



**HEMP ECO
SYSTEMS**



**We develop hemp-lime
composites for new construction
and insulation that are 100%
natural and recyclable, CE
certified, energy saver, CO2
absorber and, above all, healthy
for humans and Nature.**

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Benefits overview

Hemp/lime mix is a well known material for thousands of years, from China to antique Greece. During the last 25 years, we perfected this ancestral way of building to make it adequate for modern construction constraints and way of living.



100% natural, 100% recyclable

Our hemp-lime mix is made of selected hemp hurds of different sizes, hydrated lime and a patented blend of natural minerals that is free of toxic chemicals. All components are taken directly from Nature, mixed together with water and applied. It can be recycled as a natural fertilizer without post-treatment.



Healthier interiors for humans

Many studies show that existing insulators are good energy savers but extremely bad for the inhabitants, especially children, breathing acid air. HES-mix naturally purifies the air by absorbing CO₂ and regulating air acidity.



Best insulation in class

In today's isolation material, controlling humidity and temperature is always a hard catch. Major building companies use multilayered, CO₂ costly, mineral based materials. HES-mix is a one layer material, that regulates humidity and controls temperature, using its natural macro and micro structure and it's high quantity



Fire resistant, CE certified

CE certification was a milestone for us. It offers all guarantees you need to use HES-mix without a second thought. It is perfect at regulating humidity and temperature in the most extreme climate, naturally resistant to fire, rot proof and vermine repulsive.



100 years certified

HES-mix is incredibly stable. It doesn't rot even in direct exposure to water and repulse vermine thanks to the high density of silica naturally contained in hemp.

HES-mix Composition

HES-mix is a bio-composite made of hemp hurds (wood), cleaned and cut to a specific size, pure hydrated lime, one of the most common natural material on earth, a blend of five minerals, to keep the carbonation process ongoing and reducing the drying time of the composite and simple water.

The mix is prepared directly on site, to maximise the efficiency, using a special mixer machine especially designed for our product.





Hemp hurds

Hemp hurds come from carefully selected crops of Cannabis Sativa, a THC free specie. We control the quality of production on site, in France, Belgium and Italy. We use three sizes of hurds according to specific applications.

Hemp naturally repulse vermine and grows without herbicide or pesticide. It doesn't harm the soil and its roots are a natural fertilizer.



Hydrated lime

We use 95 to 98% pure hydrated lime, a natural and very abundant material. Contrary to other hemp and lime solutions which use cement (a highly energy consuming product) or hydraulic lime, our process needs less energy and has the huge advantage to keep the natural chemical process ongoing, i.e. absorbing CO₂ during all the material cycle.



Blend of 5 minerals

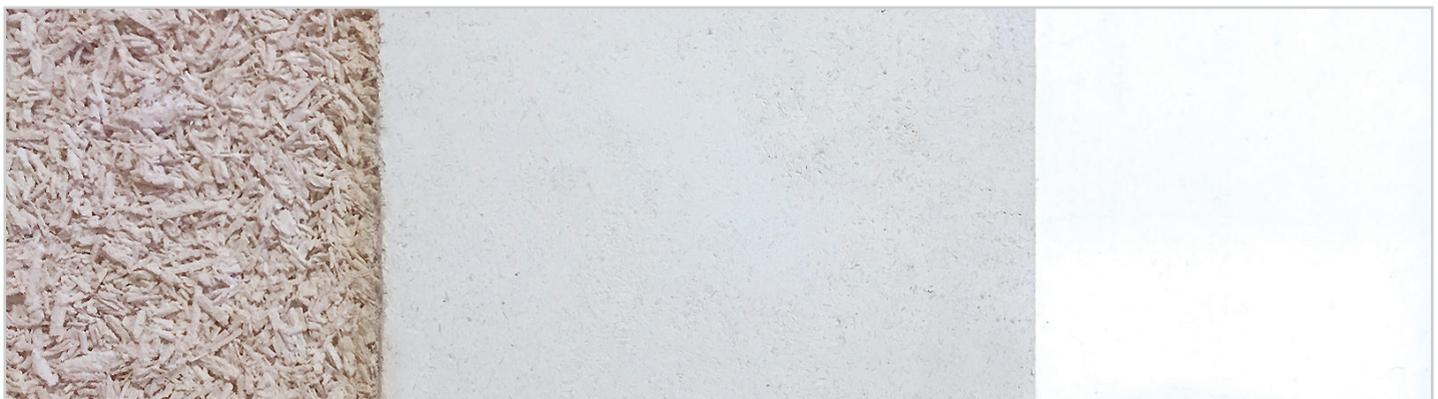
After more than 10 years of research and field testing, our laboratory finalized the «magic» ingredient of our solution. It's a patented blend of 5 natural minerals, extracted without chemical process. It allows the lime to continue to absorb CO₂, slowly, without becoming a dead stone and accelerates the drying time.

This is why our bio composite is better than the competition.

Standard applications

From walls, to roofs and attics, HES-mix and our building system can be used everywhere. With our patented formwork, it can effectively be applied on existing walls (concrete, stones, bricks or else) for insulation or for your new construction project.

Density Approx.: 240kg/m³
Thermal conductivity: 0.056 w/mk
Fire test (European Standard): A2, s1, d0



HES-mix

HES-wall with natural finish

HES-finish

New construction with HES-mix



1. Excavate and fill with gravel mixture (dia: 5-8 cm) to a thickness of 10 cm.
2. Pose a perforated tube (air drain dia: 4-6 cm) imbedded in gravel. Add 5 cm of gravel (dia: 3-5cm) apply HES-mix on the gravel bed 15-20 cm. Pose floor heating (if required).
3. Pose a 6 - 8 cm lime-sand mortar.



1. Mount formwork so that the vertical wood beams are placed in the middle. Distance between formwork (wall thickness) 30-35 cm, or according to specification.
2. Pour HES-mix in the formwork, level, spread and compact slightly.
3. Lift the formwork as soon as filled and continue the process.



1. Fix a net under the beams. Reinforce with steel wire if required.
2. Fill HES-mix between the beams to 25 cm and compact to 23 cm.
3. Apply wood planks or panelling on the inside.
4. Apply roofing on the outside.

Insulation with HES-mix



1. HES-wall is applied in thickness of 1-8 cm on interior wall to give a partial insulation and a perfect humidity regulation.
2. HES-wall can be finished by applying HES-finish with or without fine hurds. By this means, we obtain a healthy alkaline inner lining.

Finishes



Walls insulated with HES-mix can be left without over-coating, wether inside or outside, being resistant to all weather conditions. It can be coloured by mixing natural soluble pigments with linseed oil (siccative) and turpentine, which can be applied with a brush.

To have a perfectly smooth aspect, walls can be covered with HES-finish, with or without hurds:

Option 1

Apply last coat of HES-wall, level, and smooth to give a desired finish.

Option 2

Apply on HES-mix:

- 1st application of HES-finish 0,5 - 1,0 cm of hydrated lime and river sand 04-06.
- 2nd application of HES-finish 0,5 cm consisting of hydrated lime and river sand 02-04 or hydrated lime and fine hurds.

Frequently Asked Questions

Every new solutions seem suspicious at first sight. We want to be transparent and will answer to all your questions. We spend a lot of time to test our products in laboratories and in the real world, to offer you a truly solid and certified solution.

Why should I use natural materials?

For thousands of years we have built our houses from what nature offers us. From ice and snow to bamboo. Many of those building are still there after hundreds of years.



All our ancestors did was good for nature and good for humans. Then some 80 years ago man invented synthetics most of which derived from petrol or minerals. The motivation was money and time without any regards for nature and the health and well-being of us.

We are now correcting this, by first of all showing that nature is perfectly able to supply us with building materials and that with that we can build once more houses and buildings that will last for hundreds of years and be to the good of nature and humans.

But why hemp and lime as basic materials ?



Hemp, namely the Cannabis Sativa plant, without toxic elements, has been in the service of man for more than 4000 years in most civilizations. Used for clothing, paper and many other purposes (ropes was the main use for hemp fiber) it grew all over the world. 25 years ago we discovered that the stem of the plant contained a large amount of silica (sand) which caused it not to burn or rot. Thus an ideal building material.

Many other natural materials were tried out, but each time Hemp came in as the number one. Lime, that is the pure so called Hydrated Lime is a basic material used by man as hemp. All civilisations used it, and it was in abundance all over the world.

It constitutes today as in antiquity a material used as a perfect binder in construction. That is why we have gone back using this material with which our forefathers made houses that lasted for thousands of years.

But what can hemp and lime do what other modern materials can't?

Note firstly that hemp/lime (HES-mix) is a living product, not a dead as synthetic products. It is because of its continuous action, called "carbonation", able to deliver the best thermal insulation. Because of its combination of hemp and lime it regulates worst cases of humidity, even in bathrooms, without ventilation.

It cannot burn, and that without fire-retardants. It does not rot, because of the silica. It will last for hundreds of years in a building and thereby assure a long life investment for the owner. It does not contain any trace of toxic materials and finally it can be re-cycled and return as such into nature.

The main difference is the Hygrothermal behaviour. HES-MIX regulates T° and humidity inside the buildings whatever are the outside variations. The benefits are comfort and energy savings. It works as well during winter or summer.



How much more expensive is your system compared with the market prices of current products?

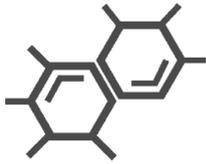
The cost of products delivered on the building site is comparing well with current products. But we have to take the total cost, material and labour in comparison. In renovation the total cost will be close to equal. On new-buildings the cost of products are again about the same, but the application, thanks to the simplicity and fastness, HES-mix system comes in less expensive than current systems.

As example a new-building of 125 m² with 25 cm HS-mix under roof, 35 cm HES-mix as walls plus finishes inside and outside and floor insulation of 20 cm will amount to a material cost of € 12-15 000.

Using HES-MIX also allows to save on the heating and the ventilation and others operations, you start saving money since the first day.



Frequently Asked Questions



How can HES-mix absorbs CO₂?

One of the component of HES-mix is hydrated lime (pure Calcium Carbonate). This element naturally reacts with water (humidity), capturing CO₂ and keeping it inside its molecular structure. For a house of 120m², two floors, using an average of 100 m³ of HES-mix, 10 t. of CO₂ will be captured (source: INRA 2005).

Imagine if all our houses would do the same!



What's the difference between HES-mix and traditional concrete?

HES-mix constitutes a wall and insulation all-in-one whereas concrete needs to be covered with a multi-layered insulation protection.
For the same price as concrete, HES-mix gives your interior a healthy alkaline and perfectly isolated atmosphere, that absorbs CO₂ and is 100% natural.



What's the difference between HES-mix and bricks?

Bricks, like concrete, come from a process that emits huge quantities of CO₂. It needs heavy industrial facilities to produce. Hemp comes directly from the Nature, without heavy processing. As soon as lime is mixed with hemp and water, it starts absorbing CO₂.



What's the difference between HES-mix and hempcrete?

Traditional hempcrete use cement or hydraulic lime. Cement comes from a heavy CO₂ industry and does not keep your interior healthy because it's a "dead" material. Hydraulic lime has the disadvantage to take longer to dry, increasing the cost of building and therefore cannot be convenient for all kind of construction.



What is an alkaline interior?

Hydrated lime and minerals reacts with water to absorb CO₂. This makes your interior less acid and more alkaline. In today traditionally isolated houses, the air is polluted with oil based and plastic based material, exhausting many toxins and acid in the air. More and more studies show that acid interior are responsible for the growth of disease such as asthma.



What are you calling a “healthy interior”?

A healthy interior is defined by:

- Stable indoor temperature
- Warm walls temperature
- Stable humidity level around 60%
- Toxic-free air
- Alkaline atmosphere
- Good noise control
- Low CO₂ level

All benefits brought by HES-mix.



What the difference between Hemp and Cannabis?

Hemp is a variety of Cannabis called Cannabis Sativa. It doesn't contain THC, the molecule responsible for psychotropic effects. The production of Cannabis Sativa is very old. As early as 2000 BC, Chinese used it for its fibers and nutritious seeds. It grows without the need of phytosanitary products, preserving the earth field. A standard hemp house needs 1ha of hemp cultivation (average).



Why is HES-mix an outstanding isolation

Several different parameters make HES-mix a perfect insulation material. Hemp hurds are naturally porous at a macro and micro levels and capable of absorbing and dissipating humidity without rotting, due to the high level of silica. See the certifications and documentation to know more technical details.



Why is HES-mix a outstanding humidity

Certified tests have proven that HES-mix is capable of fast and efficient temperature control without using air conditioning, even in the most extreme conditions (sudden rise or decrease in outside temperature). This is due mainly to the inner structure of the hemp, that is full of air bubbles at macro and micro levels.



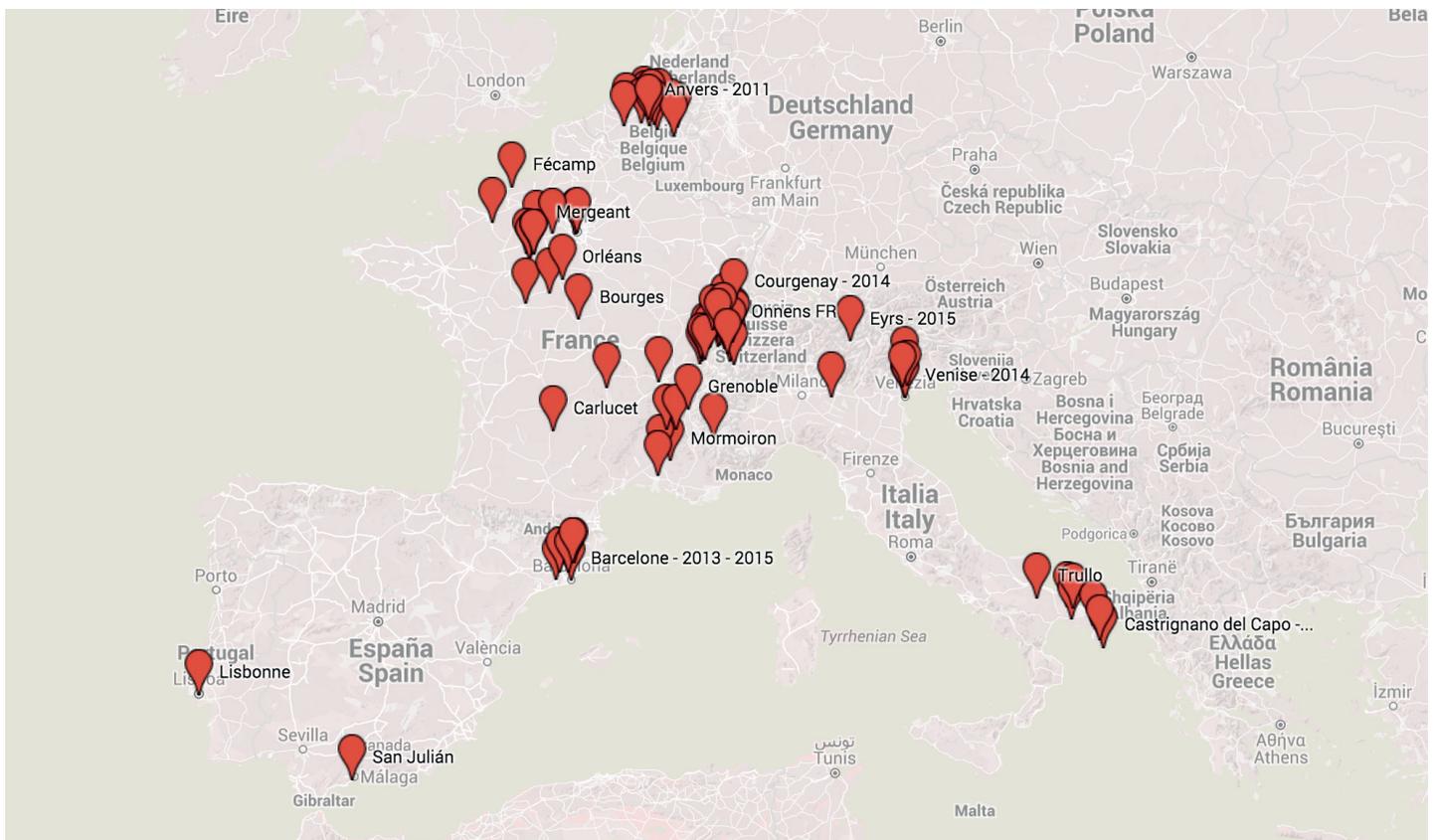
HES-mix is made out of a dried plant, should I worry about

We have a European certification that proves what we already knew: HES-mix does not burn and exhausts no toxic smoke. This is due to the lime and the high degree of silica in the hemp. It's like trying to burn sand and the certification gave us the same grade as concrete.

Technical portfolio

We have built and renovated hundreds of buildings: private home, public buildings, offices, farms, schools, warehouses.

There is virtually no limit to the size or type of construction you can build with HES-mix. From south Italy to Norway, our solutions can be adapted everywhere.



Use of HES-mix on roofs.



Use of HES-mix on existing walls, outside (with forwork) or inside (applied by hands)



Use of HES-mix on existing floor, with or without floor heating system.



Technical portfolio



A complete new house with a wooden structure and HES-mix for walls, floor, attics and roof.





A complete house renovation with a base structure of stones, steel and wood.



Special projects

Taranto prison project, Italy

In August 2015, manager Livio Ripamonti (Architect) came across the Association APAB (www.infoapab.it), active in training and supporting prisoners in the Taranto prison.

This prompted us to propose to the Association and subsequently to the prison management to intervene with our natural products to improve on the prison's indoor climate.

The proposal was accepted and the parties were able to detect the following gains that could be made:

- radical improvement of the in-door climate, with expected less health problems
- less heating in winter and cooler in summer, with lower energy consumption
- cost of the product below synthetic finishes or insulation materials
- presence of a technician from HES to train prisoners
- time of training would be abt. one week
- trained abt. 15 prisoners

It became a celebration for having developed this initiative giving a number of important impacts concerning nature, humans and society as such.

The management of the prison confirmed that the work and training will go on and HES confirmed that for the next works the technician will be made available at no cost with the compliments of the HES Group.

This Puglia initiative deserves to be broadcasted to the rest of Italy and world-wide was one of the conclusions.



Proportio - Venice

PROPORTIO is an exhibition organised by the Axel & May Vervoordt Foundation and the Fondazione Musei Civici di Venezia. Curated by Axel Vervoordt and Daniela Ferretti and located in the imposing Palazzo Fortuny, the exhibition explores the omnipresence of universal proportions in art, science, music and architecture.

Five large architectural pavilions, designed by Axel Vervoordt and architect Tatsuro Miki in collaboration with Jorgen Hempel and built using solely organic materials, transform the Sala Gondola on the ground floor of the Palazzo. embodiment of proportional features for visitors to experience as they walk through the empty spaces.

<https://youtu.be/iGtfLaXwrLs?t=1m27s>



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**Working for
humans and
Nature**