

# Overview of the hemp construction materials market



CDG ARABLE CROPS – COTTON, FLAX & HEMP SECTORS

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# The construction market

InterChanvre partner of Construire en Chanvre

For 30 years in hemp concrete

- 1986: First house restored with hemp concrete
- 1989: 1st presentation of hemp concrete at Batimat
- 1998: Creation of the association Construire en chanvre
- 2006: Life cycle analysis of hemp concrete
- 2007: creation of the Professional Rules
- 2009: 1st hemp wool insulation in France
- 2012: Integration of the granulat hemp label in the RPro
- 2017: First eco-neighbourhood in hemp concrete
- 2018/21: Pact Programme : latest version of the professional rules





# The association Construire en Chanvre

## Ambition

- Professionalising and securing hemp construction :
    - Evolution of the regulatory framework (Professional Rules)
    - Training of prescribers and craftsmen
    - Quality label « hemp aggregate for the building industry »
    - Creation of reference works (educational guides)
- ➔ Raising awareness

+ 1300 trained professionals

+ 50,000 m<sup>3</sup> per year of hemp concrete with certified hemp shives which represents 1,000 houses of 100 m<sup>2</sup>





# Hemp's strenghts

## + For health

- **Hygrothermics**: the need for air-conditioning is reduced, little heating, and great comfort in summer and winter.
- **Health aspect**: absence of VOCs (volatile organic compounds)
- Reinforced use of biobased materials of controlled origin
- **Humidity control**

## + For construction

- **Plant-based aggregate** that replaces mineral aggregate (non-renewable)
- **Lightweight** and therefore earthquake resistant (1m<sup>3</sup> of concrete = 2000 kg while 1m<sup>3</sup> of hemp concrete weighs 300 kg)
- **Durability** of materials that do not subside and are resistant to rodents and termites
- **Simplification** of construction methods
- **Reusable material** at end of life
- **Very good fire resistance** EI 240 and Lepir 2 test: unprecedented







# An example: the virtuous circle of hemp in construction





# Projects







# New and renovated hemp concrete structures in France



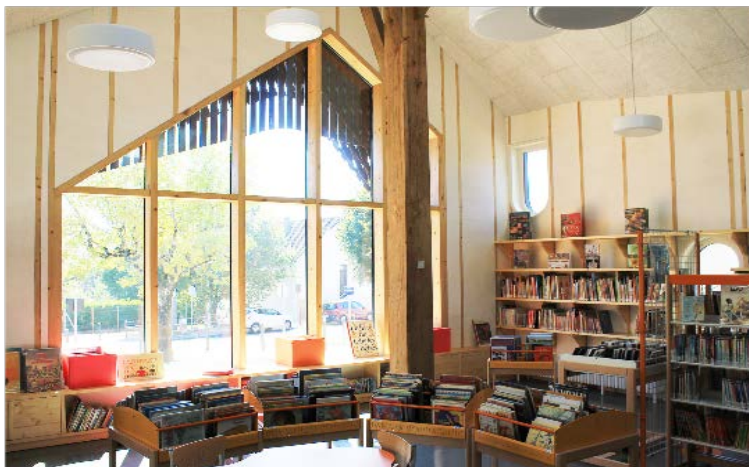
2005 - ERP Clermont Ferrand



2015 - ERP Carquefou



2014 - Multi-family housing Paris



2014 - ERP Gour de l'Arche



2014 - ERP Arche de Thoiry



2012 - Multi-family housing Paris





# New works at an international scale







# CenC and insulation

## Overview of hemp insulation

- 140,000 m3 of production per year, which represents between 1.4 and 1.6 million m2 sold
- CSTB certified, Biosourced label
- Healthy production for the earth and for humans
- Product available throughout France
- No need to change installation habits, offers a comfortable installation
- No protection for the installer
- Short circuit and circular economy with farmers within 100 km
- Biobased insulation represents 8% of the French market
- Construction of high schools, colleges, offices, etc.





SAINTE TULLE TRAINING CENTRE (04)



THE HANDBALL HOUSE - CRETEIL (94)



HEAD OFFICE OF KTR FRANCE (69)



# Hempcrete blocks

New build and retro-fitting

Easy to implement



**Thermal**  
regulation



**Sound**  
proofing



**Resistance**  
& reaction to fire



**Water**  
regulation





# Hempcrete blocks

## Overview and perspectives

- 10.000 m<sup>3</sup> sold in 2020
  - *Every day 1 house is build with hempblocks*
- A certified and labelled material
- A positive carbon footprint
  - *75 kg eq. CO<sub>2</sub> saved each 1 m<sup>3</sup> sold*
- Distribution of sales : 60% Belgium – 40% Europe
- A new production unit
  - Up to 5X more production possibilities
  - Local suppliers
  - Zero waste production process









## Obstacles for the development

### Recognition of the recyclability of the material at the end of its life

Today at European level, the NF EN 15804+A2 standard penalised the end of life of biobased materials in the environmental calculation even if science based proofs of their recyclability exist.

### A necessary evolution in thermal calculation

Necessity to take into account hygrothermal performance of hemp concrete which is competitive at high and very low temperatures thanks to waterborne absorption (for example in Australia, when it is 45°C outside, housings stay at 25 °C inside without air conditioning).