Barbara Treppo Mekiš, M. Sc., Civ. Eng.

Contact: barbara.mekis@zag.si

Industrial partner:



Want to know more?

- Follow us on LinkedIn 

- Write us to contact@mezeroe.eu

- Visit our marketplace www.mezeroe-platform.eu

