Applications guide

Hemp blocks

For zero carbon construction,
renovation, and interior walls

ISOHEMP
NATURAL BUILDING

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Editorial

Building and renovating sustainably is a necessity. Supporting you in your projects is our priority.

At a time when our planet is running out of energy and the energy crisis is raging, the choice of building materials is of the utmost importance. Impact on the environment and the health of the occupants, technical performance, ease of use, ... They are all criteria that will guide your choices. Do you have a construction, renovation or partitioning project and are you looking for a solution without compromise? Then take advantage of the many advantages of IsoHemp hemp block walls.

We have designed this guide to give you the most concrete re-presentation possible of the advantages, applications, performance, and functionality of hemp blocks in different building systems.

As a bonus, you can of course count on our team of experts to guide you in your projects. From the study of plans to design advice, from the start of construction to the training of your team, we will provide you with the necessary support you need to carry out your projects.

Join us in constructing tomorrow's sustainable buildings!

ISOHEMP NATURAL BUILDING

The hemp blocks

• Naturally efficient in all its applications

The IsoHemp hemp block is a non-load-bearing glued masonry product intended for all types of projects both in construction and renovation. The hemp blocks can be used for:

- **Construction of building envelopes**
- **Construction of partitions**
- **Implementation of interior and exterior lining**
- **Insulation of flat roofs and floors**

Its insulating performance complies with low energy, very low energy, and passive house standards.

• Construction:

1. Hempro system
2. Timber post and beam construction
3. Metal structure
4. Timber framework
5. CLT timber structure

• Renovation:

1. Interior renovation
2. Exterior renovation
3. Extension

• Interior walls

• Floor

The 5 major advantages of the hemp block

Thermal regulation

The hemp block naturally regulates the temperature of the building thanks to its excellent ability to store and dissipate accumulated heat. This insulating block has a high thermal inertia and protects:

- Against the cold in winter by keeping the heat in the house for longer
- Against the heat in summer by avoiding overheating of the living areas.

As a true thermal buffer, it maintains a constant interior temperature and significantly reduces the effect of heat variations between day and night.

Fire resistance

The IsoHemp hemp block complies with the standards in force and provides a simple and effective solution to fire protection problems for new buildings, being just as applicable to industrial and communal (nurseries, schools, etc.) buildings as it is to residential buildings. Having an excellent reaction to fire (Class A2 for a block rendered on both sides), it also offers more than two hours of fire resistance depending on the finish and the thickness of the block used. It is inflammable and does not release toxic gases during its combustion.

100% natural

The hemp block fulfils the most exacting requirements where sustainable development is concerned: it is manufactured using a very low energy process using 100 % natural material (lime and hemp) sourced from local supply chains. Constructing or renovating your house with hemp blocks allows you to store permanently more than 2 tonnes of CO_2 previously contained in the air. Talking about a positive carbon balance!

**biogenic carbon*

IsoHemp has a LCA (Life Cycle Analysis).
This LCA is available on our website.

Sound insultation

Whether you use the IsoHemp hemp blocks for your walls or internal partitions, both ambient and outside noises are significantly reduced. Thanks to its performance in respect of both sound attenuation and absorption, the hemp block acts as a genuine sound trap - damping most sound waves and thus protecting you against noise pollution.

Moisture regulation

Thanks to its high permeability to water vapour, the hemp block acts as a moisture buffer, thus providing a constant interior climate that is healthy for the building inhabitants. It also prevents condensation problems by naturally managing the exchanges of moisture between walls or different materials. Its uses:

- Renovation and isolation of old buildings with old brick walls or damp walls
- Interior renovation to insulate walls which also serve to support the wooden floors that project into them. It prevents any condensation problems at the interface of different materials and in this way ensure excellent preservation of the existing building
- Humidity regulation in commercial projects where the variations in humidity level are significant: archive rooms, museums, gyms, swimming pools, etc.

A house made of hemp blocks stores
5 tonnes of CO_2 sustainably
= 1 round-the-world trip by car

Hemp block

• Technical characteristics of the hemp block

The blocks are extremely versatile and meet the many requirements for new buildings as well as those for renovation projects, regardless of the type of building: single-family houses, collective or tertiary buildings.

Range of blocks

Hempro range

Technical characteristics	Block 7	Block 9	Block 12	Block 15	Block 20	Block 25	Block 30	Block 36	Unit
Thickness	7,5	9	12	15	20	25	30	36	cm
Modular dimensions	60 x 30							60x20	cm
Number of blocks per m²	5,5							8,3	blocks / m²
Maximum block weight	5,7	7,1	9,2	11,5	15,3	20	23	18,4	kg
Bulk density when dry	340								kg/m³
Adhesive consumption	3	3,6	4,7	5,8	7,8	9,7	5,8	7,5	kg/m²
Dry thermal resistance	1,12	1,34	1,79	2,24	3	3,73	4,48	5,37	m²K/W
Thermal resistance at 50% RH	1,06	1,27	1,69	2,11	2,82	3,52	4,23	5,07	m²K/W
Thermal conductivity λ	0,071								W/mK
Phase shift	4,9	5,9	7,9	9,8	13,1	16,4	19,7	23,6	h
Sound reduction index* Rw	37 (0;-2)	37 (-1;3)	38 (-1;-3)	38 (-1;-3)	40 (-1;-5)	41 (-1;-5)	42 (-1;-5)	44 (-1;-6)	dB
Acoustic absorption coefficient α	0,85								
Equivalent air layer thickness Sd	0,21	0,25	0,34	0,42	0,56	0,7	0,84	1	m
Water vapour resistance factor μ	2,8								
Compressive strength	22								MPa
Reaction to fire Without render	B, S1, d0								
Resistance to fire			60		120				min

Technical characteristics	Drilled blocks		U blocks		Unit
Thickness	30	36	30	36	cm
Modular dimensions	60x30	60x20	60x30	60x30	cm
Maximum block weight	20,1	15,6	22,9	27,4	kg
Diameter of the recess	15x15	18x18	15x42	18x42	cm
Cross-section of the recess	177	254	630	756	cm²
Adhesive consumption	5,8	7,5	10	12	kg/m²

** Hemp block masonry with plaster on one side - extrapolated value*

You can find all the necessary information concerning our products in our product catalogue. Download the technical data sheets from www.isohemp.com.

Construction

• An efficient insulating envelope

Do you have a construction project in mind? No matter which constructive system you choose, IsoHemp hemp blocks always represent a major advantage for your project. With IsoHemp you build and insulate in a natural and very efficient way. Moisture regulation, thermal insulation, and soundproofing ... The blocks do it all.

Discover the benefits and characteristics of IsoHemp's hemp blocks for the following construction systems:

- **Hempro system**
- **Timber columns-beams**
- **Metal structure**
- **Timber framework**
- **CLT timber structure**

Our team is at your service to help you make a choice and guide you through the feasibility study of your project. A building project is preceded by a long phase of reflection, as all kinds of requirements and needs must be met. We'd gladly discuss this with you!

The Hempro system

With IsoHemp's Hempro system, there's no need for any other insulating materials. Build the whole building solely with IsoHemp hemp blocks, thanks to a full and extensive range.

The Hempro system comprises two types of hemp blocks of 30 and 36 cm thickness: solid blocks and prefabricated blocks (drilled blocks and U-blocks). Located in the building envelope, the prefabricated blocks serve as the insulating lost formwork for the structural frame made from the reinforced concrete poured into it.

The drilled blocks constitute the form-work for the columns, while the U-blocks allow the beams to be poured that subsequently support the floor and roof. To achieve even higher thermal performance, a lining with a second masonry layer of hemp blocks of different thicknesses can be planned.

The Hempro system is a 'ready-made' solution that can be fitted and built up easily and quickly. This system is perfect for general contractors and because the hemp blocks are so light, they are also very easy to use on site.

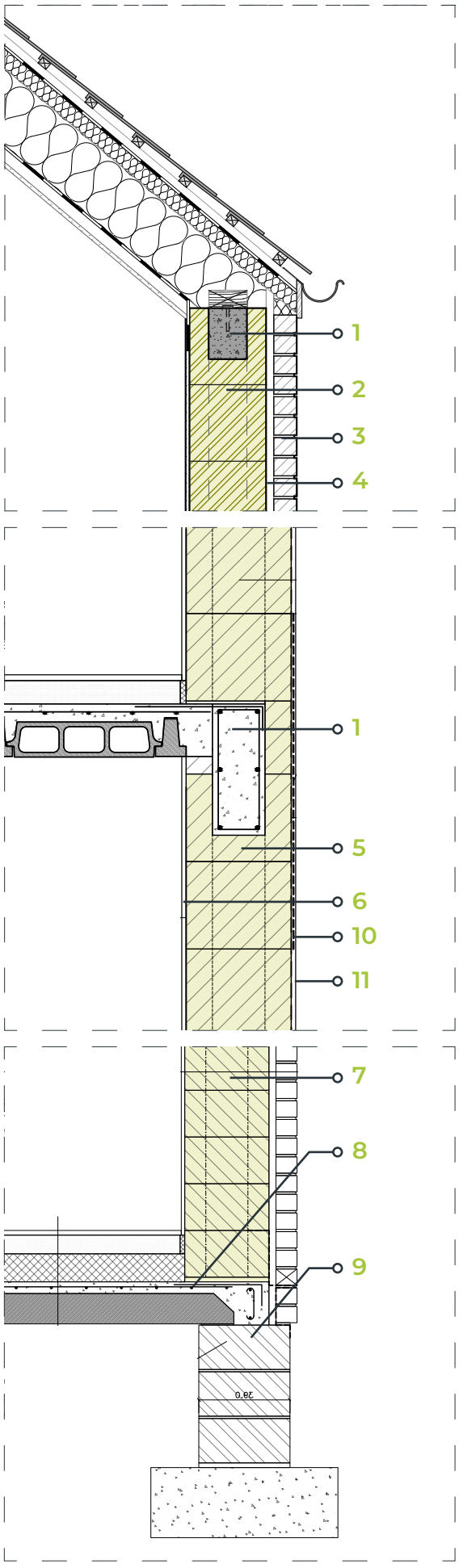
Customized energy savings

IsoHemp envelope	30	36	30	36	30	36	60	cm
Extra thickness IsoHemp block	-	-	9	9	12	12	-	cm
Wall thickness*	33	39	42	48	45	51	63	cm
R-value wall	4,43	5,28	5,70	6,54	6,12	6,97	8,66	m^2K/W
U-value wall	0,23	0,19	0,18	0,15	0,16	0,14	0,12	W/m^2K

** With a finishing layer of 1 cm on the inside and 2 cm on the outside*

● Low and extremely low energy consumption ● Passive**

***Designing a passive house also depends on other factors, such as building exposure, region, ... and must be validated by a calculation according to PHPP.*



Construction

Advantages

- Breathable and homogenous building envelope
- High insulation value with reduced thickness
- Easy and quick to install, masonry with thin joints
- Excellent price-to-quality ratio
- Summer and winter comfort thanks to the thermal inertia of the hemp blocks.

ISOHEMP BLOCKS AND CLADDING BRICKS

1. Reinforced concrete
2. Poured concrete column
3. Cladding brick
4. Layer of air
5. IsoHemp U-block
6. Interior plaster coating
7. IsoHemp drilled block
8. Sealing membrane
9. Foundation
10. Fencing
11. Exterior plaster

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Timber post and beam construction

The timber post and beam system is a sustainable construction that requires few natural resources and is very simple to install.

The combination of the timber post-and-beam system and the hemp blocks looks very natural, as the spaces between the posts are filled with stacked blocks, creating a complete and homogeneous insulating building envelope.

The combination is ideal, and the two products meet all the performance required for shell structures.

The installed hemp blocks are then provided with grooves on the inside into which the technical tubes can be inserted. The interior and exterior finishes can be applied directly to the hemp blocks.

By combining the timber post and beam system with IsoHemp hemp blocks, you create a light, comfortable, ecological, and sustainable building.

• Customized energy savings

IsoHemp envelope	30	36	30	36	30	36	60	cm
Extra thickness IsoHemp block	-	-	9	9	12	12	-	cm
Wall thickness*	33	39	42	48	45	51	63	cm
R-value wall	4,43	5,28	5,70	6,54	6,12	6,97	8,66	m²K/W
U-value wall	0,23	0,19	0,18	0,15	0,16	0,14	0,12	W/m²K

** With a finishing layer of 1 cm on the inside and 2 cm on the outside*

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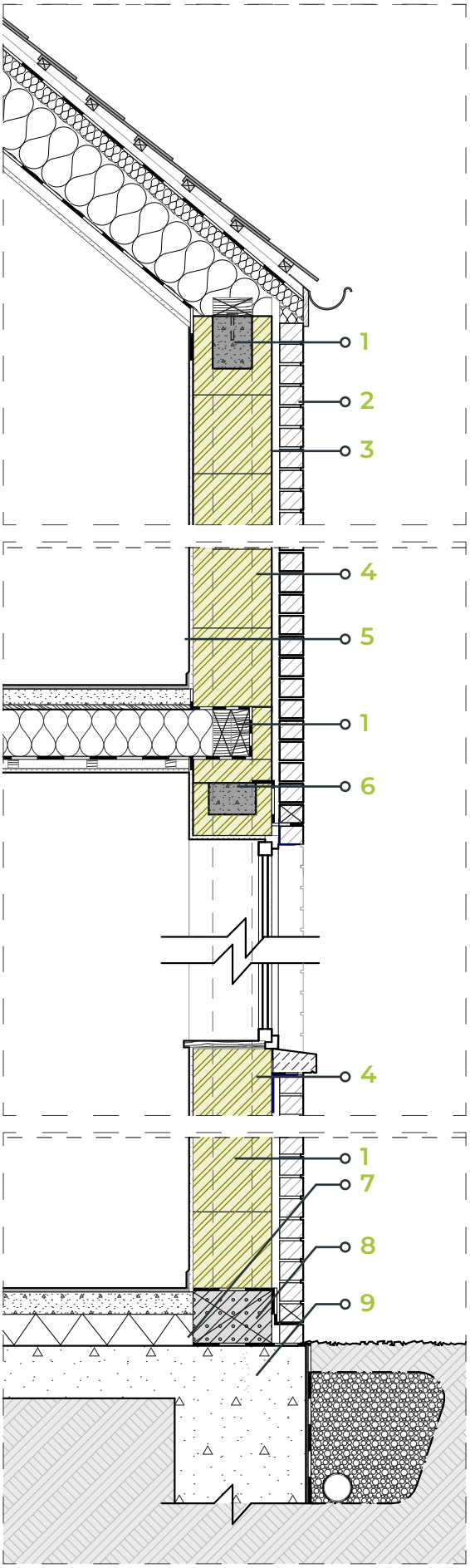
Construction



Advantages

- Zero-carbon and a 100% natural design
- Lightweight construction with good inertia
- Breathable and homogenous building
- Hemp blocks enable dry construction

1. Timber structure
2. Cladding brick
3. Gap
4. IsoHemp block
5. Interior plaster coating
6. IsoHemp lintel
7. Sealing membrane
8. Rot-proof insulating block
9. Foundation

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Metal structure

In the past, metal structures were mainly used for industrial applications and real estate, but today they are also increasingly used for the construction of houses and residential blocks. The advantages of metal structures are:

- Economic solution
- Great architectural versatility
- Very quick to assemble

The hemp blocks form a complete and homogeneous envelope around the metallic structure in which bay openings for doors and windows are implemented. With hemp blocks, you can:

- Build walls (substrate on which to apply finishes) and create airtight spaces
- Improve the thermal and acoustic performance of the building
- Make the structure fireproof

This structural solution allows you to build a quality building with a breathable and insulating, homogeneous building envelope.

• Customized energy savings

IsoHemp envelope	30	36	30	36	30	36	60	cm
Extra thickness IsoHemp block	-	-	9	9	12	12	-	cm
Wall thickness*	33	39	42	48	45	51	63	cm
R-value wall	4,43	5,28	5,70	6,54	6,12	6,97	8,66	m²K/W
U-value wall	0,23	0,19	0,18	0,15	0,16	0,14	0,12	W/m²K

*With a finishing layer of 1 cm on the inside and 2 cm on the outside

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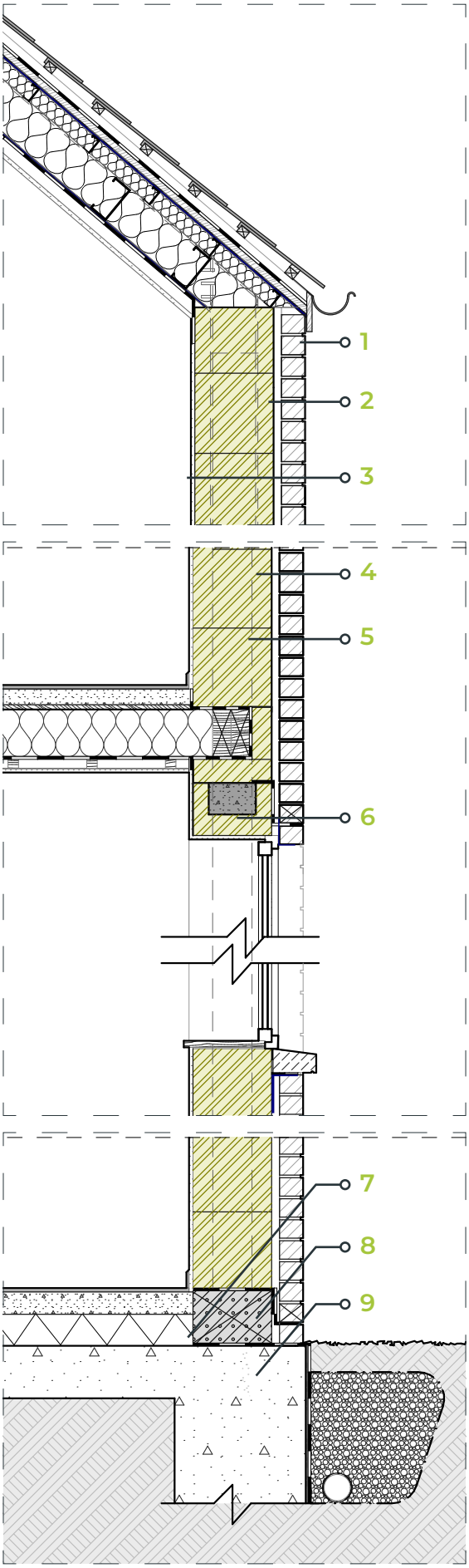

Construction

Advantages

- Fast installation
- Breathable and homogenous building envelope
- Creation of large areas

ISOHEMP BLOCKS AND CLADDING BRICKS

1. Cladding brick
2. Gap
3. Interior plaster coating
4. IsoHemp block
5. Metal framework
6. IsoHemp U-block
7. Sealing membrane
8. Rot-proof insulating block
9. Foundation

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Timber framework

Timber frame construction offers a fast, highly insulating, and environmentally friendly solution. The only drawback of this construction system is the lack of thermal inertia of the wall. It is mainly made of lightweight materials with low thermal capacity.

However, the wall clad with IsoHemp's hemp block masonry effectively contributes to both summer and winter comfort. It significantly reduces the risk of overheating and provides the solution for this type of construction.

Installing the hemp block on the inside not only provides an insulating covering, but also facilitates the installation of technical pipes and decorative elements. Moreover, you do not need a vapour barrier with this type of masonry. The hemp block placed on the outside is an excellent support for finishing, fixing elements (gutter, basketball ring, lamp, etc.) and prevents overheating in summer.

Customized energy savings

IsoHemp envelope	20	30	OSB- or wood fibre board	15	cm
	Timbre frame with 14cm flexible insulation				
Extra thickness IsoHemp block	OSB- or wood fibre board		12	15	12	cm
Wall thickness*	37	47	29	32	44	cm
R-value wall	6,13	7,54	5,01	5,43	7,12	m²K/W
U-value wall	0,16	0,13	0,20	0,18	0,14	W/m2K

*With a finishing layer of 1 cm on the inside and 2 cm on the outside

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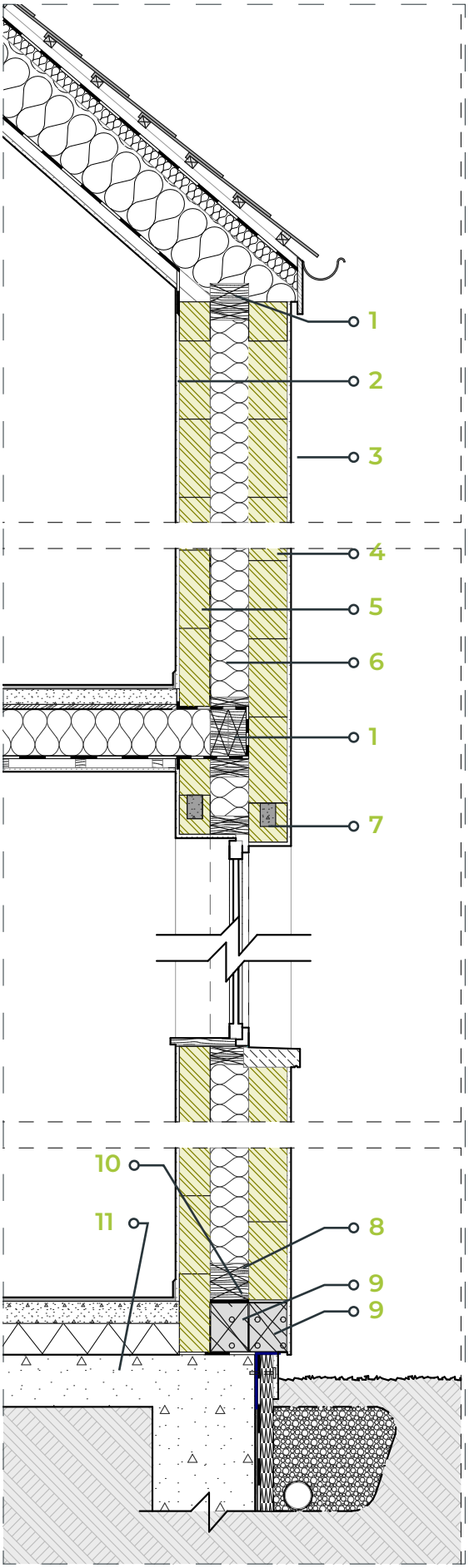
Construction



Advantages

- Much improved acoustics
- No more overheating in summer
- Placing technical tubes gets easier
- Wide range of finishing materials

INTERIOR AND EXTERIOR ISOHEMP BLOCKS

1. Timber framework
2. Interior render
3. Parging
4. IsoHemp block envelope
5. IsoHemp block
6. Flexible insulation
7. IsoHemp lintel
8. Timber framework
9. Rot-proof insulating block
10. Sealing membrane
11. Foundation

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

CLT timber construction

Cross Laminated Timber panels (CLT) are ideal for the rapid erection of a closed shell and quick installation of the building structure.

Enclosing the CLT along the outside with hemp blocks offers numerous advantages and significantly improves acoustics. Moreover, this material is suitable for a very wide range of finishing materials (bluestone, mineral plaster, ...) and you can also easily attach elements to it. Hemp blocks allow the wood to breathe, preserve and protect it.

To improve thermal comfort and reduce noise reflection, we recommend combining CLT with non-load-bearing internal walls and partition walls made of hemp blocks. These internal walls provide better thermal and acoustic insulation and make it easier to fit electrical tubes. This allows you to erect buildings with a very low environmental impact.

• Customized energy savings

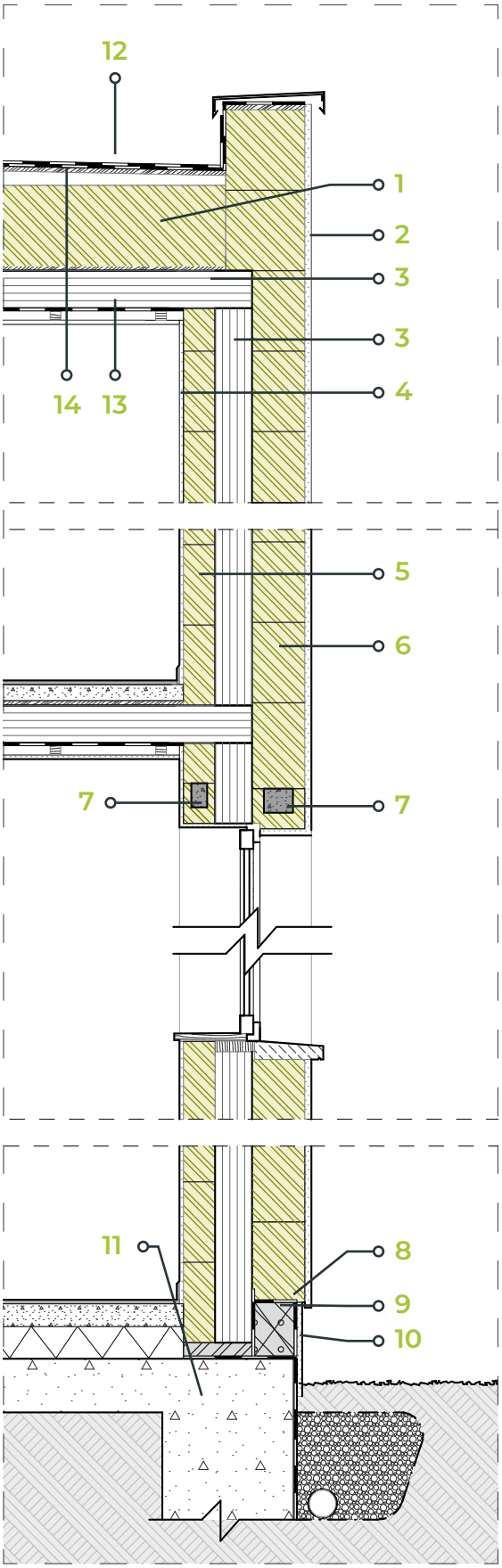
IsoHemp envelope	30	15	20	30	cm
	CLT 14 cm				
Extra thickness IsoHemp block	-		12		cm
Wall thickness	47	44	49	59	cm
R-value wall	5,01	4,59	5,30	6,70	m^2K/W
U-value wall	0,20	0,22	0,19	0,15	W/m2K

**With a finishing layer of 1 cm on the inside and 2 cm on the outside*

● Low and extremely low energy consumption ● Passive**

*** Designing a passive house also depends on other factors, such as building exposure, region, ... and must be validated by a calculation according to PHPP.*

Construction



This configuration is suggested in part because of its acoustic performance. Other combinations are equally possible.

Advantages

- Fast to build
- Much improved acoustics
- Construction nodes mastered
- Architectural freedom

INTERIOR AND EXTERIOR ISOHEMP BLOCKS

1. IsoHemp block
2. Parging
3. CLT structure
4. Interior plaster coating
5. IsoHemp block
6. Envelope IsoHemp block
7. IsoHemp lintel
8. Sealing membrane
9. Rot-proof membrane
10. Exterior baseboard
11. Foundation
12. Double sealing
13. Vapour barrier
14. Screed

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Hemp brings a true sensation of comfort. It creates a cosy atmosphere that I've never experienced before.

Brigitte – Owner of a hemp house – France

I chose hemp blocks for my latest project. The energy performance, the remarkable carbon footprint and the simplicity of implementation convinced me of their potential.

David Loir – Dream Architecture – Belgium

Renovation

• A double-insulating and efficient shell

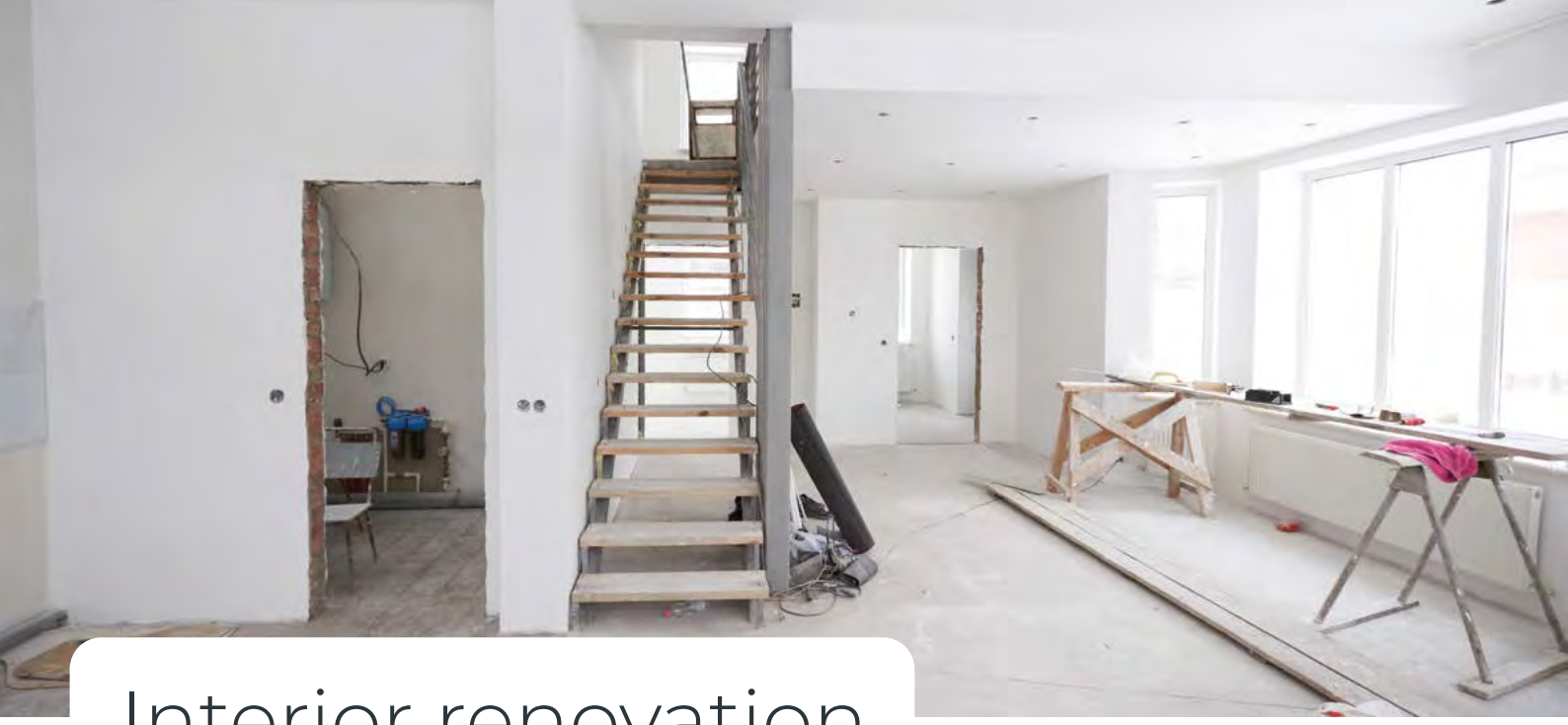
Is a renovation imminent? Then think about proper insulation. To avoid problems such as condensation and leaks, make sure that the existing walls and the new materials are compatible.

Thanks to IsoHemp's hemp blocks, your building will be renovated efficiently. Moisture control, thermal insulation, soundproofing, ...

The blocks do it all. Discover the benefits and properties of IsoHemp blocks for renovation projects:

- **Interior renovation**
- **Exterior renovation**
- **Extension**

Our team is at your service to help you conceive and design your project. A renovation must consider the existing materials and meet very precise performance requirements. Let's look at this in more detail.



Interior renovation

IsoHemp's hemp blocks are an efficient and high-quality solution to technical challenges you face during an interior renovation, regardless of whether it is urban planning obligations or the mandatory preservation of the external façade.

Renovating from the inside can affect the energetic dynamics of the building. For example, the thermal and moisture regulation of the walls may be disrupted, constructive nodes may occur, or even dew points on floors or interior walls.

By installing a second wall built from hemp blocks in front of the existing walls from the inside, you avoid building problems that could lead to condensation. Permeability and absorbency are two of the main advantages of hemp blocks. With these blocks, you also preserve the original building.

Moreover, installing hemp blocks along the inside has the added advantage that no preparatory work is required. The blocks are very easy to place perpendicularly, which means that do-it-yourselfers can also easily get started with it. Once they are stacked against the existing wall, you can make grooves in them to insert the technical sleeves. You then plaster them with the aesthetic finish of your choice.

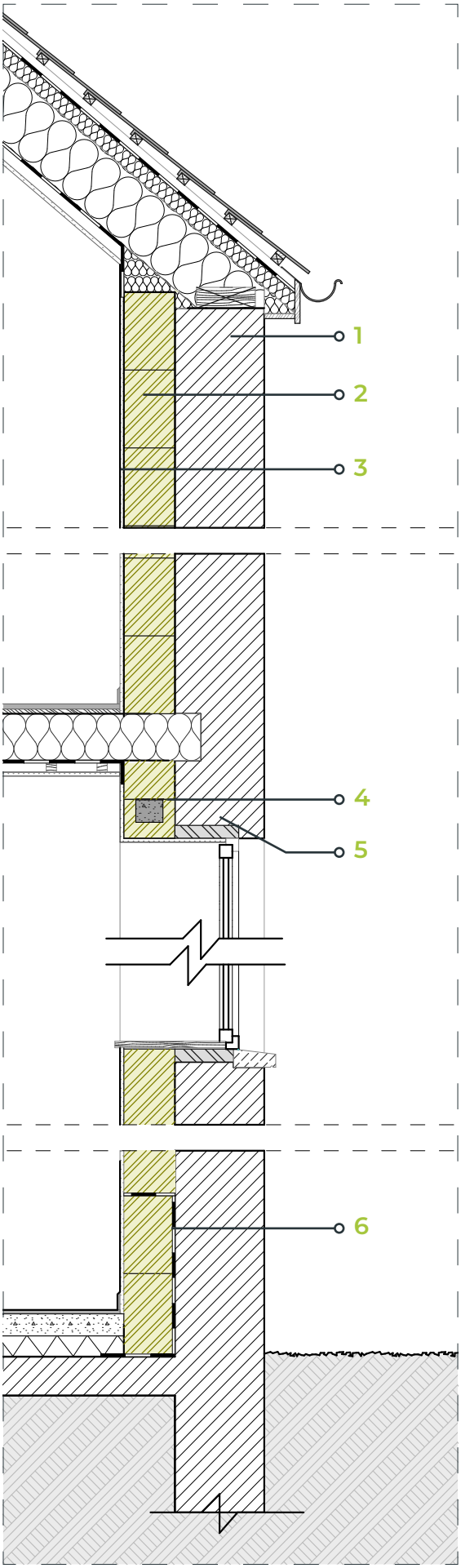
For your wall to be perfectly continuous and the water vapour to drain away efficiently, the cavity between the existing wall and the hemp block wall should ideally be filled with a mixture of lime mortar and hemp.

• Customized energy savings

IsoHemp envelope	9	12	15	20	25	30	36	cm
Wall thickness*	10	13	16	21	26	31	37	cm
R-value wall	1,29	1,71	2,13	2,84	3,54	4,24	5,09	m^2K/W

**With a finishing layer of 1 cm*

Renovation



Advantages

- Very easy to install
- Ecological and sustainable solution
- Preservation of original building (houses, farms, heritage, etc.)
- Moisture regulation
- Healthy inside environment
- Placing technical tubes and fasteners becomes child's play

INTERIOR ISOHEMP BLOCKS

1. Existing building
2. IsoHemp block
3. Interior plaster coating
4. IsoHemp lintel
5. Thermal insulation
6. Sealing membrane

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Exterior renovation

IsoHemp's hemp blocks are an efficient and high-quality solution to technical challenges you face while installing exterior insulation. Renovating the building envelope can provide significantly lower heating bills, better airtightness and continuous insulation that eliminates any cold bridge.

Nevertheless, exterior renovation can also affect the energetic dynamics of the building. Structural problems or changes in the water balance of the existing walls cannot be ruled out when you insulate the building. Hemp blocks, for example, are a very good insulation material. They preserve the breathability of the walls, regardless of whether they are brick or stone walls.

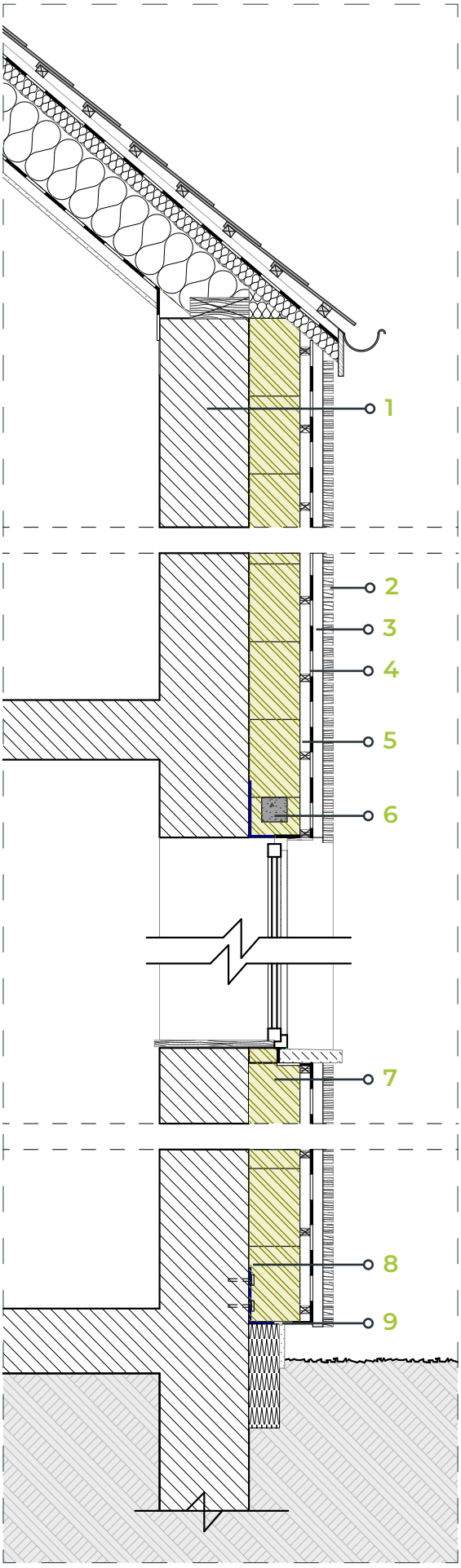
Exterior renovation also offers a lot of other advantages, such as a very wide choice of finishing materials. Hemp blocks are also suitable as a substrate for parging, as well as for cladding, which can be attached directly to the hemp block construction. The hemp blocks have a good load-bearing capacity and penetration of the insulating layer by the fasteners is thus excluded. External brickwork and heavy blue stone or concrete thresholds can be incorporated directly into the hemp block construction.

Installing an insulating second exterior wall is the best solution to increase the thermal performance of the entire building, and any risk of thermal bridges is eliminated.

• Customized energy savings

IsoHemp envelope	9	12	15	20	25	30	36	cm
Wall thickness*	11	14	17	22	27	32	38	cm
R-value wall	1,28	1,71	2,13	2,83	3,54	4,24	5,09	m^2K/W

**With a finishing layer of 1 cm.*



Renovation

Advantages

- Durability of the insulating layer
- Good substrate and support for cladding, parging and bricks
- Ecological and sustainable solution
- Regulates the walls' humidity

EXTERIOR ISOHEMP BLOCKS

1. Existing building
2. Cladding
3. Counter laths
4. Rain barrier
5. Lathing
6. IsoHemp lintel
7. IsoHemp block
8. Metal angle
9. Baseboard + glued insulation

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Extension

Thanks to IsoHemp's hemp blocks, you expand your home quickly and enjoy all the benefits of a perfectly insulated and high-quality extension.

An extension has numerous advantages: it is easy and quick to install, it creates extra living space, provides architectural versatility and you are free to choose which building system you want to work with.

Discover the advantages and properties of IsoHemp blocks for different building systems:

- **Hempro system**
- **Timber construction**
  - > Wooden post and beam construction
  - > Timber frame construction

For details of these systems, please refer to the previous pages in this guide.

Interior walls

• Building interior walls

Regardless of whether you are building or renovating, choose IsoHemp hemp blocks for interior masonry. Installing partition walls or subdividing rooms, with IsoHemp blocks you do it with ease and enjoy perfect acoustic comfort.

Hemp blocks are the ideal solution for:

- **Interior walls of multiple living units and apartments**
- **Pre-walls of residential buildings**
- **Interior walls of industrial buildings**

Our team is at your service to help you make a choice and guide you through the feasibility study of your project. Interior walls have various functions. There is a solution for each of your needs. Read on if you would like to know how and what!

Flats & housing

To separate housing units and insulate them thermally and/or acoustically, different systems are possible depending on whether the wall must be able to support a floor or not. The load-bearing walls are made of masonry or load-bearing elements which are then lined with hemp block masonry at a certain distance from the load-bearing wall. The cavity will be filled with a soft insulating wool to guarantee an optimal optimal acoustic result.

The non-load-bearing walls are made of double masonry of hemp blocks separated by a flexible insulating wool. The two walls will be held together by fixations embedded in the masonry joints.

NB: As the acoustic insulation depends directly on the rendering applied, a complete continuity of the rendering is necessary in order to obtain an optimal result. Do not hesitate to contact us to have a look at your technical plans.

• Customized energy savings

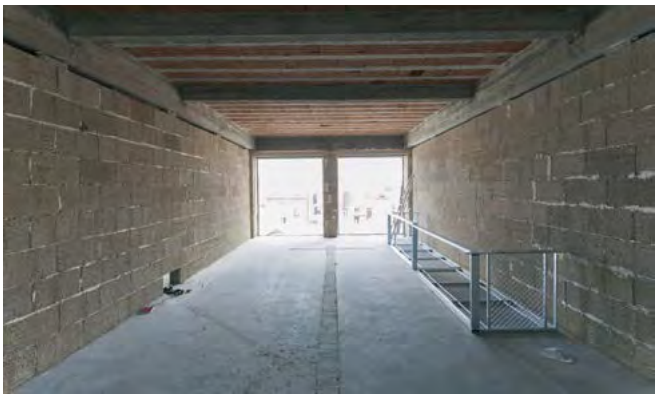
	SOLUTION 1			SOLUTION 2		
IsoHemp block	**Silica-limestone 21,4cm**			**9**	**12**	**cm**
Layer	**Mineral wool 3cm**			**Mineral wool 3cm**		
IsoHemp block	**9**	**12**	**15**	**12**	**15**	**cm**
Total thickness*	36,4	39,4	42,4	26	32	cm
R-values wall	2,14	2,59	3	3,66	4,51	m^2K/W
Fire resistance	120	120	120	120	120	min

** With a 1 cm coating on both sides.*

Interior walls

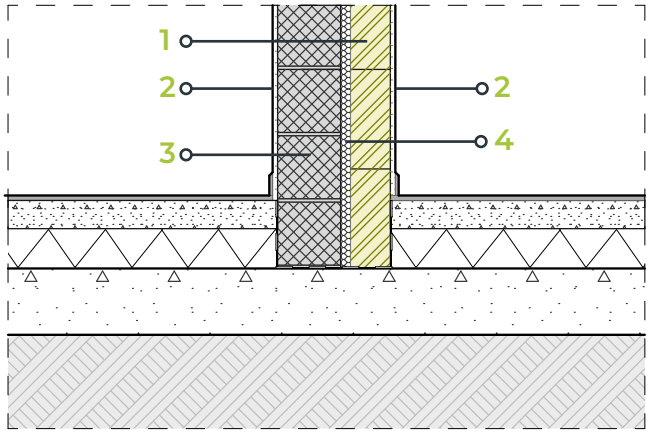
Advantages

- Cost-effective and sustainable solution
- Efficient sound insulation
- Quick to install
- Numerous finishing options



SOLUTION 1

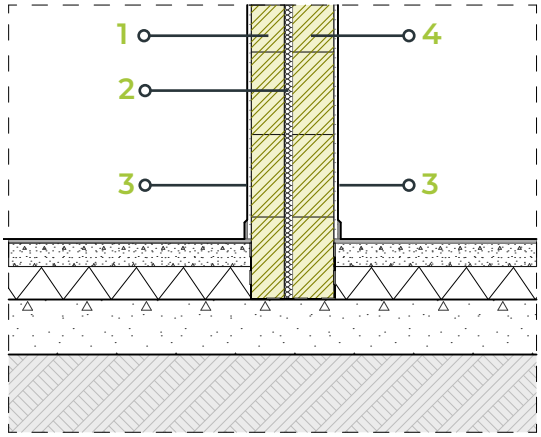
Load-bearing masonry and IsoHemp blocks



1. IsoHemp block 12cm
2. Interior plaster
3. Load-bearing masonry
4. Flexible insulation

SOLUTION 2

Double masonry with IsoHemp blocks



1. IsoHemp block 12cm
2. Flexible insulation
3. Interior plaster
4. IsoHemp block 15cm

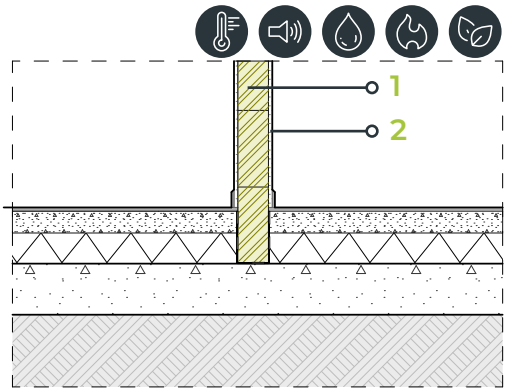
The performance table and technical section give examples of the possible building systems. Other solutions are also possible.
For more information, please contact our technical department.

Partition walls for residential units

• Interior walls

Partition walls with hemp blocks are ideal for various configurations, especially for constructions where a performant acoustic insulation is required or where interior walls are very light. They are also recommended in «light» construction projects, to add thermal mass, in case the buildings are subject to large thermal fluctuations.

The construction is done on concrete or wooden floors, before the floor is insulated. The hemp blocks stacked in height are secured by the geometry of the walls (corners). The slimmer the construction, the thicker the partition wall must be, to ensure optimal resistance. A continuous rendering ensures optimal acoustic insulation.



1. IsoHemp block
2. Interior plaster

- Light material
- Easy to install
- Thermal inertia
- Solid wall
- Acoustic insulation

IsoHemp building envelope	9	12	15	20	25	30	cm
Total thickness*	11	14	17	22	27	32	cm
R-value wall	1,31	1,73	2,15	2,86	3,56	4,26	m²K/W
Burning behaviour*	A2						
Fire resistance*		60		120			min
Acoustic attenuation index**	38	39	40	42	43	44	dB
Sound absorption	0,85						

**With a finishing layer of 1 cm.*

***With plastering along one side - Extrapolated value.*

Industrial buildings

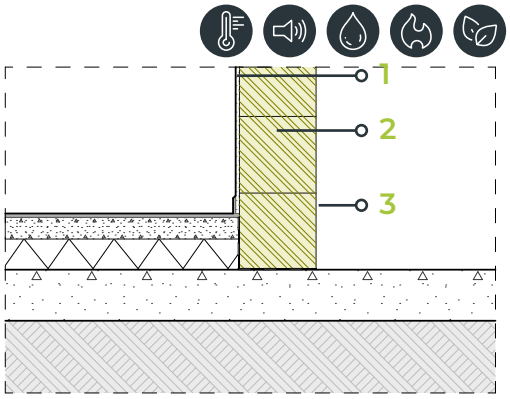
• Interior walls

The requirements for furnishing industrial buildings and offices are usually very demanding with a lot of aspects to take in account.

- **Thermal: do the spaces need to be heated?**
- **Acoustic: a noisy workshop or a quiet office space?**
- **Burning behaviour: fire resistance for 2h or more?**
- **Resistance: attachment of cable ducts, etc.?**

Hemp blocks meet all these specific requirements and ensure very high thermal performance of partition walls, for example, between office spaces and unheated areas.

The construction with the blocks can remain visible or painted over for optimal sound insulation.



1. Interior plaster
2. IsoHemp block
3. Painting

IsoHemp building envelope	20	25	30	36	cm
Total thickness*	21	26	31	37	cm
R-value wall	2,84	3,54	4,24	5,09	m²K/W
Burning behaviour*	A2				
Fire resistance*	120				min
Acoustic attenuation index**	42	43	44	45	dB
Sound absorption	0,85				

**With a finishing layer of 1 cm.*

***With plastering along one side - Extrapolated value.*

Floor

Hemp blocks as floor insulation are a very durable and hard-wearing solution. Simply lay them directly on a substrate that you have protected from rising damp, and then apply the compression layer.

There are two techniques for applying such floor insulation:

- You place the hemp blocks on a waterproof floor slab.
- You place the hemp blocks on a draining solid or pack layer.

The latter technique is the cheapest, as you no longer need to install a full floor/floor slab.

Hemp blocks as floor insulation are compatible with various types of screeds (cement, lime, or clay). You can also provide technical tubes in this and even floor heating is possible.

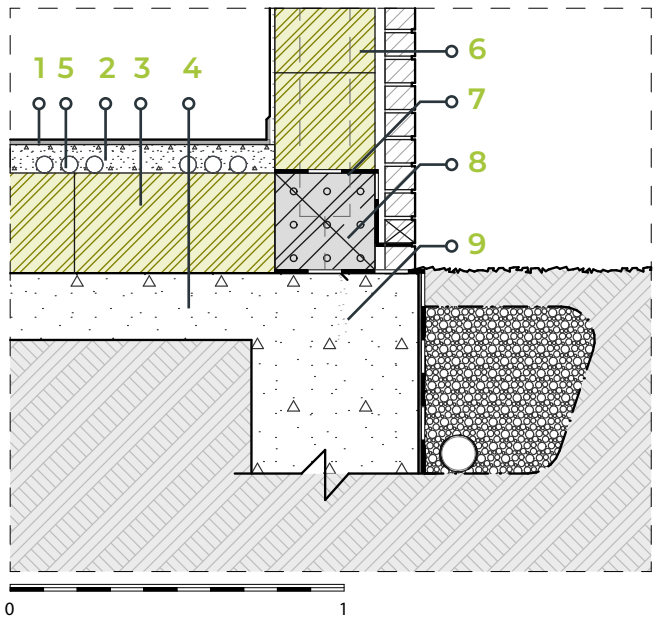
Customized energy savings

	Coating thickness 8cm							
IsoHemp block	30	30	15	20	30	15	20	cm
Substrate	Concrete floor slab 20cm	Layer of stabilized sand 3cm						
		Drainage soil of pebble 35cm	Drainage soil of expanded clay 35cm			Drainage soil of cellular glass 35cm		
Thickness	58	76	61	66	76	61	66	cm
R-value	4,55	4,46	4,84	5,55	6,96	6,45	7,17	m2K/W
U-value	0,22	0,22	0,21	0,18	0,14	0,15	0,14	W/m2K

Floor

Advantages

- Fast and easy to install
- Sustainable solution
- Floor heating is possible
- Better resistance without build-up



1. Finishing layer
2. Thickness of cover layer
8. cm
3. IsoHemp block 30 cm
4. Floor plate
5. Floor heating/ Technical tubes
6. Exterior wall
7. Sealing membrane
8. Rot-proof membrane
9. Foundation

The performance table and technical section give examples of the possible building systems. Other solutions are also possible. For more information, please contact our technical department.

Reference projects

• Specific features for your construction site

Are you facing a real challenge on your construction site? Don't worry, with hemp blocks you can master any challenge! Precisely because they have so many functions, they can be used for many applications and guarantee constant performance. Moreover, they are also maintenance-free.

Explore with us the different projects with versatile features:

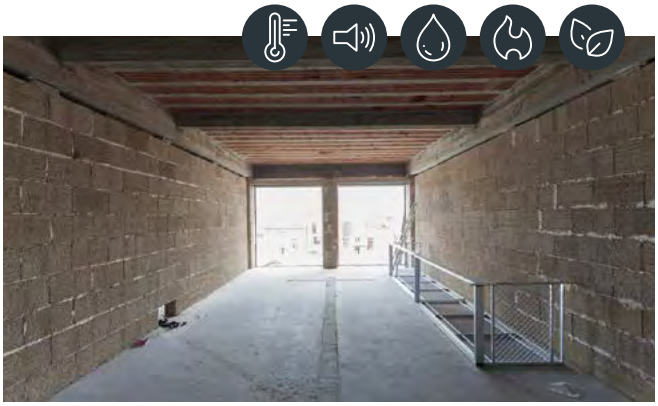
- Single-family houses
- Residential blocks
- Industrial buildings
- Office buildings
- Storage areas (archiving, artwork, food, etc.)
- Schools

Fancy visiting one of our sites or learning more about one of these projects? Then get in touch with us. Our team is at your service to help you design your project.

Would you like to discover more references? Visit our website.

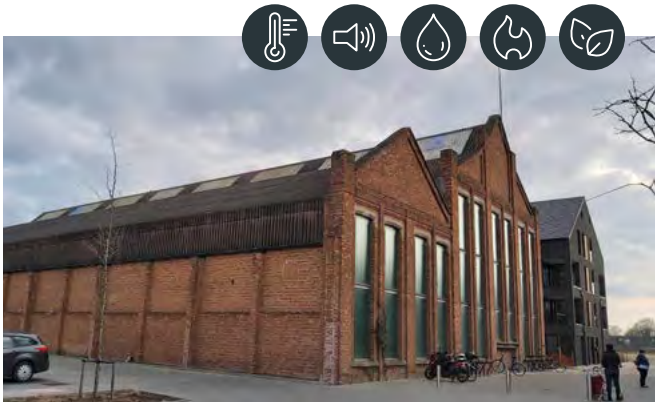
Reference projects

• Converting office spaces into residential units



Project: For the interior renovation of a former two-story office building, 15 and 30 cm hemp blocks were used to transform the building into 9 lofts that meet very low energy standards. The entire inner shell was made of hemp blocks which were also used for the double partition walls. Result: optimal sound insulation and fire-resistant walls. The natural interior plaster of IsoHemp was also used as a filler layer for interior walls.
Architect: Lode Vranken & Giulia Caterina Verga
Year: 2017
Place: Brussels, Belgium

• Renovation of a storage facility



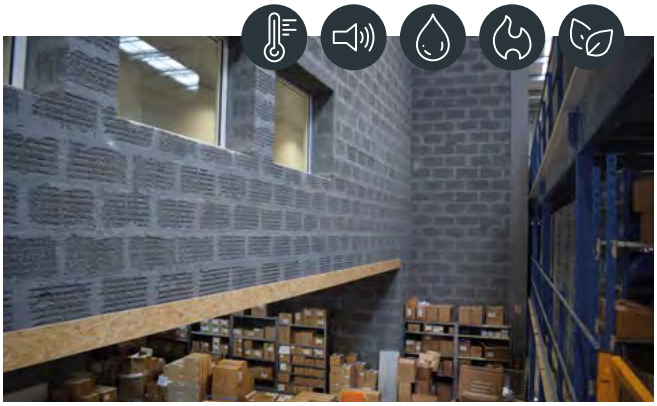
Project: Construction of 8 storage rooms for the preservation of works of art of the city of Mechelen. This project has a “box in a box” structure with walls of 30cm thick blocks and between 6m and 8m high. A total of 1500m² of hemp blocks were used.
Architect: Tecro & Krea Architects
Year: 2021
Place: Malines, Belgium

Reference projects

• Apartment building made of wood

Project: A new apartment building built with CLT and an outer shell of 30 cm thick hemp blocks. The client was looking for natural and breathable insulation. The interior walls consist entirely of 12 cm thick hemp blocks that significantly improve the acoustics of the living spaces.
Architect: David Loir - Dr(ea)²m
Year: 2018
Place: Pont-à-Celles, Belgium

• Story office building



Project: New industrial building constructed from 30cm thick hemp blocks and a supporting structure of concrete blocks. The building includes a logistics centre and various office spaces.
Architect: Colette Boever Architecte
Year: 2018
Place: Contern, Luxembourg

• Thermal and acoustic insulation of an elementary school

Project: Interior renovation of elementary school De Leertrommel in Opwijk with 30cm hemp blocks. It is the first school in Flanders to use hemp blocks with a view to sustainable renovation and a focus on the well-being of the children.
Architect: Ark architecten
Year: 2022
Place: Opwijk, Belgium

• Renovation of a wooden and brick barn

Project: Complete interior renovation of an old barn using 15 cm thick hemp blocks. The aesthetic character both on the inside and on the outside of the former farmstead is preserved, and potential condensation problems are avoided, thus leaving the wooden roof unaffected. Along the inside finished with natural plaster based on lime.
Architect: DAO Architecture sprl
Year: 2017
Place: Scoumont, Belgium

Reference projects

• House made of hemp blocks under a greenhouse

Project: Construction of a house using the Hempro system with hemp blocks 30cm thick. This bioclimatic house is designed in a conservatory. The living spaces inside are designed compactly and open towards the greenhouse, allowing the occupants to take full advantage of the extra living space.
Architect: Geoffroy Matthys based on a concept of Koen Vandewalle
Year: 2022
Place: Court-Saint-Etienne, Belgium

• Two highly energy-efficient single-family homes

Project: New construction of two very low energy houses with a structure of wooden posts and beams that was completely walled with only 42 cm thick hemp blocks (12 cm + 30 cm). Exterior finish based on lime.
Architect: Karbon Architecture et Urbanisme
Year: 2016
Place: Ottignies, Belgium

• Construction of a commercial space and shop

Project: Construction of a retail space to sell agricultural products from the neighbouring farm. As a project with a social purpose and strong rural roots, they chose a metal structure and an insulating shell made of 36-cm-thick hemp blocks.
Architect: /
Year: 2021
Place: Nijlen, Belgium

• Energy-efficient single family home

Project: Construction of a single-family house with the Hempro system made of 36cm hemp blocks. The owners were convinced of the advantages of a single-wall system and wanted to use bio-based products as much as possible. Building with hemp blocks was therefore the most logical choice.
Architect: ID Rénovation
Year: 2022
Place: Maisongoutte, France

Reference projects

• Low-energy house in post-and-beam system

Project: Construction of a single-family house in wooden post-and-beam system with hemp blocks for this zero-carbon project. The clients wanted high energy performance and a future-ready house. They chose hemp insulation with hemp blocks of 42cm thickness
Architect: Karbon Architecture et Urbanisme
Year: 2022
Place: Tangissart, Belgium

• Interior renovation of a house

Project: Renovation of an old farmhouse with a timber framework filled with hemp blocks. Along the inside, the farm was walled up with hemp blocks of 15cm thickness. This solution prevents condensation problems and damage to the wooden roof truss.
Architect: Self-renovation
Year: 2018
Place: Limbourg, Belgium

• Renovation of a timber-frame house

Project: The heritage of the Alsace region is of great historical value and must be preserved. The renovation of a half-timbered house is a technical challenge where many parameters must be taken into account, including thermal insulation and moisture regulation so as not to damage the wooden framework. In this case, hemp block are the obvious solution, as it stays close to the know-how of the past.
Architect: Auto-rénovation
Year: 2022
Place: Sélestat

• Interior renovation of a former farmhouse

Project: Renovation and restoration of the inside of a former French 'longère' (longhouse farm, which in this case served as a pig farm) using 20cm hemp blocks. Preserving the external character of the building with old authentic stones. Plastered on the inside with lime.
Architect: Self-renovation
Year: 2018
Place: Fougères, France

Reference projects

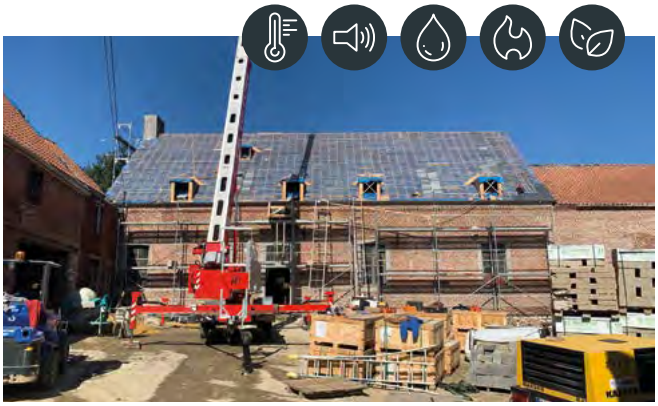
• Conversion of a monastery into a social housing project

Project: Hemp blocks were chosen for the renovation of this old monastery to ensure residents' comfort, long-term affordable energy bills and an environmentally friendly project.
Architect: Katrien Vervoort
Year: 2022
Place: Arendonk, Belgium

• New timber-frame construction

Project: To move away from the stereotype of the mountain chalet with wooden framework and vapour barrier, the architect recommended IsoHemp blocks to the client. This material was the perfect answer to the project's requirements: distributed thermal insulation, easy to install, retaining its breathable properties and easy application of plaster on both sides, also allowing partial self-construction.
Architect: Thomas Bommelaer
Year: 2021
Place: Hautes-Alpes, France

• Renovation of a medieval farmhouse



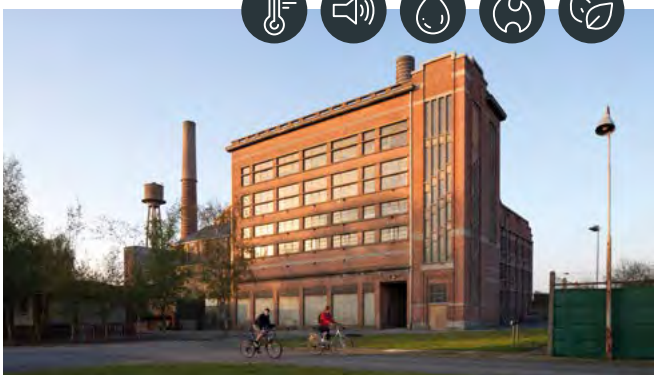
Project: Conversion of a heritage farmhouse into a hotel. Insulation was carried out from the inside to preserve the façade. The hemp block provides efficient moisture control to avoid problems such as cold bridges, condensation points, dew points, ... It also guarantees the preservation of the old, classified building.
Architect: Philippe Beublet, Plan 2b
Year: 2021
Place: Loupoigne, Belgium

• Clustered house with 3 bioclimatic dwellings

Project: Compact houses improved by focusing on their comfort by selecting quality materials, such as hemp blocks. The main challenge was to respect a very tight budget while building with ecological materials. Numerous cost-saving measures were implemented: compactness, curtain walls instead of frames, self-construction...
Architect: Anne Stevens et Egil Franssen Architectes
Year: 2019
Place: Chastre, Belgium

Références chantiers

• Renovation of a classified power plant

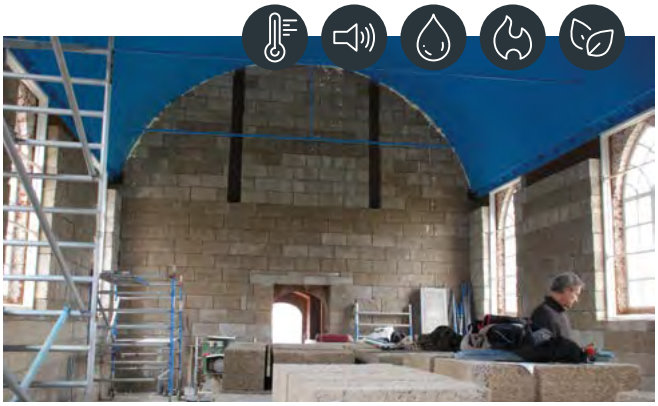


Project: Renovation of nearly 1,000m² of a classified former power station into a coworking and event space. The insulating shell was made with 15cm hemp blocks to provide acoustic and thermal comfort while respecting the heritage.
Architect: Silleghem en Partners
Year: 2021
Place: Zwevegem, Belgium

• New construction of a single-family house in hempro system

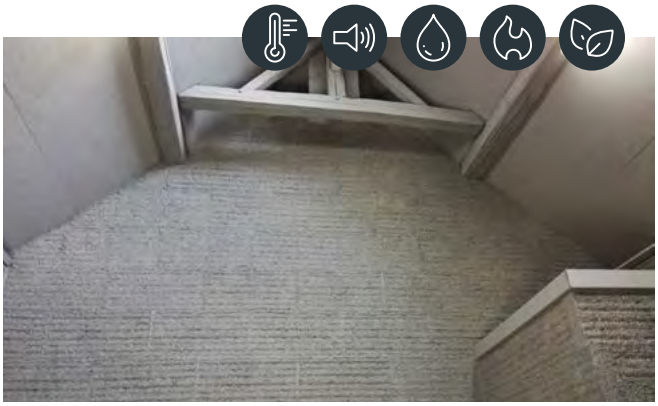
Project: The Hempro system proved to be the ideal solution for the building envelope in this project to meet the specific low energy requirements of the building. It is used in combination with a system of concrete beams and columns.
Architect: Marc-Henri Tellier
Year: 2021
Place: Stavelot, Belgium

• Renovation of an old church



Project: Renovation project of a former church to bring it up to low-energy standards. Interior insulation using hemp blocks (30 cm thickness). Wall heating and interior finishing with clay.
Architect: Reinier de Gooijer
Year: 2018
Place: Kloosterburen, Netherlands

• Conversion of a barn into a music studio



Projet : Conversion of an old barn into a room 100% dedicated to music. Hemp blocks were used for their exceptional acoustic properties as well as for the thermal insulation and hygrometric regulation necessary for the comfort of the musicians and for the conservation of the musical instruments.
Architect: Self-renovation
Year: 2019
Place: Florennes, Belgium

Applications

- Single-family homes
- Outbuildings
- Townhouses
- Apartment buildings
- Industrial building
- Interior partitions

We take care of your project as if it were our own.

Our team helps you to make your project a sustainable success through preliminary studies, technical and design advice and guidance on your construction sites.

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www.isohemp.com
info@isohemp.com

Tel : +32 (0)81 39 00 13
Fax : +32 (0)81 39 00 14

IsoHemp SA-NV
Rue Georges Cosse, 1
Z.I. Noville-les-Bois
5380 Fernelmont, Belgium

IsoHemp France
13 Avenue de l'Europe
10300 Sainte Savine, France

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