

Koddatek

Foamed geopolymer as
carbon sink using
construction robotics



Problem

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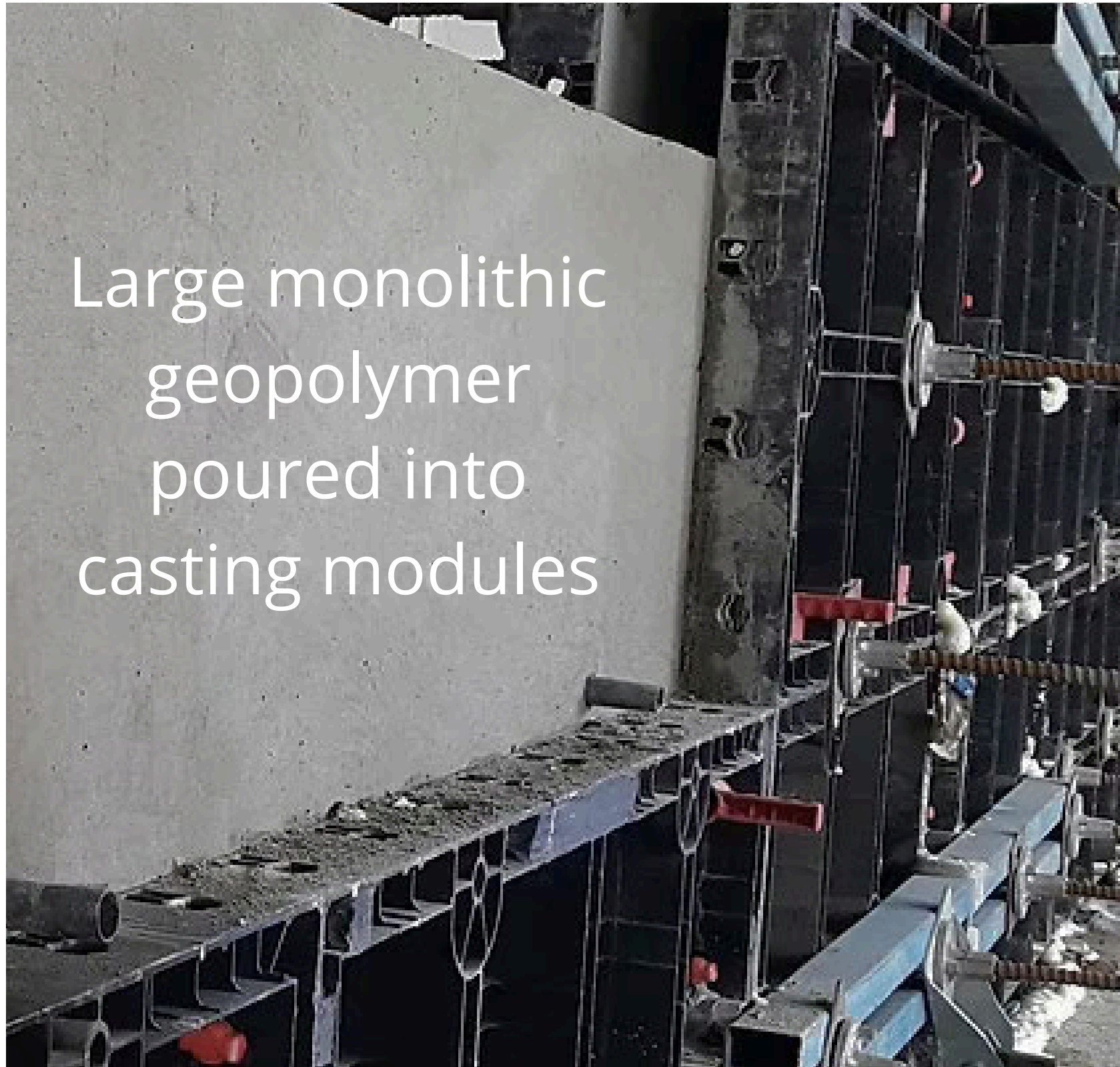
EU is co-funding
to make 22 million houses
energy efficient, we **need to speed
up 40x to meet 2050 target**
(from 0.1% to 4% of houses per year)

Construction companies are wondering
where can we find 40x more builders?

Foamed geopolymer robotics helps out

How?

Large monolithic
geopolymer
poured into
casting modules



At high speeds
120-240m³/day



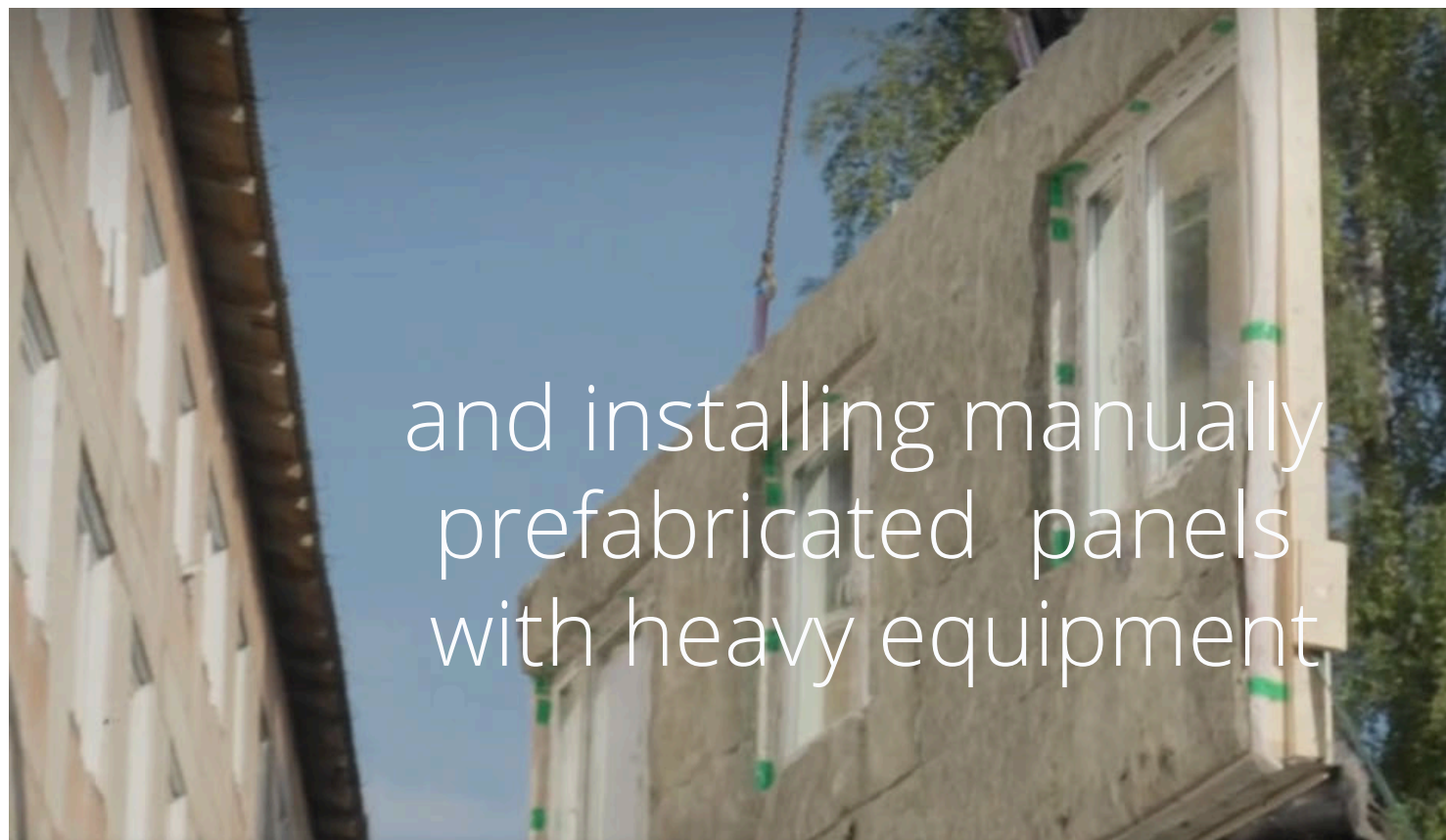
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400m2 roof example





Instead of this



and installing manually prefabricated panels with heavy equipment



Insulation poured against wall

120-240m³/day





Instead of loose insulation
that shrinks 25% in 5 years



**Forever stable aircrete
insulation poured
120-240m³/day**

Material options



Currently training AI for the equipment to:

- prolong season from 6-10 months/year in nordics
- reduce human error and product defects
- protect IP (operators do not need to know recipes)

* currently high quality mix can be made at 5-20°C

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Dreaming of

EIC Pathfinder research consortium

Towards cement and concrete as a carbon sink
(16 October 2024)

- Decarbonized and carbon-negative cement and concrete
- Potential for economical and abundant availability of feedstock at the place of production and consumption
- Potential for scalability and low cost and ease of use also in developing economies
- Meeting or exceeding norms and standards for cement and concrete

Dreaming of

EIC Pathfinder research consortium

Categories	Sub-categories (not exhaustive)
1. Alternative binders and processes	<ul style="list-style-type: none">• Alternative binder technologies• Alternative feed-stocks (e/g magnesium rocks, industrial waste, mining waste, etc.)• Carbonation curing technologies
2. Clinker fraction and binder efficiency	<ul style="list-style-type: none">• Alternative SCM technologies• Synthetic aggregates (e/g carbon sink aggregates)• Particle size distribution control• Advanced admixtures• Mixture variability control• Novel reinforcement technologies
3. Energy and emissions reduction	<ul style="list-style-type: none">• Alternative processes (e/g electro-chemical)• Electrification of high temperature processes• Technologies reducing process temperatures
4. Enabling technologies	<ul style="list-style-type: none">• Advances in computational material science• Advances in AI/ML data technologies• Advances in imaging, scanning technologies

Do you know who could collaborate?

Competencies needed:

- Foamed geopolymer for 100-500 kg/m³ density material
- Emissions capture from burning biomass, waste, coal, oil-shale
- Sinking emissions into wet geopolymer (binder and foam)

Thank you!

Contact point:

Jon Ender
Chief Technical Officer
jon@kodatek.ee

+372 5515057

<https://www.linkedin.com/in/jonender/>