

Improving Building Material Recyclability using Mineral Waste

The example of an insulation startup

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Construction is failing to keep pace with the environmental challenges

1. | Continuously **growing demand** for construction



We build the equivalent of 1 New York City every month

2. | Building as **one of the main drivers** for climate change



The share of worldwide CO₂ emissions from buildings*



The share of global energy consumption from buildings **

Circular Economy in Construction



Guggenheim Museum, Bilbao



Markthal, Rotterdam



Blur expo02, Yverdon-les-Bains



MAXXI, Rome



Assembly

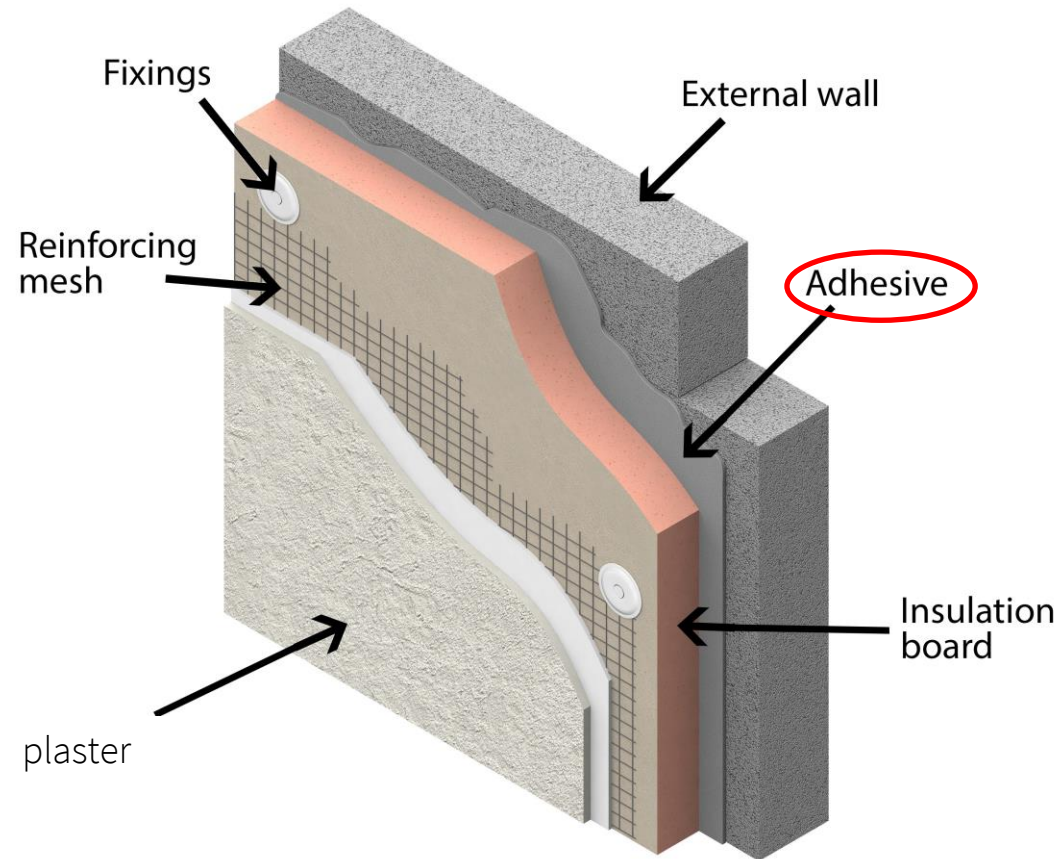
Disassembly



Buildings are patchy composites

The example of insulation

Material families in a building façade




Problems

Lack of reversed logistics

Contaminations
(e.g. bituminous glues, HBCD)

Recycling in Construction is too costly
(logistics + contamination between materials)

A yellow Hyundai excavator is shown in the foreground, working on a pile of debris and rubble. In the background, a large, multi-story brick building is visible, with some windows appearing broken or boarded up. The scene suggests a demolition or construction site. The excavator's arm is raised, and its bucket is positioned near the ground. The overall atmosphere is industrial and somewhat somber due to the demolition work.

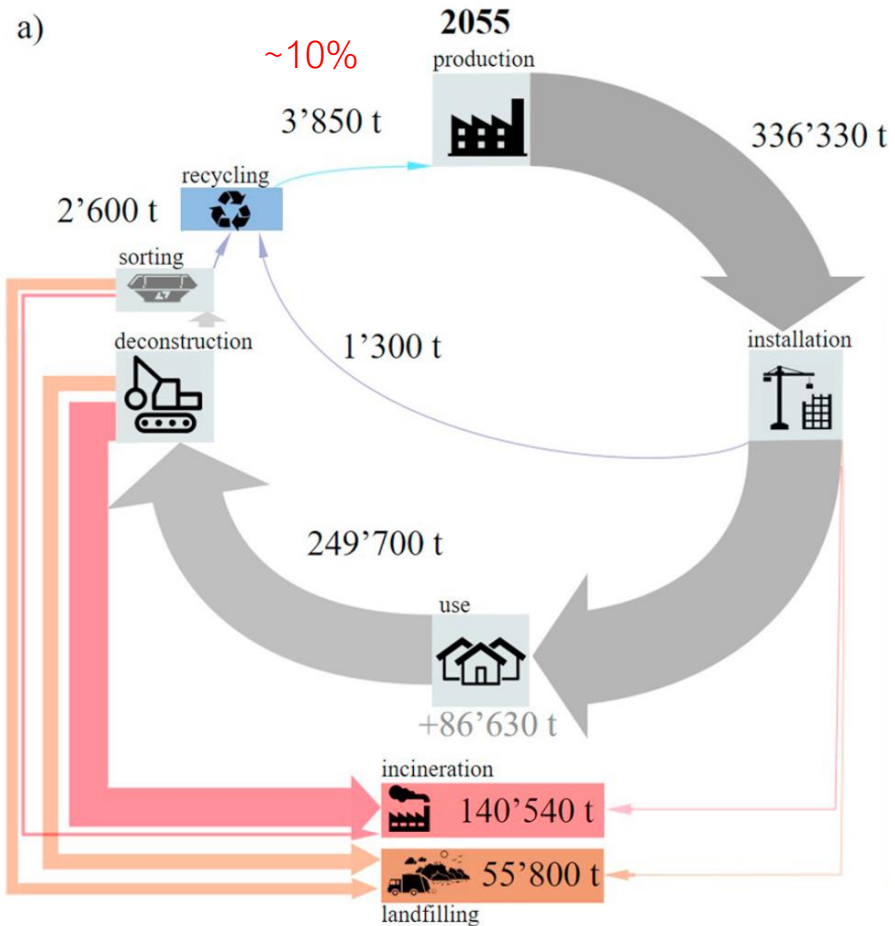
1.5%

The current share
of insulation
materials recycled
in Switzerland*

FenX

Strategy for impact reduction: the example of Swiss insulation

Baseline



Screwing vs gluing

Selective deconstruction

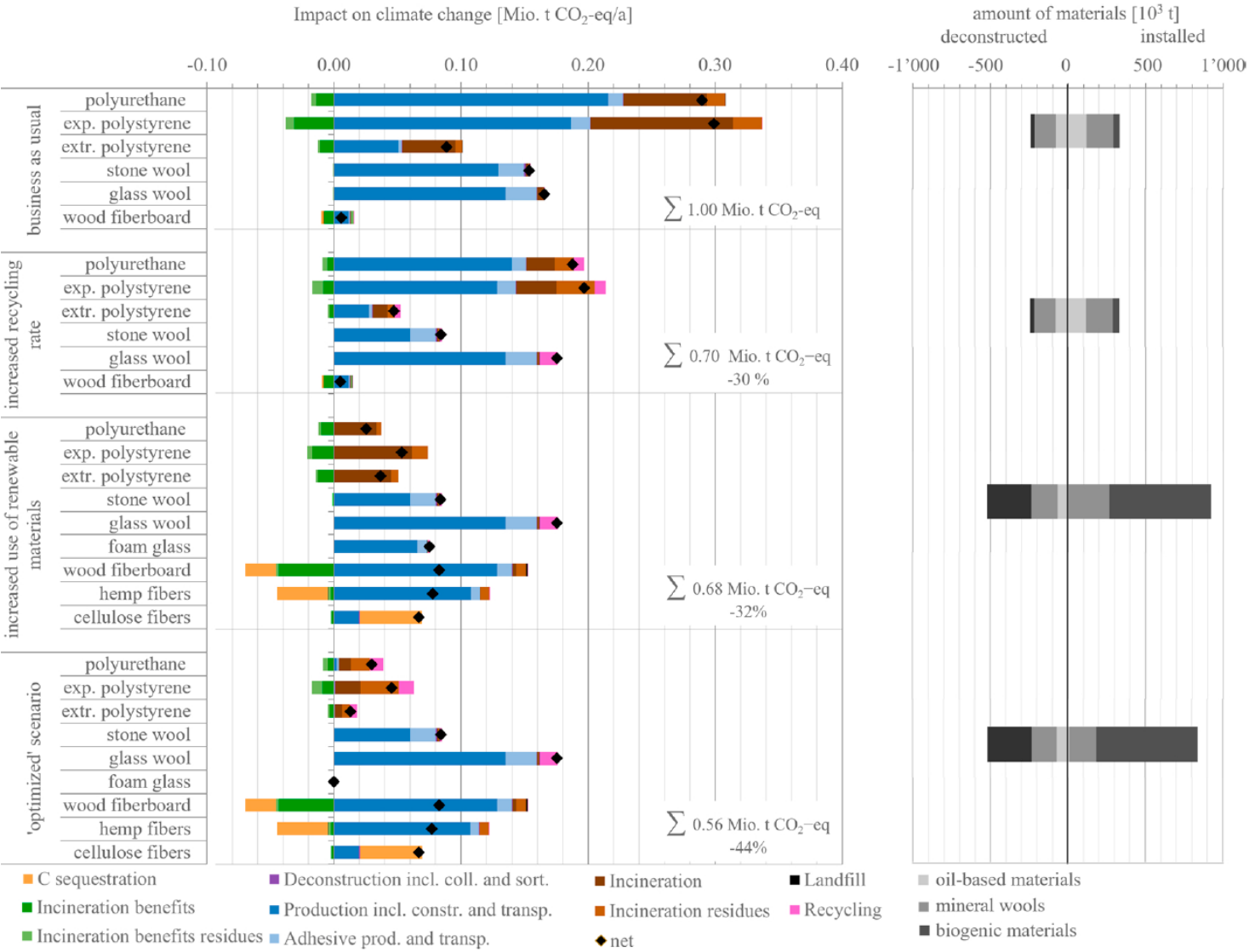
Strategy for impact reduction: the example of Swiss insulation

Baseline

A

B

A + B



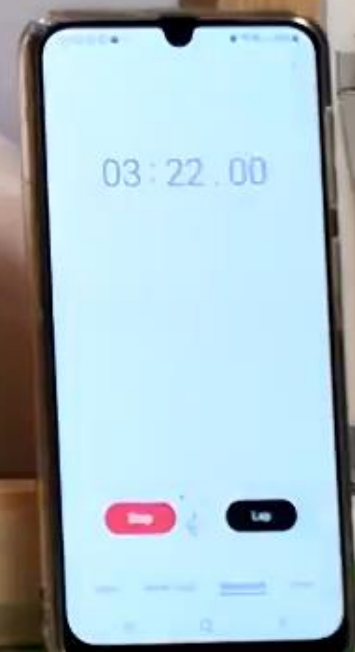
Increasing recycling rates +
use low-carbon materials
could reduce Swiss CO₂
emissions by 44% by 2050

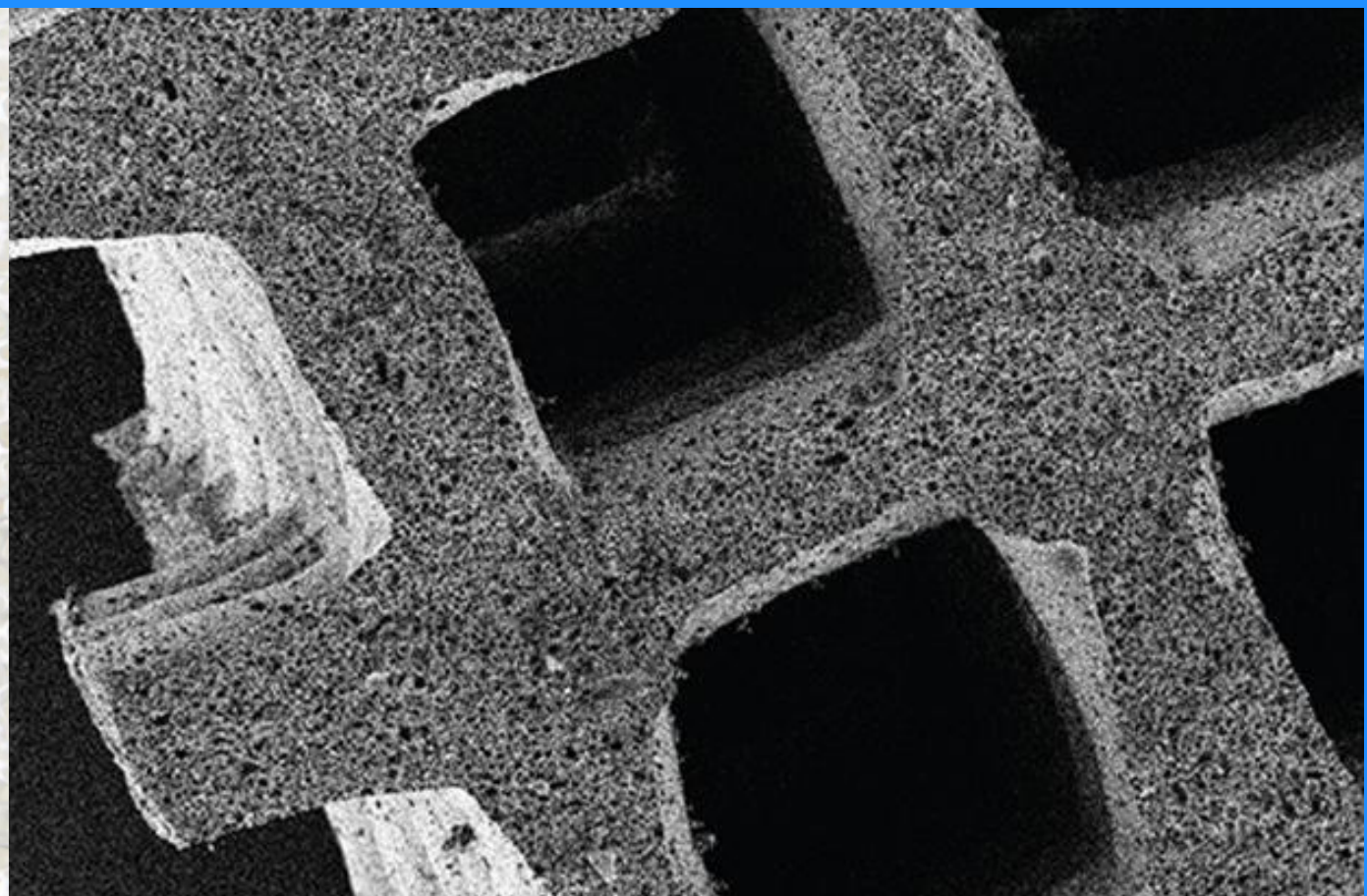
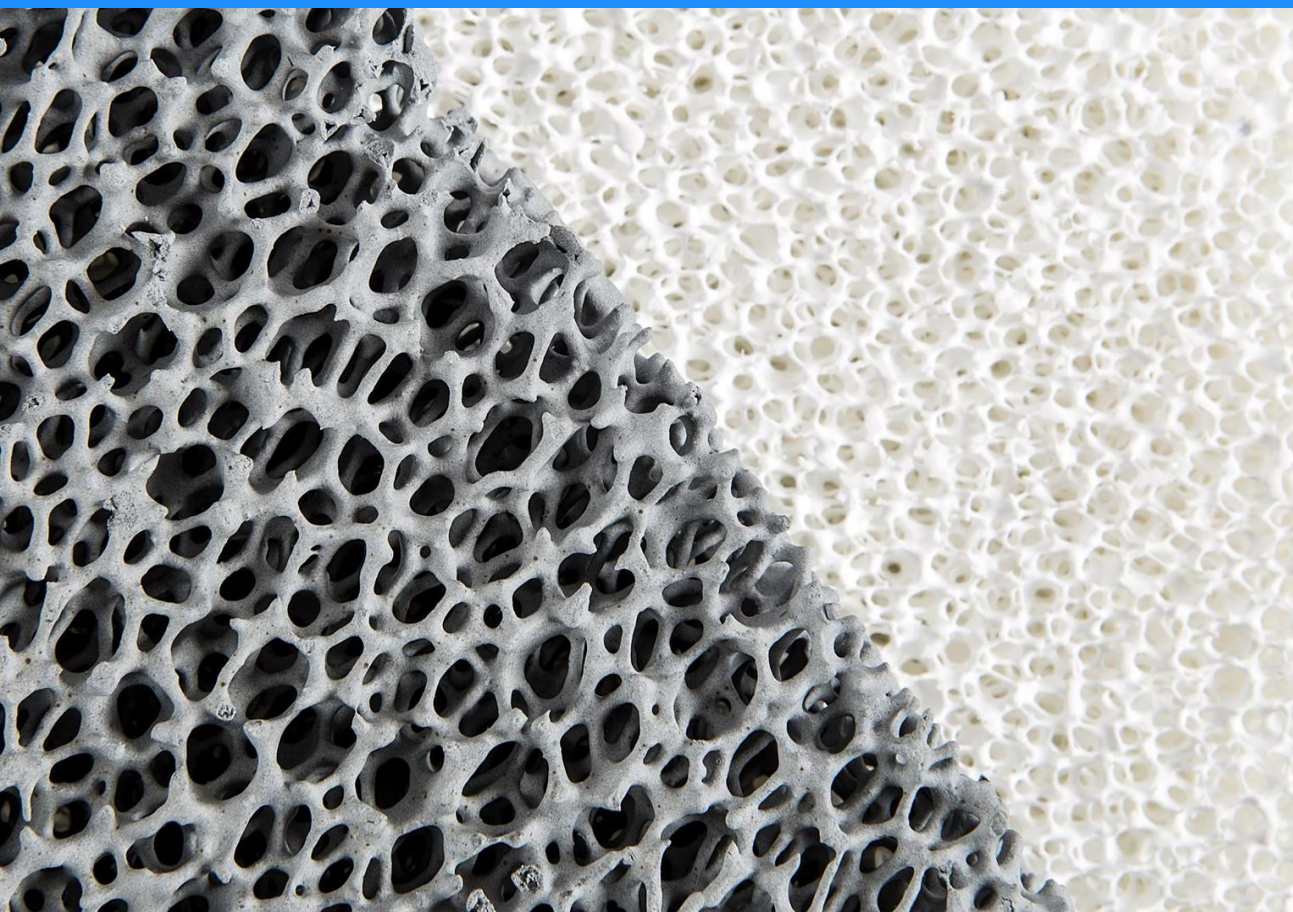
New construction materials must be low-carbon + "easy-to-recycle"



Our Approach

Mineral foams





Development of ultra-light mineral foams

Using mineral waste



Excavated materials



Construction waste



Paper ash



Rice husk ash



Coal fly ash



Metal slags

FenX mineral foam



Our mineral foam technology, manufactured with low energy, forms ultra-stable bubbles, enabling maximized performance and sustainability at competitive cost

✓ Patented technology

Mineral Waste



Grounded/Filtered to fine powder



Sustainable Building Material from Mineral Foam



Ultra-stable foaming with FenX additives

First product: Insulation Panel



Highly insulating



Maximum A1 fire protection



Rigid with a better surface finish



Easy to cut and handle



Breathable



100% Circular
and low embedded energy



Lightweight

Product tested and ready for market!

1



On building projects,...

2



varying the applications, ...

3



with 40+ market players...

4



to test performance and
installation.

We address the building insulation market, subjected to high pressure



1. High CO₂ intensity

- Proper insulation can reduce household energy by 44%.¹
- 75% of EU buildings are not minimally insulated.²



2. High prices

- Due to high energy demand, standard insulation materials (Plastics, Wools) had their price increased in average by 30% since 2020.³



3. Critical fire regulations

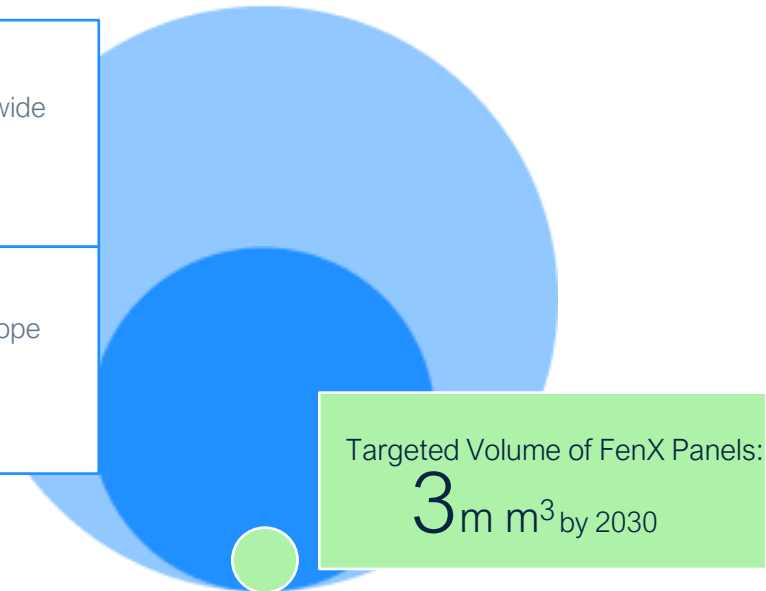
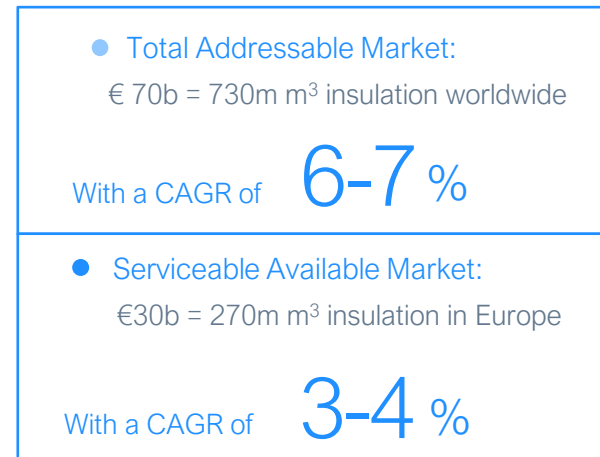
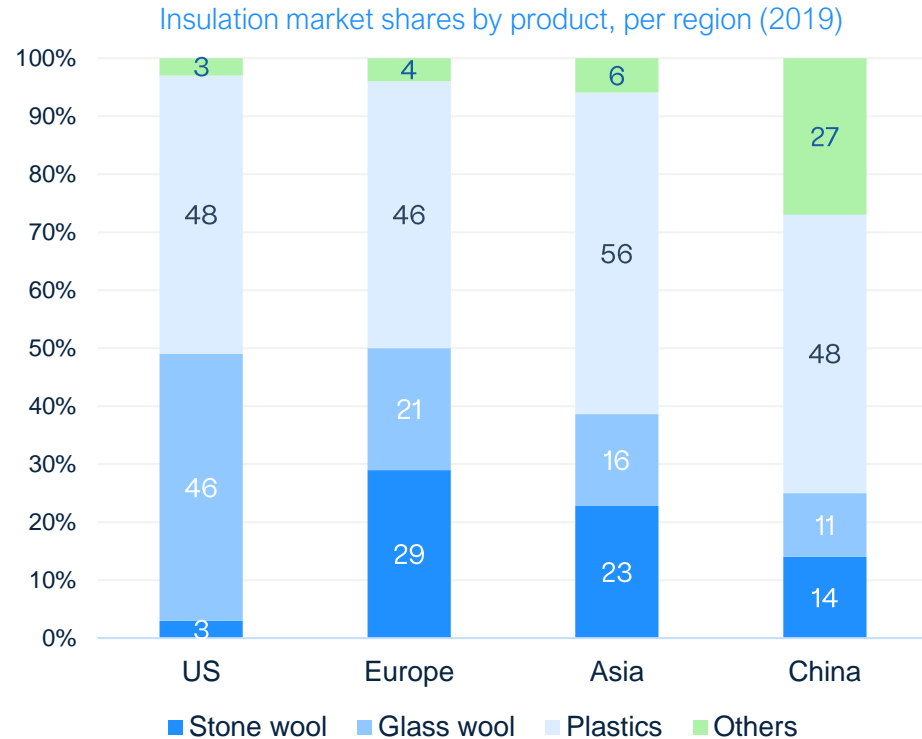
- Strict fire restrictions on use of flammable materials (e.g. UK, Spain, Middle East)⁴
- 50% of European market shares (organics) are not fulfilling the norms.⁵



4. Difficulty to recycle waste

- Reasons due to contamination in material or high costs to separate materials (e.g. plastic or fibers glued to concrete/bricks)

Building insulation market: huge and growing!



High growth opportunity among threatened standard insulation materials

A product that ticks all the boxes for future-proof insulation

Key criteria

Fire resistance

A1

Thermal conductivity

< 0.04 W/mK

Open to air/vapor diffusion

< 10

Compression strength

> 70 kPa

Ease of recycling / separation

Low embedded energy

< 150 MJ / m² for U=0.2

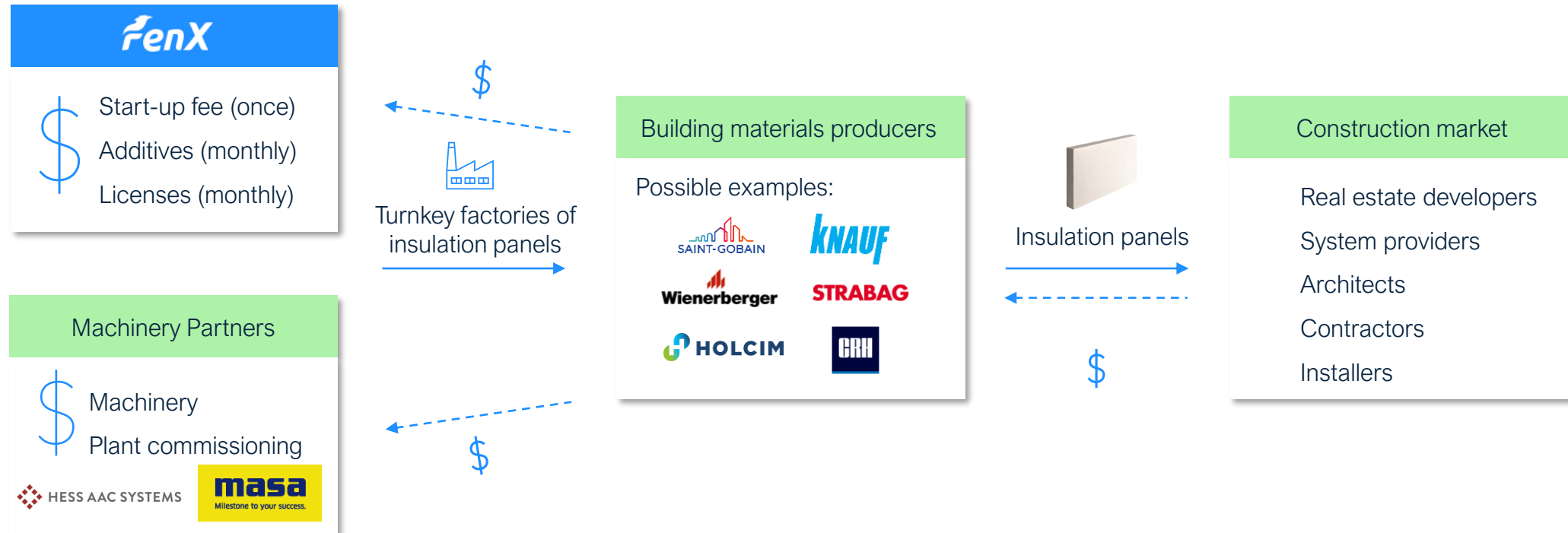
Cost competitive

< 150 €/m³



FenX performs significantly better than other mineral foams/bio-sourced and can compete with Plastics & Wools on performance and price

We provide turnkey factories to building materials producers





First factory with
FenX technology to
start operations in Spain
in 2025!

In partnership with:



.Igeneris



Where we come from and where we're going



2019-2021

- First Demonstrators Panels
- Financing round of 2.7 Mio



2022-2023

- Set-up of Prototyping Line
- Market Acceptance Panels



Today

- Validation factory-scale processes
- Validation Business Model



2025

- Factory 1 start
- Manufacturing de-risk



In 2 years

- 2 Factories installed / 3 more sold
- Launch new applications

Our team to make it happen

Management Team



Dr. Etienne Jeffroy
CEO & Cofounder
PhD Materials Science ETH



Enrico Scoccimarro
CPO & Cofounder
MSc Materials Science ETH



Jens Diebold
COO
Ex-CEO Holcim Germany
Ex-Head Sustainability Holcim

Supported by world-class team



15 people, 8 nationalities
Techies, industry idealists and realists



Our common goal
Demonstrate sustainability without
compromising cost or performance

Board of Directors



Michael
Stucky
Finance / Venture
Ex-CFO GlycoVaxyn



Hassan
Sohbi
M&A Lawyer
Taylor&Wessing



Alexis
Angot
Scale-up / Finance
Ex-CFO Ynsect

10+ Prizes and Awards



Join us in building a sustainable Future!

Why choose FenX insulation panels

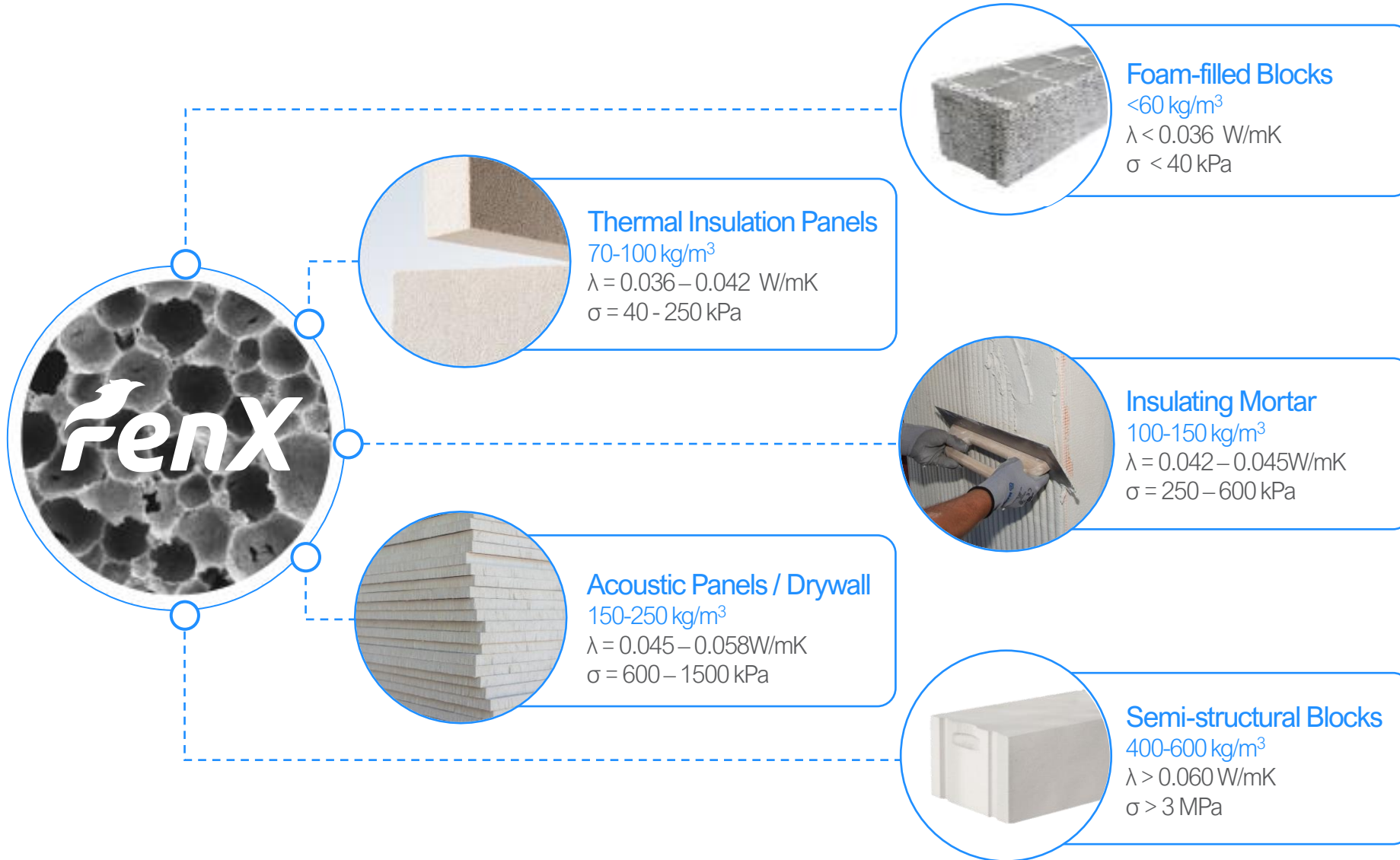
- 1 | All-in-one insulation for maximum comfort
- 2 | Easy-to-install and versatility in applications
- 3 | “Lowest footprint” philosophy = made from waste, low-energy, recyclable

What we are looking for

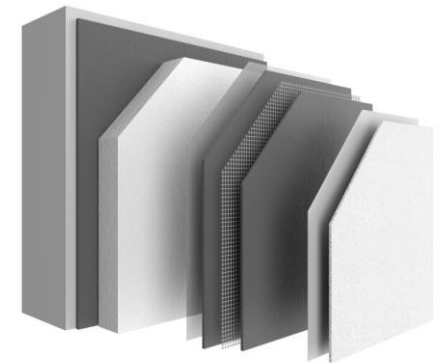
- 1 | Customers interested in producing and selling insulation
- 2 | Customers willing to buy mineral foam insulation panels
- 3 | Supporters to drive circular & cost-competitive innovation



Vision: Improve Construction Decarbonization and Recycling with Mineral Foams



End-goal:



Fully recyclable
building elements



Thank you!

Would you like to learn more? Get in touch.

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