GeoTHERM 2024, Offenburg, 29.-30.02.2024

Autonomer Bohrroboter - Neuartiges Bohrverfahren für die oberflächennahe Geothermie

Autonomous drilling robot - Novel drilling method for shallow geothermal energy

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Borobotics GmbH, Winterthur

Agenda

- Introduction ZHAW, Borobotics
- Problem
- Solution
- Business Case
- Status
- Next Steps

ZHAW's eight departments

School of Engineering

Architecture, Design and Civil Engineering

Health Professions

School of Management and Law

School of Engineering

Applied Psychology

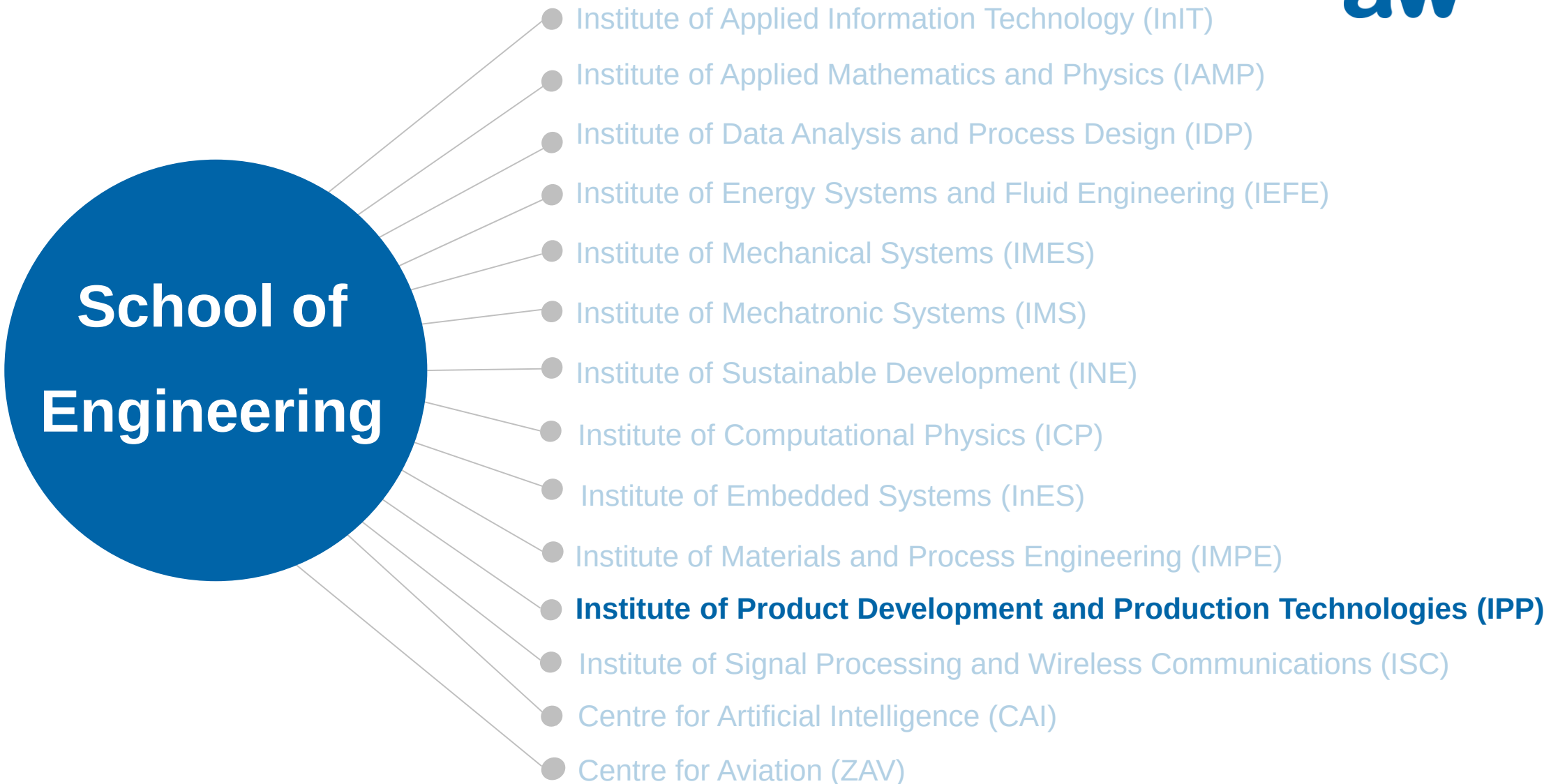
Social Work

Applied Linguistics

Life Sciences and Facility Management

14 institutes and centres

School of Engineering



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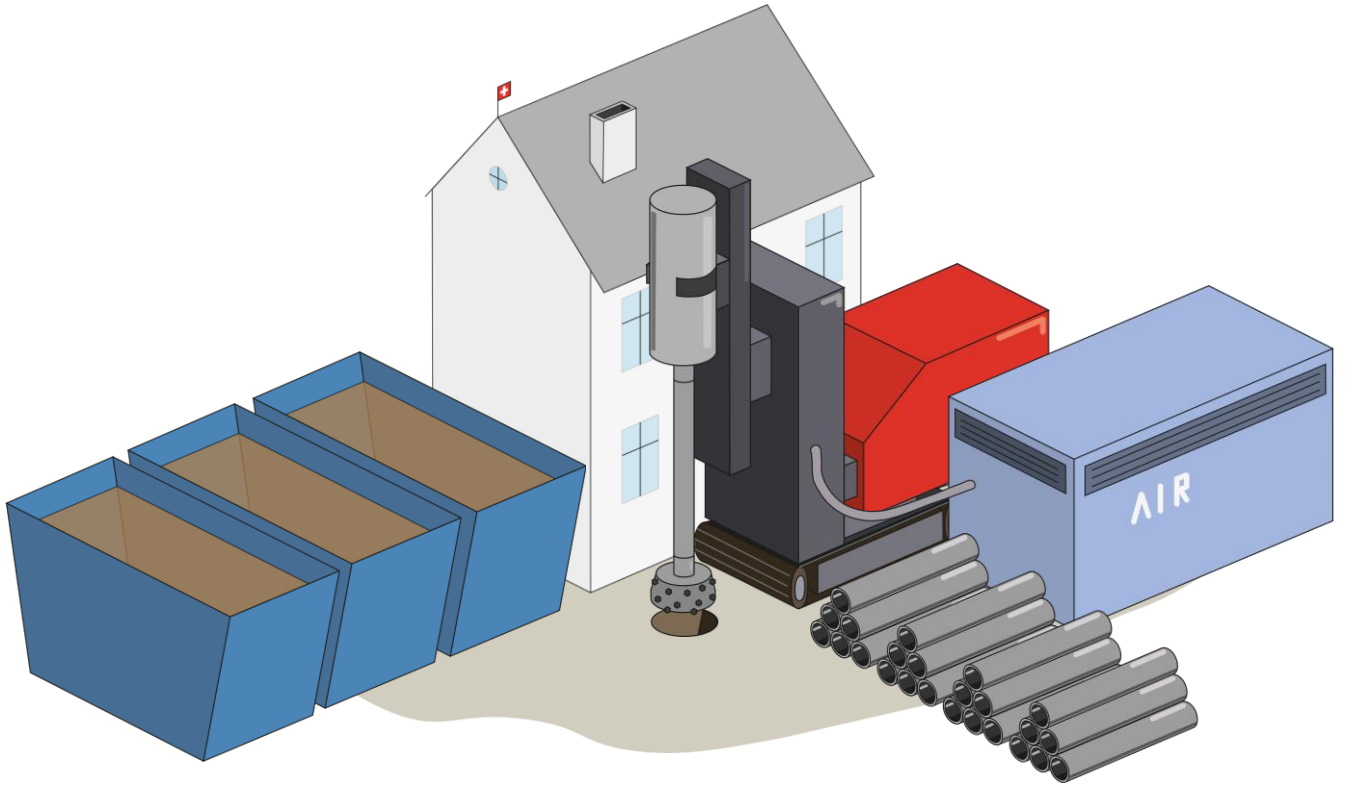
Bore-robots for geothermal drilling in small spaces

Geothermal drilling as we know it

Marc Barmettler

Owns 18 drilling rigs

BARMETTLER
erdenergie.ch



50 m² of space

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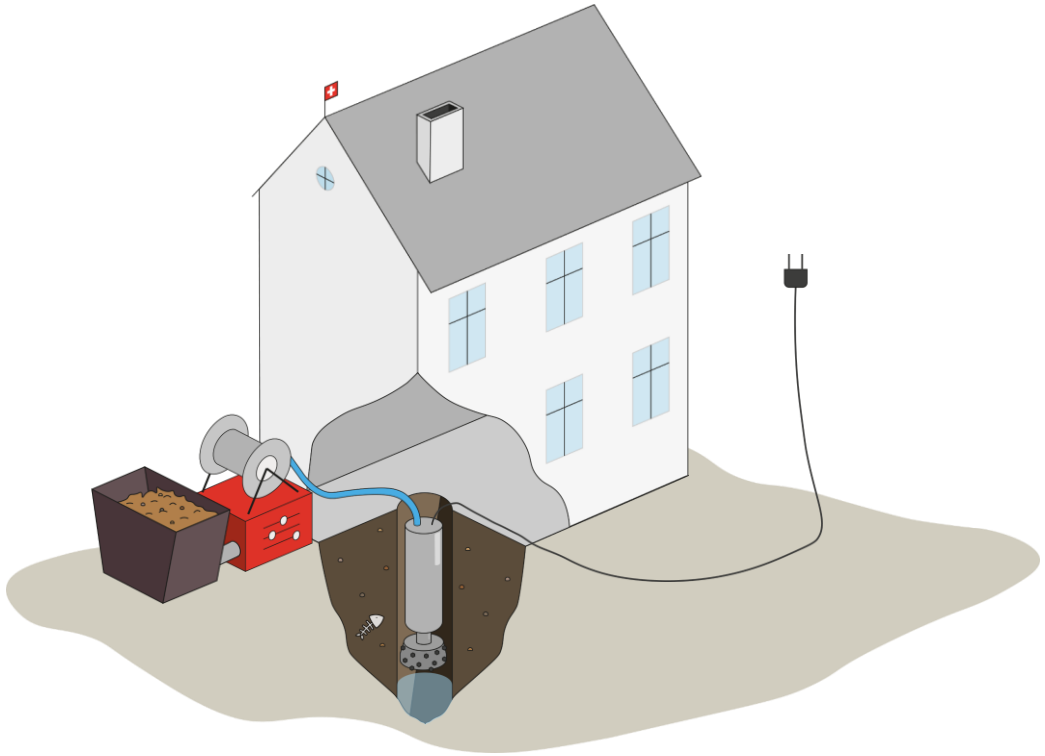
The Problem – not enough space for Marc to drill

Yearly CO_2 emissions: Gas heating: 3’650kg | GSHP: 380kg

Our idea: Integrate the drilling rig in the bore hole



8 m² of space

Space-efficient

High-tech

94% CO_2 reduction per borehole

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Our idea: Integrate the drilling rig in the bore hole

Space-efficient

High-tech

94% CO_2 reduction per borehole

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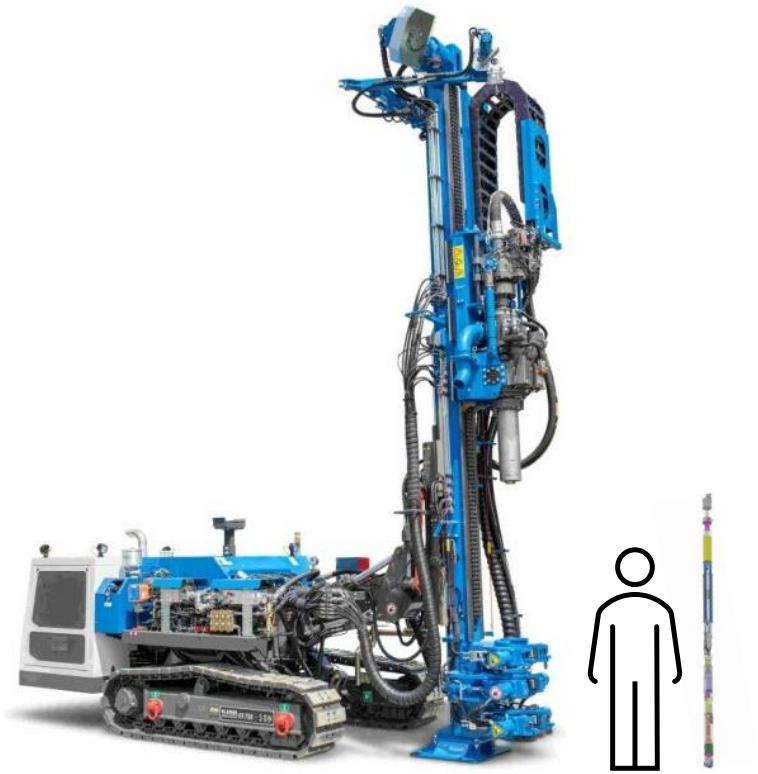
Our idea: Integrate the drilling rig in the bore hole



Space-efficient

High-tech

94% CO_2 reduction per borehole

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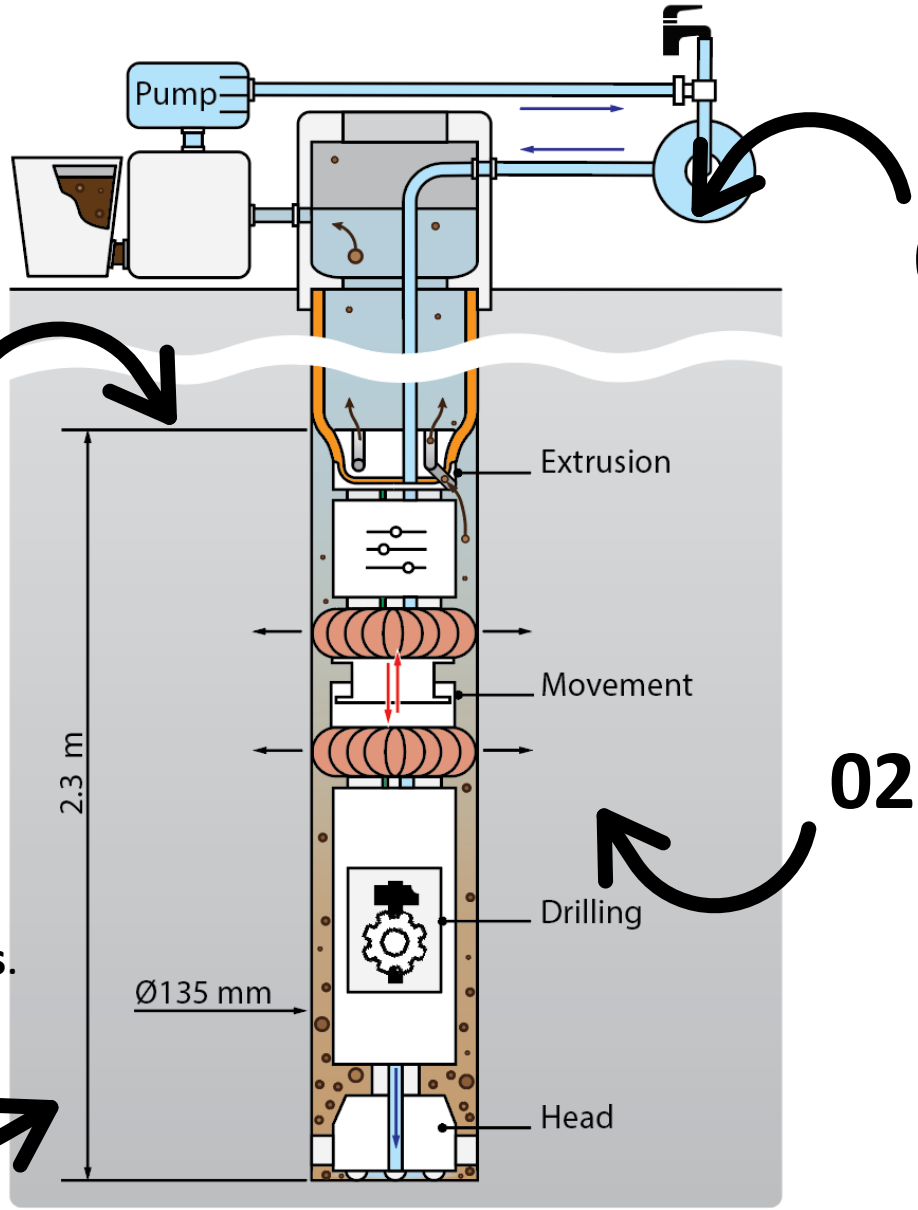
Where’s the magic?



03 Closed **Water cycle** for flushing

04 3D print **pipe to support the borehole**

02 **Fluid muscles** for movement

01 Drill bit **rotates & hammers**.

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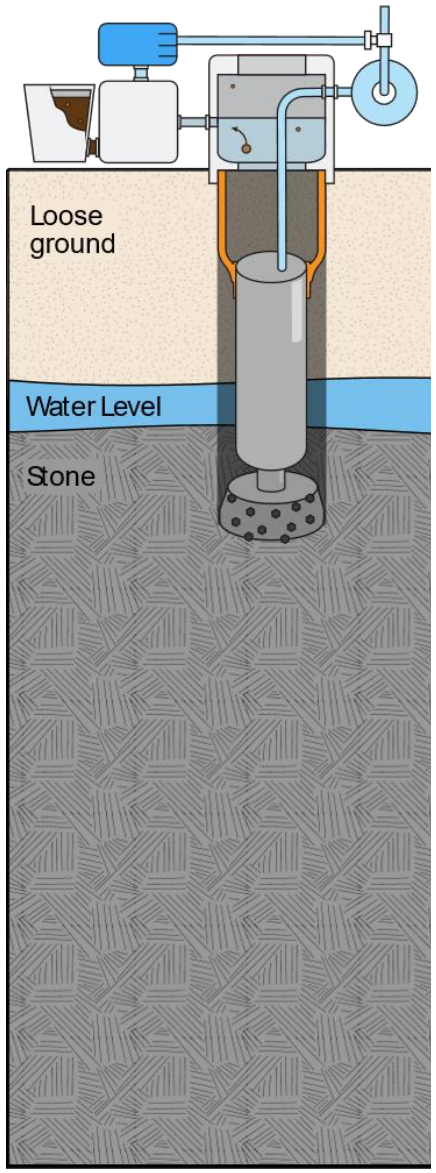
Installation Process

01
Drill Borehole



Business Model – Sell Drilling By The Meter

Borobotics
innovative geothermal drilling

Drilling Company

Building Owner

Conventional vs. Borobotics

	Conventional Drill	Borobotics Drill	Difference
Level of automation	Manual	Automated	
Space requirement	50 m^2	8 m^2	- 84%
Noise	120 dbA	<80 dbA	- 34%
CO_2 Emissions	2 t	288 kg	- 86%
Steel/kg			
Time spent to drill 200 m	5 days	15 days	+ 188%
Amount of machines operable per team of 2	1	15	
Km drilled per year per team of 2	20	57	+ 285%
Margin per year per team of 2	CHF 275K	CHF 813K	+ 396%

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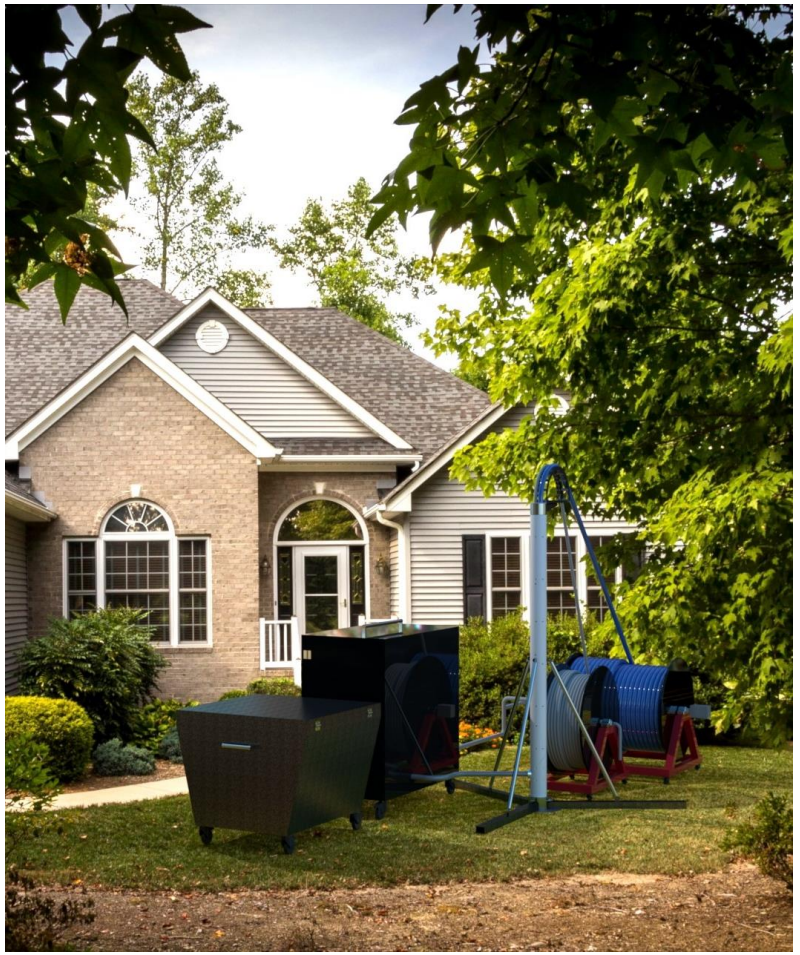
The Grabowski in real life



First 20 m test

Borobotics

We are searching for partners, investors, collaboraters → Visit us

Stand 122

Moritz Pill

Justin Staller

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Scalable & sustainable technology made in Winterthur

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Many Thanks to:

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zh aw spin off
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