

MYCEEN

Revolutionising
construction industry
with carbon-negative
mycelium-based
insulation panels



Fossil-based building insulation contributes to emissions in the **highest-emitting** construction industry

problem

37% of all CO₂ emissions globally

40% of energy consumption

38% of all waste generated in EU



opportunity in EU

75% of buildings are inefficient

35 M buildings to renovate by 2030

250 M m³ insulation used per year in EU



Sustainable construction materials market **grows 3x faster** compared to conventional materials

Company

Founded in 2021 in Tallinn, Estonia

Patent-protected technology

€1 M+ in funding (90% grants)

Product & pricing validated on the market:

30+ LOIs and **200+ leads** across EU

Design awards and nominations

Diverse team of **10 people**

Collaborations with **universities** and **engineering companies**



Our innovation is the novel mycelium-based insulation material and the method for its production

mushroom mycelium

- infinite natural glue
- exponential growth



leftovers (sawdust)

- low-cost € 3m³
- abundant resource



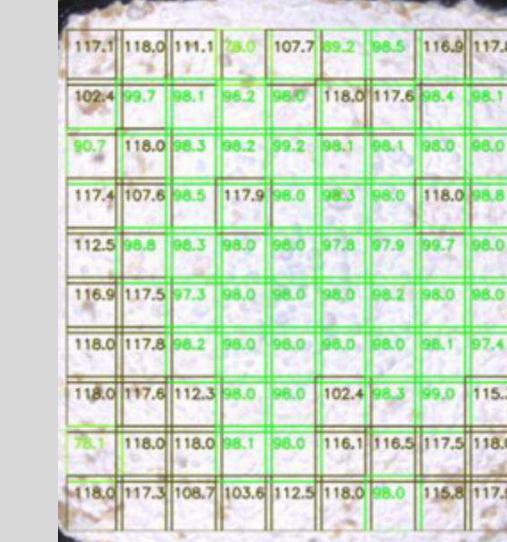
carbon-negative building materials

- 4x lower cost
- 1m³ material = -100kg/CO₂

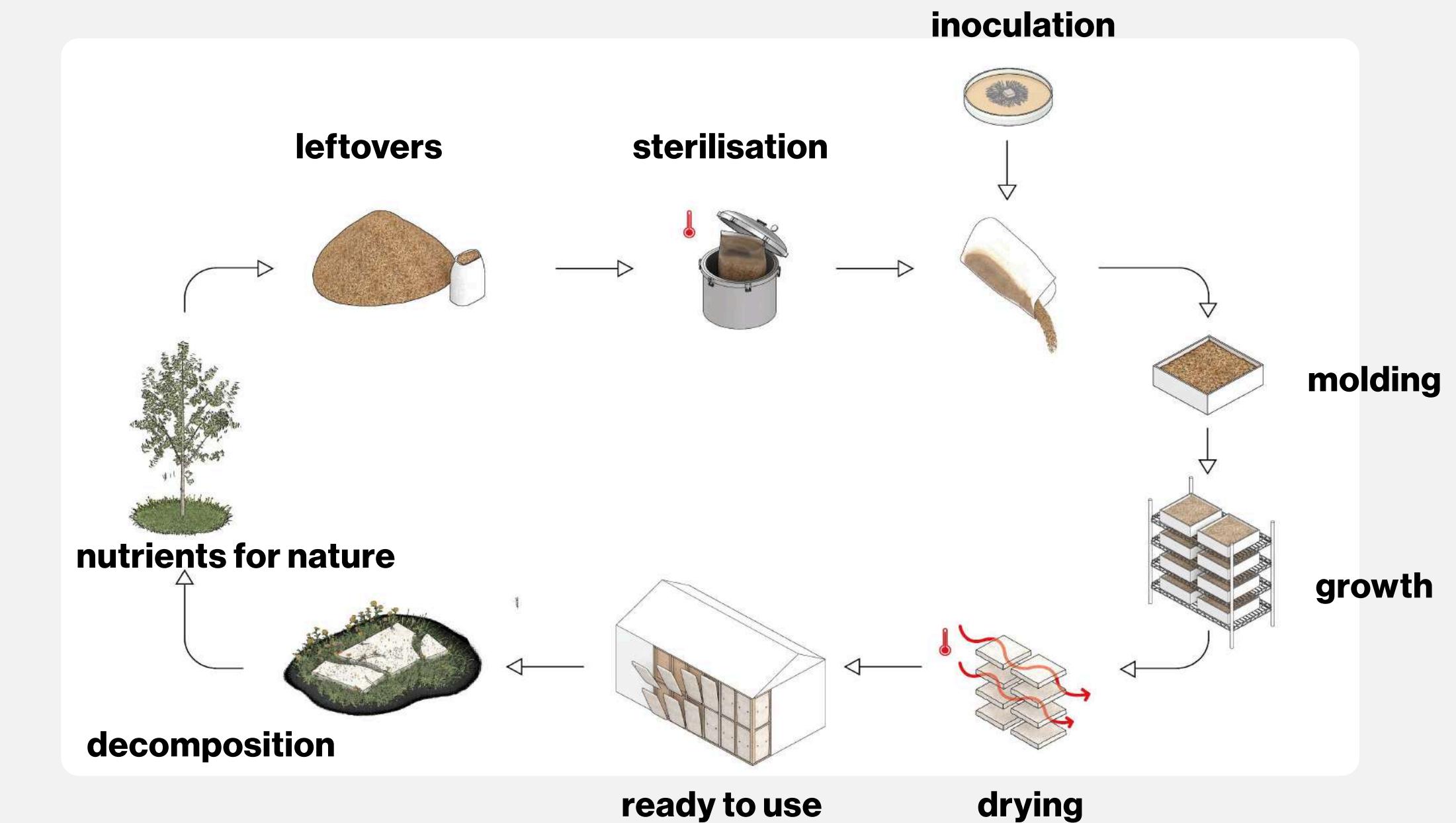


automated production tech (IP)

- energy efficient (growth at 25°C)*
- Artificial Intelligence & Machine Vision
- to reduce labor cost and increase output



We have developed a solution that **reduces the cost** of bio-based insulation by **four times**.

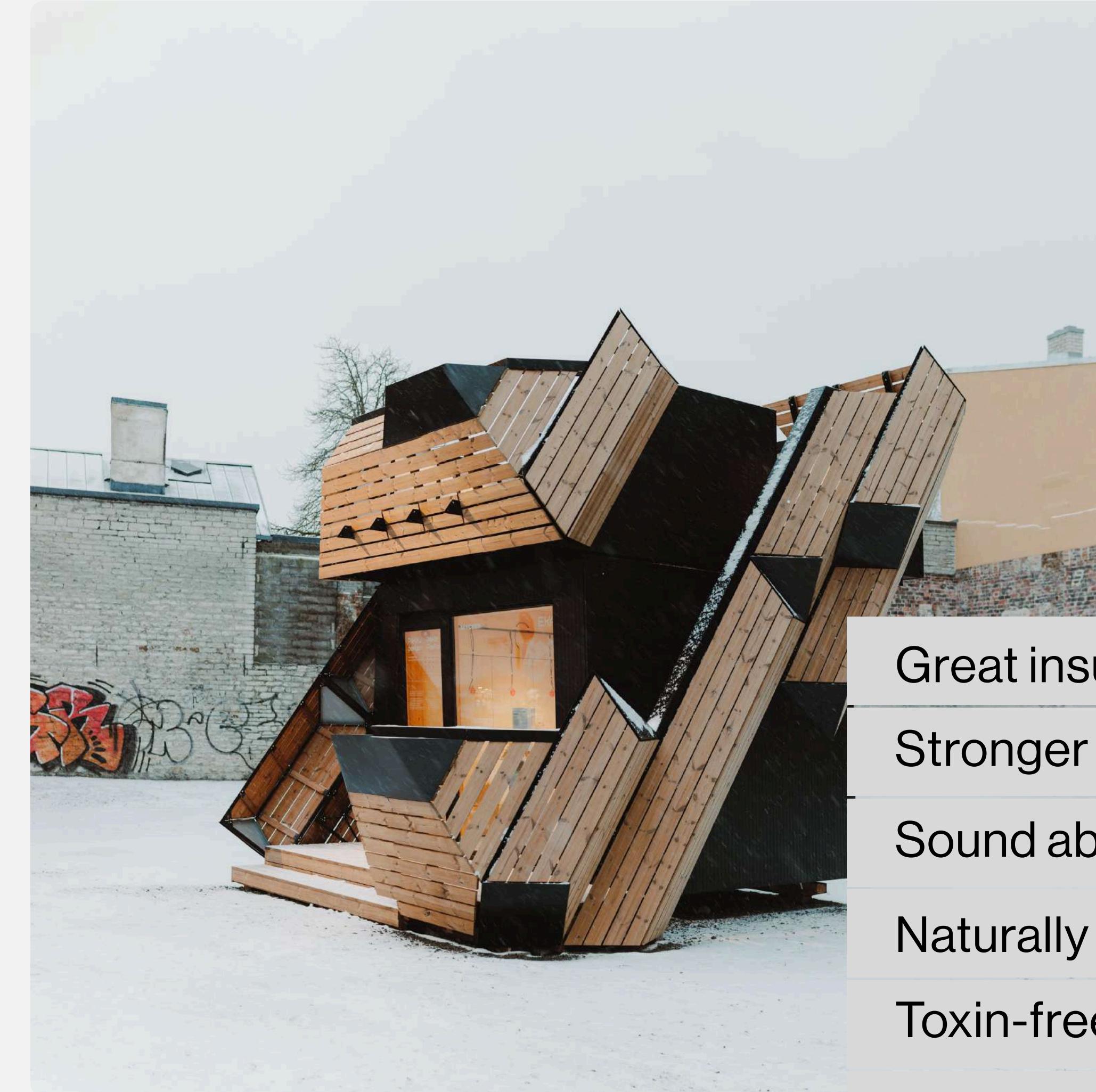


*energy intensive mineral wool production at 1500°C

Validated in real environment, our insulation exceeds market expectations

real environment test

- **70+** sensors
- compared with:
 - mineral wool
 - wood fibre insulation
- different thicknesses
- durability
- sound insulation



Myceen's test house in Tallinn, Estonia



Section of test house' wall

results

- better stability for:
 - temperature changes
 - humidity changes
- no mold/degradation

Great insulation properties ($\lambda=0.037\text{W/m}^*\text{K}$)

Stronger than EPS (load-bearing)

Sound absorbing and blocking (high density)

Naturally fire retardant (class D)

Toxin-free, 100% safe material

Breathable - great regulator of indoor climate

Scalable production

based on own IP

production volume

3000m³
target for EIC

40-50
houses insulated

- Unique material recipe
- 4 years of continuous material production
- Reduced defects to 1-3%
- Energy-efficient production at 25°C (instead of 1500°C)
- Automated production controls
- Patent on Artificial Intelligence & automation



117.1	118.0	111.1	78.0	107.7	89.2	98.5	116.9	117.8	116.3
102.4	99.7	98.1	98.2	98.0	118.0	117.6	98.4	98.1	117.5
90.7	118.0	98.3	98.2	99.2	98.1	98.1	98.0	98.0	117.8
117.4	107.6	98.5	117.9	98.0	98.3	98.0	118.0	98.8	118.0
112.5	98.8	98.3	98.0	98.0	97.8	97.9	99.7	98.0	118.0
116.9	117.5	97.3	98.0	98.0	98.0	98.2	98.0	98.0	115.3
118.0	117.8	98.2	98.0	98.0	98.0	98.0	98.1	97.4	118.0
118.0	117.6	112.3	98.0	98.0	102.4	98.3	99.0	115.3	78.2
78.1	118.0	118.0	98.1	98.0	116.1	116.5	117.5	118.0	111.3
118.0	117.3	108.7	103.6	112.5	118.0	98.0	115.8	117.9	117.1

Myceen's insulation outperforms market with performance and pricing due to low-cost inputs

compared to bio-based solutions:

- better fire class
- 4 x lower price
- no virgin raw materials

compared to mineral wools:

- better thermal and humidity stability and acoustics
- healthier living environment
- drastically lower CO₂

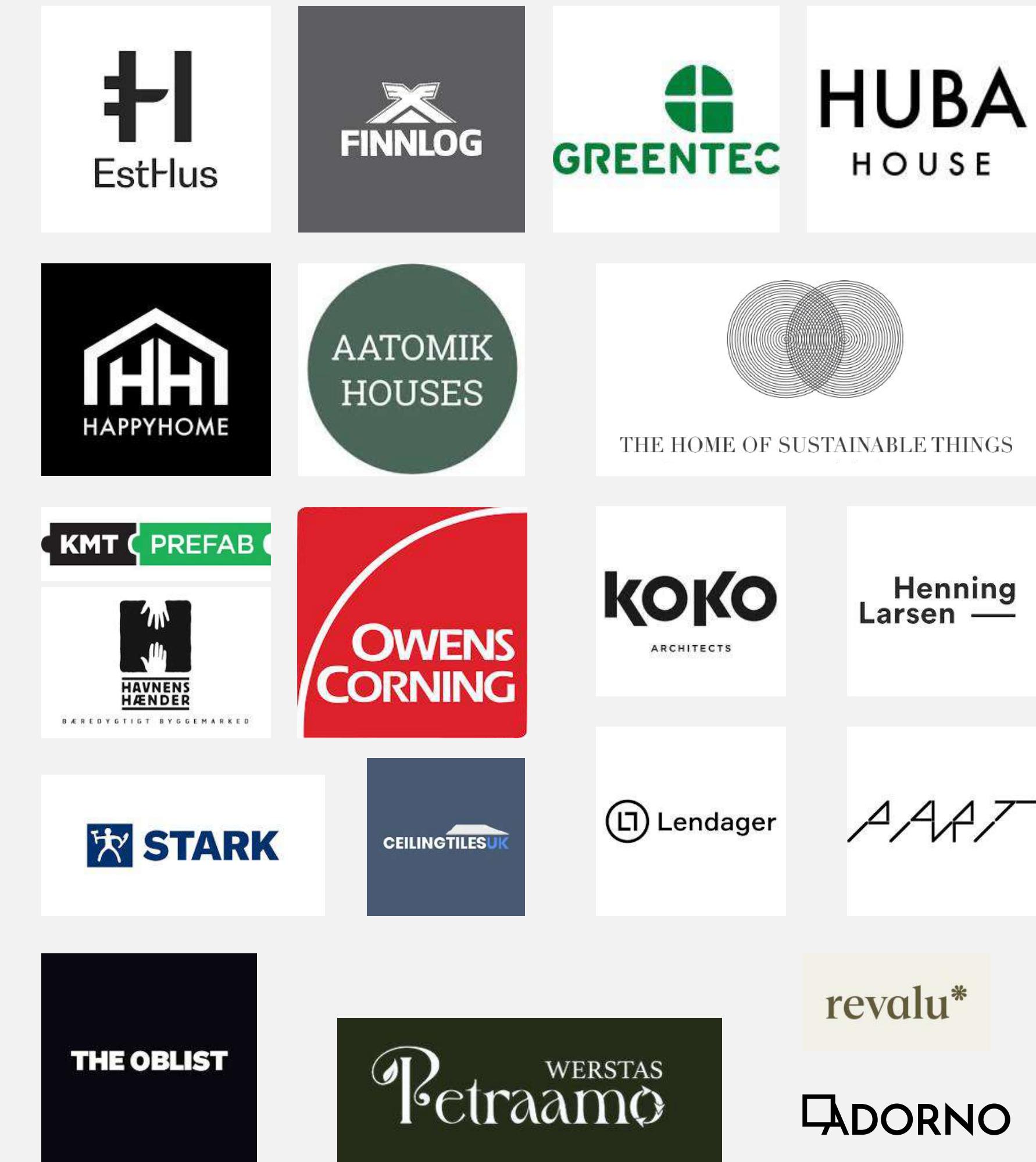
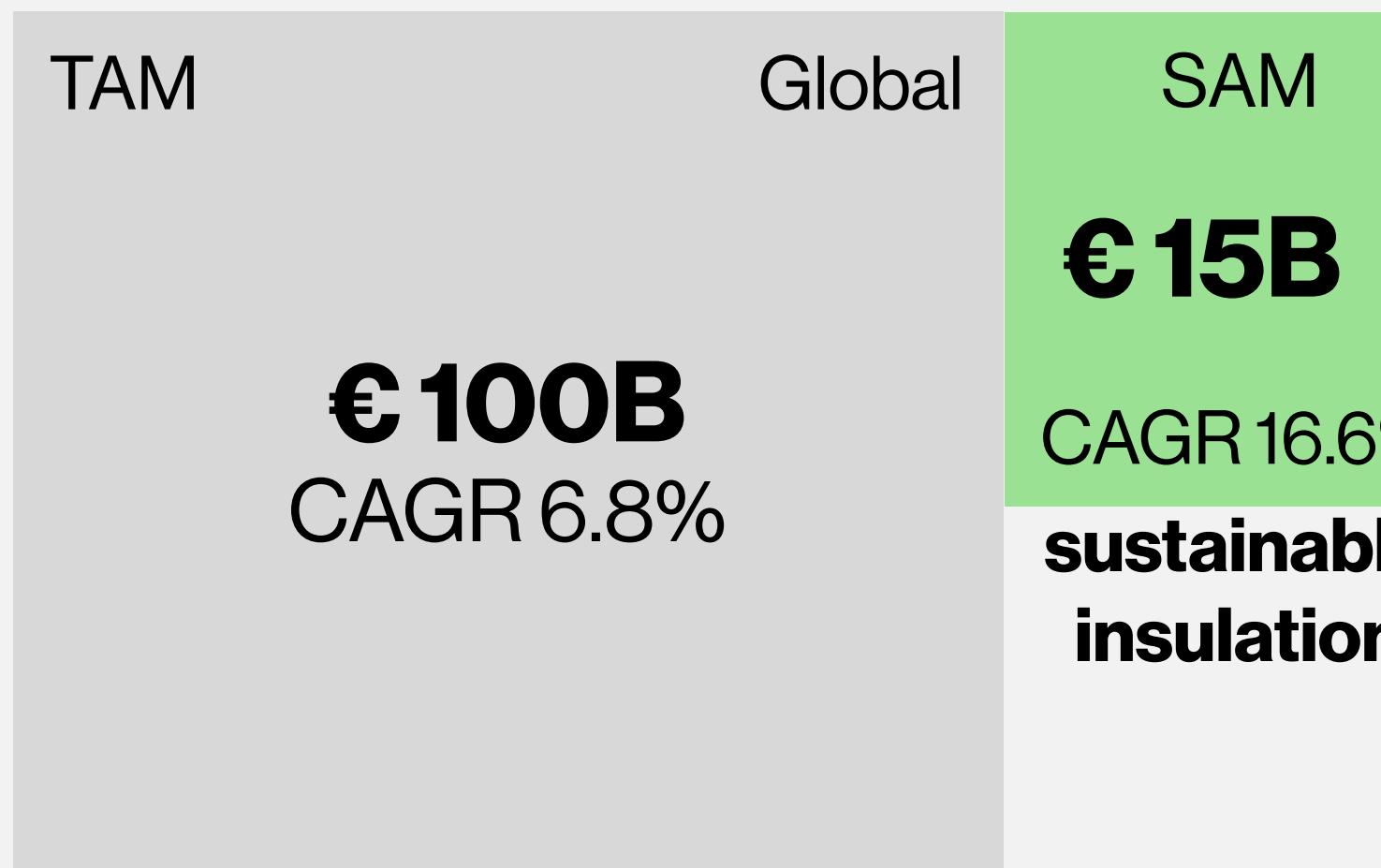
Type	Material	Density kg/m ³	Thermal conductivity λ (lambda)	Fire Class	Sustainability kg CO ₂ /m ³	Price €/m ³
Mycelium	Mycelium composite (sawdust)	100	0.037	D/B	-100	50
Bio Fibre-Based	Wood fibre (STEICO), virgin wood	140	0.040	E	-85	220
	Hemp-Jute fibre	37	0.037	E	-N/A	200
Straw	Straw elements	115	0.060	E	-100 - 50	100 - 200
Mineral Wool	Glass wool	53	0.033	A	92	40
	Rock wool	72	0.036	A	108	30
Rigid Foams	Expanded polystyrene (EPS)	17	0.030	E	71	100
	Extruded polystyrene (XPS)	30	0.029	E	225	213

Myceen's insulation brings down an average house's carbon footprint by 20% without a "green premium" price

We've **validated** our products and pricing on international **market**

- **30 LOIs** with 10 house producers and 20 architects/resellers already surpass our production capacity for the next two years.
- **200+** ongoing **leads** with resellers, house producers and construction companies further fuel the Equity scale-up.

Insulation material market by 2030



Innovation with the potential to scale

Commercialisation strategy:

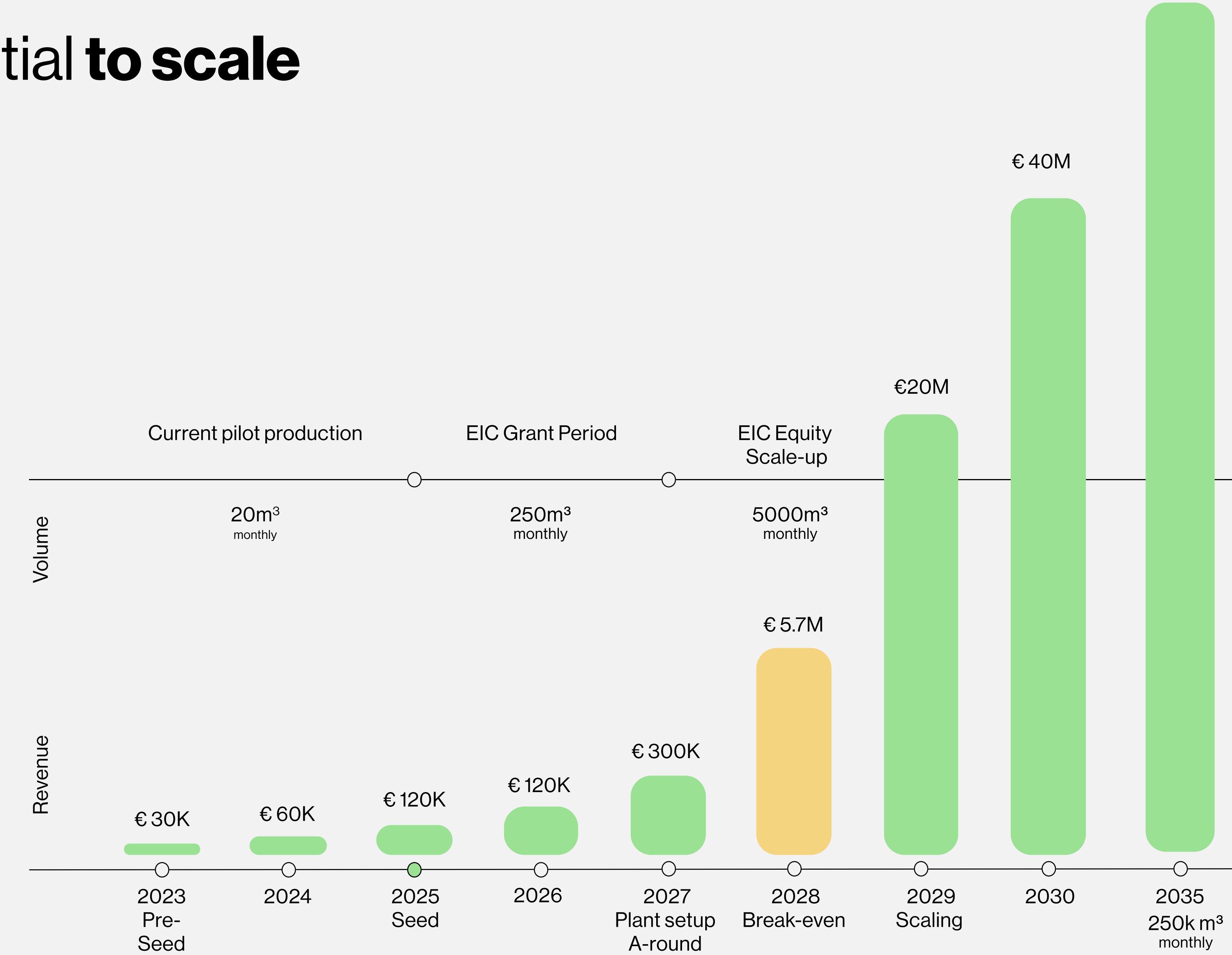
B2B Customer segments:

house producers, construction companies, architects & resellers

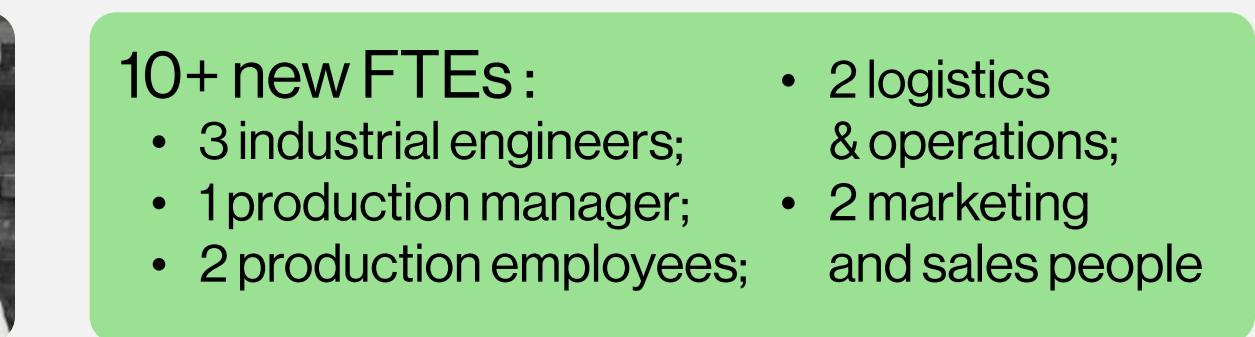
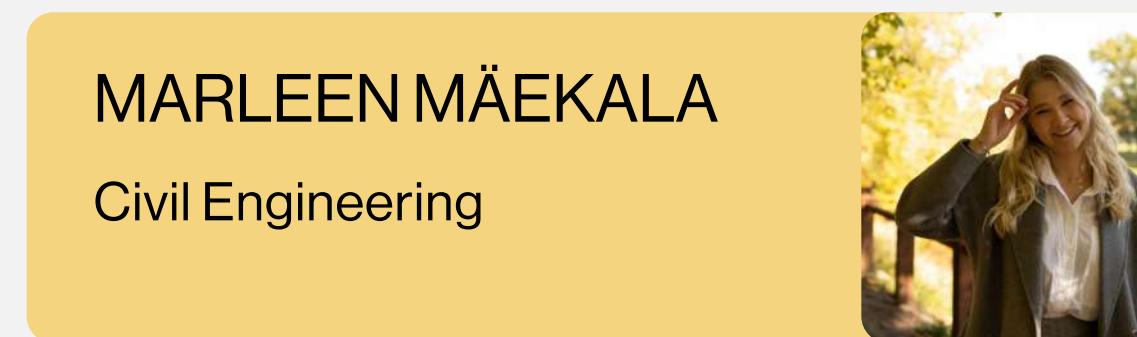
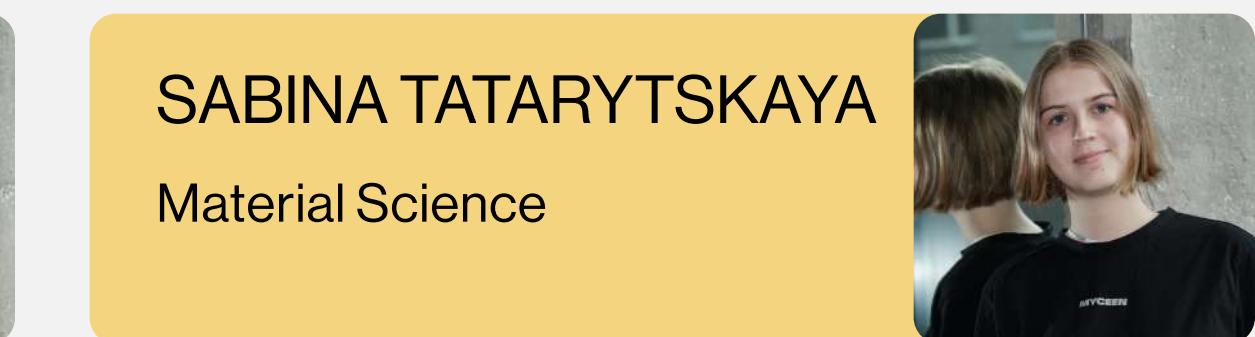
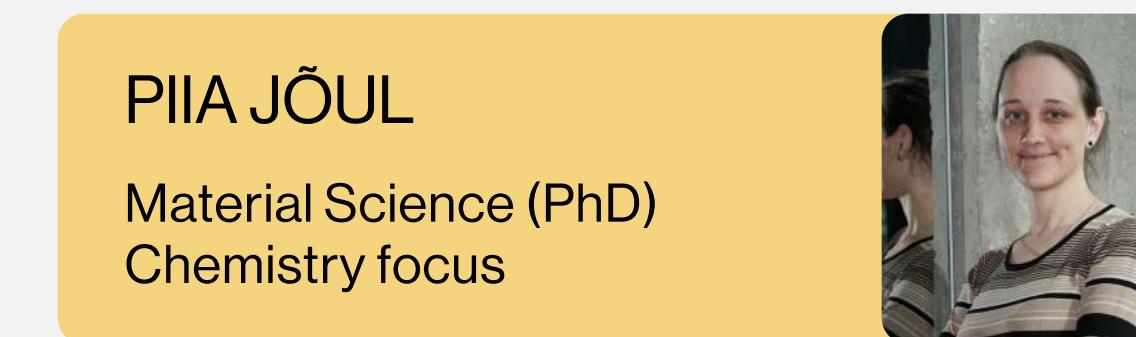
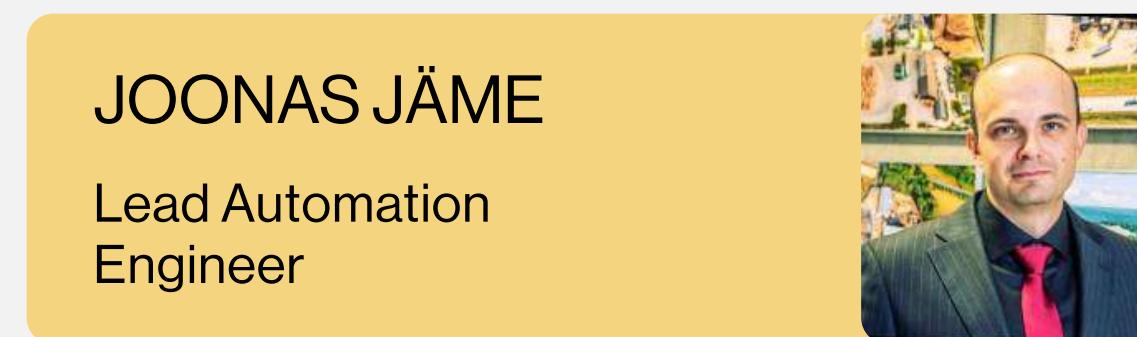
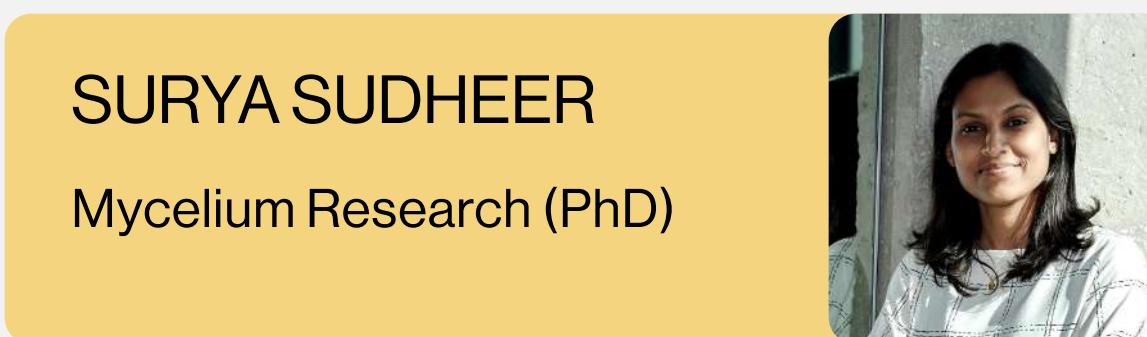
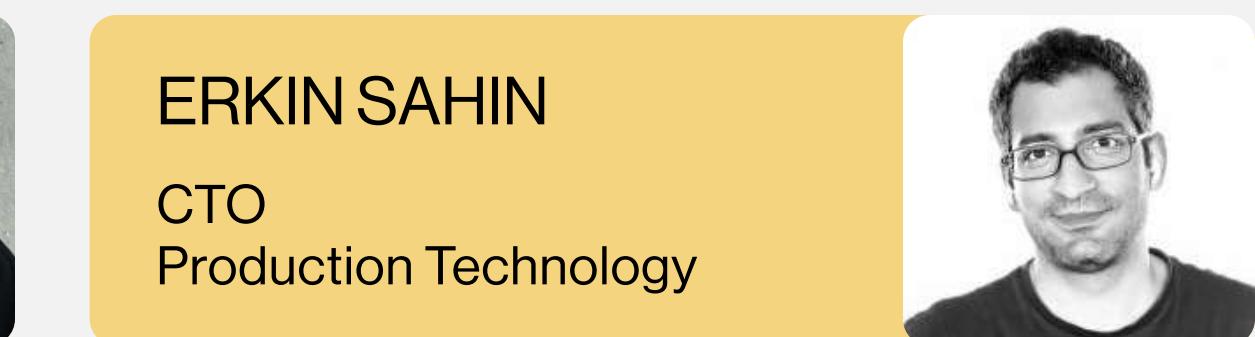
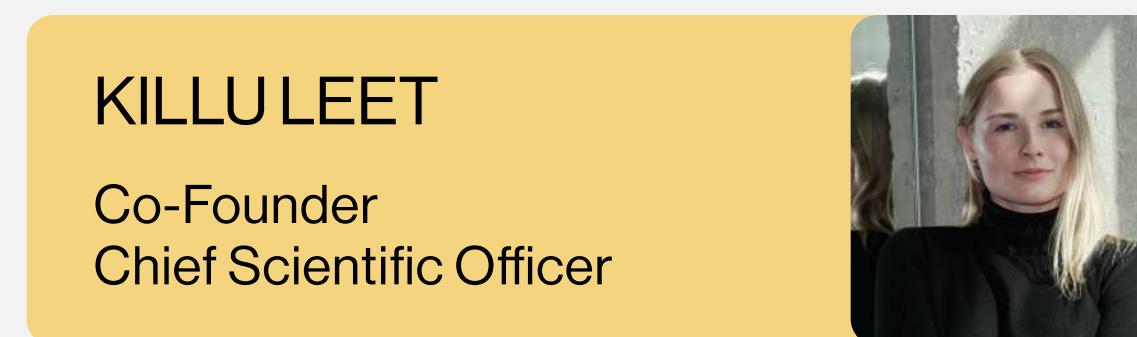
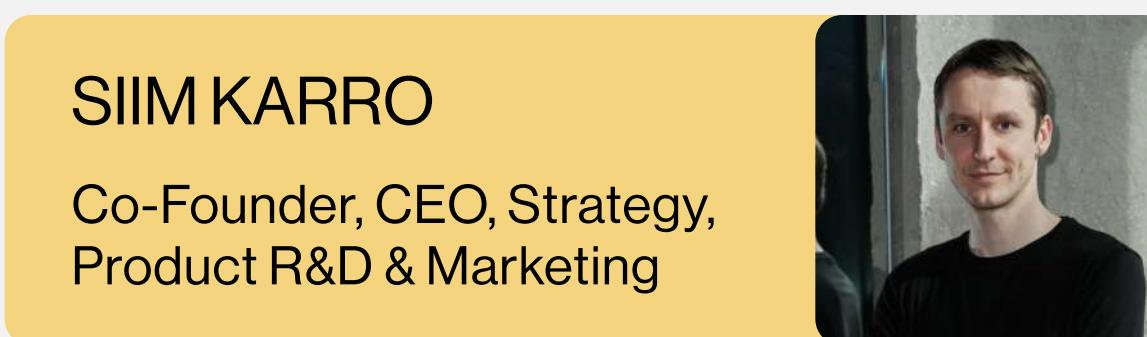
Price: €50 per 1 m³;
average small house requires
150m³ of insulation material

First target segment:

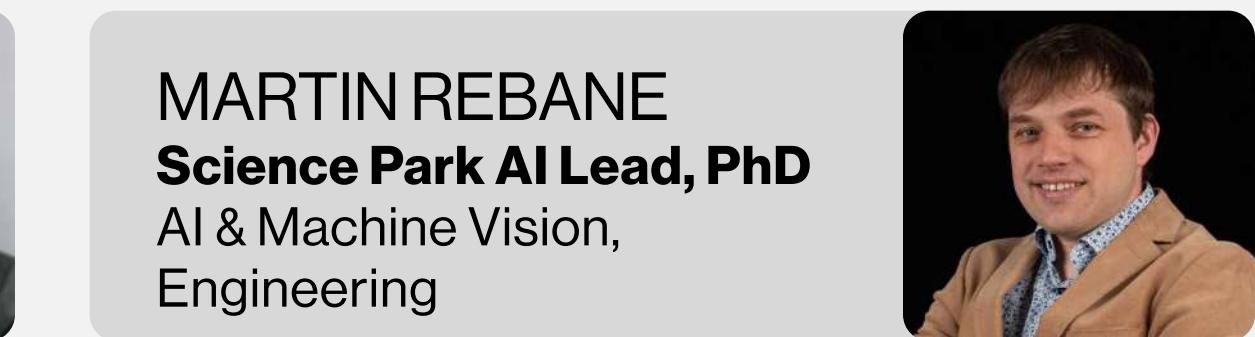
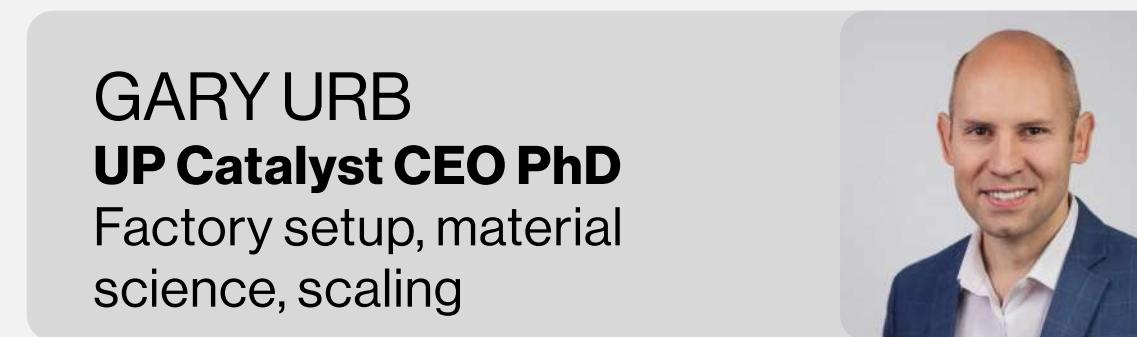
house producers & contractors who need our material on a continuous basis
(€100-500k per client per year)



We have a **diverse team** covering key competences to commercialise mycelium-based insulation materials



supported by experienced **advisors:**



Our development is supported by a wide **network from academia to industry:**

EIC funding enables us to set up a **fully automated** production line, paving the way for the launch of our **commercial** activities

Where we are **today**?

- First funding raised
- Materials successfully lab tested with ISO standards and in real environment
- 1st test house built in Estonia, 2nd will be set up in Italy
- Semi-automated production capacity 20 m³ per month
- Continuous engagement with prefab house manufacturers, architects, resellers
- First patent filed

R&D: EIC grant €2,5M + €1M own financing

- Establishing fully automated production line; target 2500-3000 m³ per year,
- Deliver commercial capacity of insulation material for 10 house producers, 40-50 housing projects
- Reduce manual work in production process by 90%
- Further IP protection
- TRL6 to TRL8
- De-risk our technology

Scale-up: EIC equity €3,25M + €3,25M from VC

- Reach break-even at €5.7M in 2028
- Increase production capacity 20x
- Follow-up R&D for new mycelium-based products
- 60 000 m³ of leftovers valorised per year and 10 000 tons of CO₂ saved

With our **healthy** and **affordable**
insulation materials, we will **transform**
the construction industry toward **net zero**.

With EIC we can achieve this change by 2030

**Insulate 7500 houses
sustainably per year**

**Store and avoid
12 mln kg of CO₂**

**Valorise 740 000 m³
of leftovers and save
virgin raw materials**

**Create over 150
multidisciplinary jobs
in Europe in a novel field**

**Expand to 3 EU countries
with our manufacturing for
pan-European distribution**

**Help EU meet its Green
Deal, Renovation Wave,
Circular Economy, and
many other targets**

