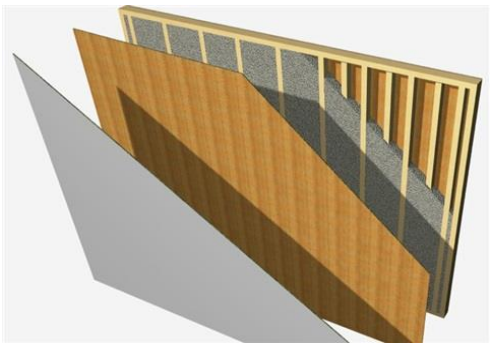
# LANARQ - INSULATION FOR HOUSES MADE OF SHEEP WOOL IN CHILE


The Lanarq enterprise, based in Coyhaique, in the Aysén Region of Chile, is a design workshop for sustainable architecture using sheep's wool, a discarded material from local small-scale sheep farmers, to create a thermal, acoustic and fireproof insulation blanket.

The article published in the magazine Pais Circular of Chile presents the history of Lanarq and the process adopted to design the innovative system. The company was created in 2016 by architects María De Los Ángeles Lobos and Andrés Villouta following an intense phase of study and experimentation in the territory.

Sheep farming is traditional and widespread in the Aysén Region and the project, inspired by practices underway in New Zealand, the United Kingdom and Spain, has been created to thermally insulate rural houses using locally available materials, reducing firewood consumption and local pollution. Carrying out workshops with students at the Coyhaique agricultural school, consulting local sheep producers to obtain the wool and carpenters for the wooden components, the architects defined the production process, the technical characteristics of the products and the modalities of collaboration with the local actors, aiming to create a territorial production chain that would benefit the population as a whole in economic, environmental and social terms.



With the support of Corfo, the Agricultural Innovation Fund of Chile, the architects managed to create a sheep wool insulation system that can be applied to existing rural houses to improve their liveability and that can be used to design and build new ecological buildings.

The Lanarq's website presents the products based on sheep's wool which, due to their technical characteristics, comply with the country's building regulations, and the services that the enterprise offers for the use of this material in housing:

- 100% sheep's wool insulation blankets in different thicknesses.
- A construction system with sheep wool, based on a wooden structure and filled with sheep wool in bulk or with an insulating blanket.
- Sheep wool installations. Hand or machine filling of structures, walls or ceilings with sheep's wool in bulk.

Working in collaboration with different national institutions, Lanarq has also succeeded in promoting the use of sheep wool for thermal and acoustic insulation of social housing and new prefabricated houses with ecological characteristics.The website presents the following realizations that Lanarq can offer to local families and institutions: use of sheep wool through public subsidies for self-build housing; incorporation of sheep wool insulation material in bio-construction, together with other efficient and sustainable natural materials such as adobe, stone and wood.

Lanarq's main workshop-laboratory is located in Coyhaique and another manufacturing plant operates in Cochrane. The enterprise also carries out part of the production through the workshops of subcontracted carpenters, ensuring the final assembly with the wool.

In 2021, Lanarq established a strategic alliance with the Trade Association of Small Farmers and Stockbreeders of the Baker River (Municipality of Cochrane), who supply an important part of the wool the company uses. Its perspective is also to establish a partnership with a supplier association for timber, to ensure its origin from forests adopting sustainable management plans and located in the region. For interior cladding of the houses, Lanarq favours the use of native woods.

An article published by the magazine GMG Aquitectos summarises the constructive and environmental advantages of sheep's wool among the natural insulation materials, that are being rescued today within the framework of bio-climatic architecture:

- It is breathable without compromising its thermal efficiency. It allows the home to breathe, creating dry environments and preventing damage to the materials making up the enclosures.
- It is a natural thermoregulator thanks to its hygroscopic properties. When the outside temperature rises, the fibres heat up, release moisture and cool down, cooling the environment. When the outside temperature decreases, the fibres cool down, absorb moisture and heat up.
- Sheep’s wool insulation offers the greatest durability. Properly placed, it retains its density and cohesion for decades.
- It is easy to install and adapts easily to the support, being able to be fastened with staples in the case of blankets or by friction in the case of bulk wool. In addition, the blankets are light, workable and easily trimmed with simple tools
- It is a natural and renewable material as it comes from the regular and necessary shearing of sheep.
- Sheep’s wool is among the top insulating materials in terms of sustainability, as the energy consumption required for its manufacture as well as the greenhouse emissions are lower than those of conventional insulators.
- It is recyclable. Insulation manufacturing uses wool discarded as waste by other industries due to its colour or grade. It does not generate solid waste, being completely biodegradable.
- It does not endanger the health of installation teams or building occupants because the toxicity levels of the treatments to improve its fire retardant and pest repellent qualities are very low.

The Lanarq enterprise has been recognised by important awards from different institutions in Chile for its architectural-social innovation that allows the development of quality housing. During six years of work, Lanarq has managed to qualify the sheep wool as an excellent insulating material and to formally incorporate it in the

housing sector of the Aysén Region and in the country. Lanarq's plans for the future are to continue to promote sustainable architecture that addresses environmental, social and economic issues.

Moreover, the Lanarq enterprise represents a successful example to inspire territories in other countries where sheep farming represents a traditional productive activity, to create a new productive chain capable of supporting small producers, giving value to a waste that requires costs for its correct disposal and contributing at the same time to the progress of a bio-climatic, sustainable architecture based on local materials.


**To know more**

[Lanarq website]

[Lanarq in magazine País Circular - paiscircular.cl]

[Article in madera21.cl]

[Study from Universidad Técnica Federico Santa María - Chile]

[Aislamientos Naturales con Lana de Oveja in ECOesMAS website]

[Lana de oveja como aislamiento en construcción in eco-miga.es]

[Aislamientos de lana de oveja y algodón in EcoHabitar]

[Havelock Wool | Wool Insulation – New Zealand]

[Sheep's wool insulation Thermafleece in United Kingdom]

[Wool Insulation in Wool4Build website]

[SheepWool Insulation - Ireland]

[Lana de oveja de descarte como aislante natural térmico in Argentina - masindustrias.com.ar]

[Natural Wool Insulation in the USA - naturalwool-insulation.com]

[Wool Facts in IWTO website]