

Reusing Insulation Materials in small scale renovation projects: Lessons from the ISOL'ution Blueprint Project

Authors: Mumtaaz Viaene, Architect & Renovation Advisor, La Rue asbl ; Dr. Bilal Outirba, Researcher, Université Libre de Bruxelles ; Pr. Patrick Hendrick, Professor, Université Libre de Bruxelles ; Nicolas Smets, CEO of BatiTerre



*Testing device
to verify thermal
conductivity. Picture
provided by La Rue
ASBL*

Reusing Insulation Materials in small scale renovation projects: Lessons from the ISOL'ution Blueprint Project

In Brussels, and more widely in Europe, a large number of inhabitants experience energy precarity. More than one third of the Brussels housing stock is not or barely insulated, resulting in high heating costs and unhealthy living conditions. Existing renovation policies tend to benefit households with greater financial capacity, leaving a significant share of the population without access to renovation.

At the same time, the renovation wave generates substantial material flows. Insulation materials are central to improving the energy performance of buildings, yet many are discarded in renovation and demolition projects, sometimes after only a few years, despite being designed for much longer lifespans. This, however, creates an opportunity to recover increasing amounts of insulation material from buildings that are being dismantled. The ISOL'ution project was initiated to address this gap by investigating whether insulation materials can be safely and effectively reused in small-scale renovation projects.

In this project, various partners collaborate across the different steps of bringing insulation materials into structured practice. La Rue provides technical and social assistance to participating households and

analyses how reused insulation can be integrated into renovation projects.

La Rue also collaborates with BatiTerre to source insulation materials and organise logistics. The Université Libre de Bruxelles carries out experimental testing to verify the thermal conductivity of materials, and Casablanca, a social contractor active in reintegration programmes, carry out the renovation works.

The feasibility of the entire value chain from deconstruction to effective re-implementation was demonstrated in the first phase through ten pilot projects. Logistical, economical technical aspects were addressed. A testing device based on EN 12667 was developed to verify thermal conductivity index, addressing the lack of traceability and performance data that often prevents reuse.

In the second phase, two additional typologies were investigated , focusing on external applications. These cases explored reuse under more demanding exposure conditions, including moisture behaviour and multilayer assemblies combining interior and exterior insulation.

The environmental impact of insulation reuse was further assessed. Life Cycle Analysis calculations indicate that reusing insulation materials can reduce

INSULATION MATERIALS

		synthetic		mineral		natural
						
		polyurethane	eps/pse	rockwool	glasswool	wood fiber
roof	interior					
		flat roof	chantier 1	chantier 1	chantier 6	chantier 2
						
		pitched roof	chantier 10			chantier 4
	combined					
		pitched roof	chantier 12	chantier 10	chantier 8	chantier 2
facade	exterior					
		flat roof	chantier 5	chantier 1	chantier 3	
	interior					
		facade	chantier 1			
floor	exterior					
		facade				chantier 9
	on top					
		on ground	chantier 7	chantier 6		
	underneath					
		under structure	chantier 11	chantier 7		

Table displaying different types of insulation materials and possible (re) use cases. Table provided by La Rue ASBL

ISOL'UTION

the environmental impact of the insulation layer by approximately 60 to 80 percent (depending on the calculation method), primarily by avoiding production-related impacts. These findings support reused insulation as a credible material within renovation policies.

The project also examined the potential for a process-based certification of the thermal performance verification device. As current validation efforts rather focus on certifying specific materials, ISOL'ution explored how a recognised testing protocol could facilitate regulatory acceptance of reused insulation. This marks a transition from experimentation to structural embedding.

In addition to technical innovation, ISOL'ution emphasised training and skills development. Construction workers involved in the pilots were introduced to circular economy principles and trained to work with reused insulation, building local capacity for circular renovation practices.

Nevertheless, certain operational and logistical challenges remain. The supply of reclaimed insulation is currently rather unpredictable in terms of type, size and quantity, requiring flexible design approaches and increased attention to airtightness and fixation methods. Storage and transport are critical cost

factors, particularly in dense urban contexts. These challenges were mitigated through early sourcing, strict visual sorting and close coordination between partners.

In order to valorise reused insulation, there is a strong need for greater administrative recognition. Strengthening local reuse hubs, further documenting long-term material performance and a focus on the circular economy in the training of construction workers are essential next steps to scale insulation reuse and unlock the full value of secondary materials within the renovation transition.