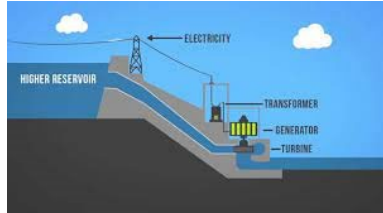




Prometheus: Regional Energy Systems as an Enabling Technology

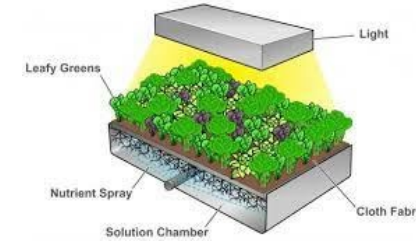


Solution: Develop Novel Applications and Measure Impact of Regional Energy Systems



Societal Impact

Environmental Impact

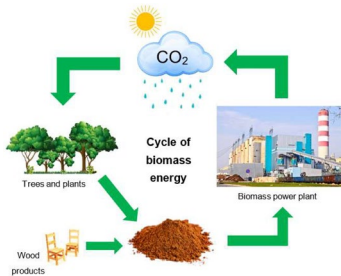


Economical Impact

Collaboration

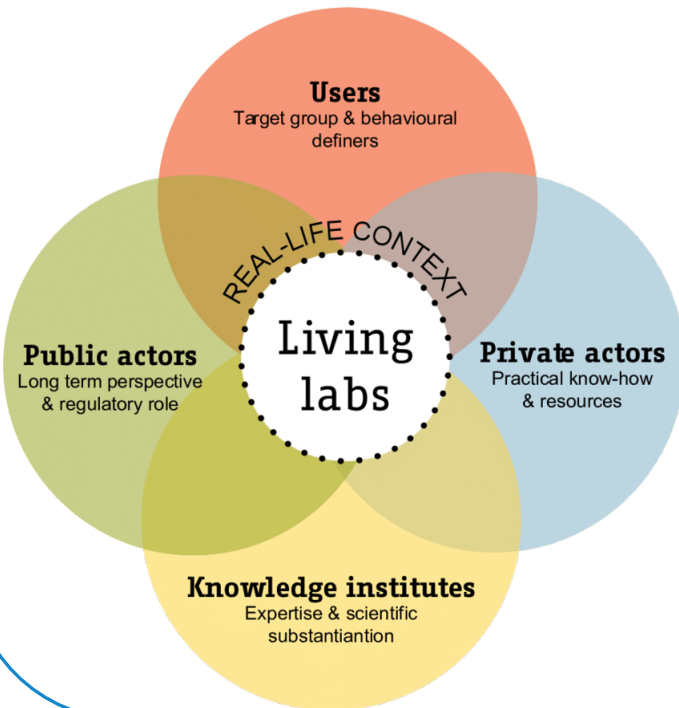
Regional Specialisation

Accelerate Adoption of Knowledge, Projects, Products & Services

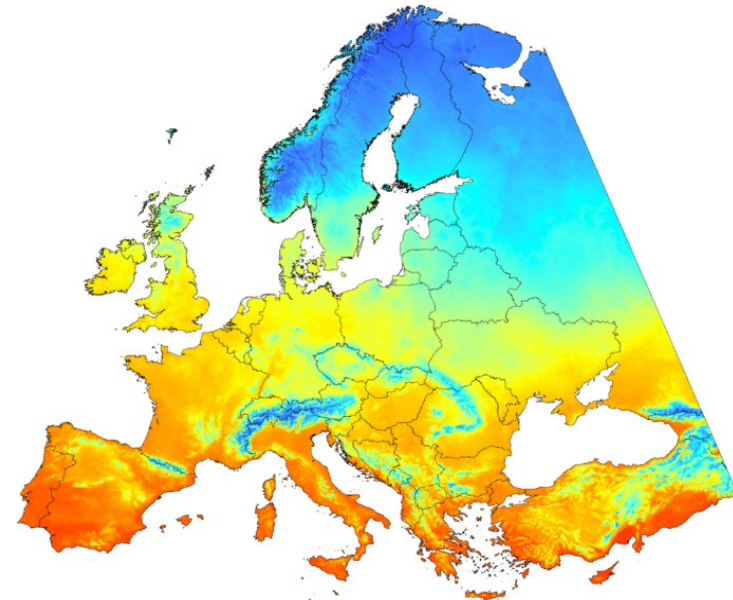




Ask – Cluster Partnerships



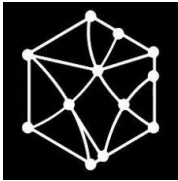
Programme co-financed by the European Regional Development Fund.





Prometheus: Integrating Regional Energy Systems to Enable Sustainable Cities and Communities

Consortium partners



S4 | Navarra Nafarroa



Thank you & contact information

- Thank you for your interest
- For more information contact:



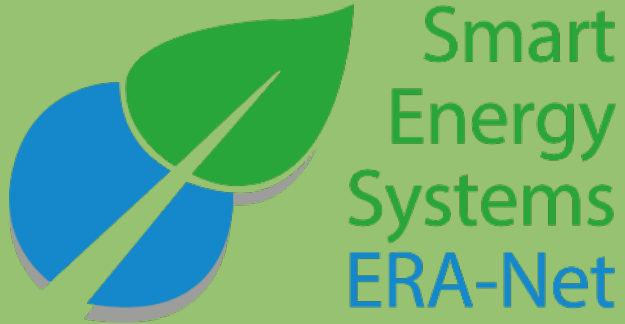
Alan Whiteside

alan@stonnivation.com

alan.whiteside@strath.ac.uk

[https://www.linkedin.com/in/
alanwhiteside/](https://www.linkedin.com/in/alanwhiteside/)

Funding Partners



This initiative has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements no. 646039, 775970 and 883973.



Pitch presentations by new project initiatives

- 12:00 Prometheus: Integrating Regional Energy Systems to Enable Sustainable Cities and Communities, *Alan Whiteside, Stonnivation, Scotland UK*
Immediate feedback, comments or questions
- 12:10 **Novel biobased material for thermal energy storage**, *Nasko Terziev, SLU, Sweden*
Immediate feedback, comments or questions
- 12:20 Thermochemical Heat Pumps: Revolutionising heat and cold storage,
Tim Rutten, ARES, Netherlands
Immediate feedback, comments or questions
- 12:30 Directional Steel Shot Drilling Enabling Geothermal Everywhere, *Diederik Wawoe, Canopus Drilling Solutions, Netherlands*
Immediate feedback, comments or questions
- 13:00 Closing of the event

Novel biobased materials for thermal energy storage

BIO-NRG-STORE

Consortium partners

- **Coordinating organisation:** **KTU (Karadeniz Technical University), Turkey**
- **Main contact person:** **Prof. Ali Temiz (project owner); Prof. Nasko Terziev (project coordinator)**
- **List of consortium partners:**

1. **KTU (Karadeniz Technical University), Turkey**
2. **SLU (Swedish University of Agricultural Sciences)**
3. **CNR-IBE (Italian National Research Council, Institute of Bioeconomy)**
4. **FHS (Fachhochschule, Salzburg), Austria**

Industry:

iCell AB, Rundvirke Poles AB



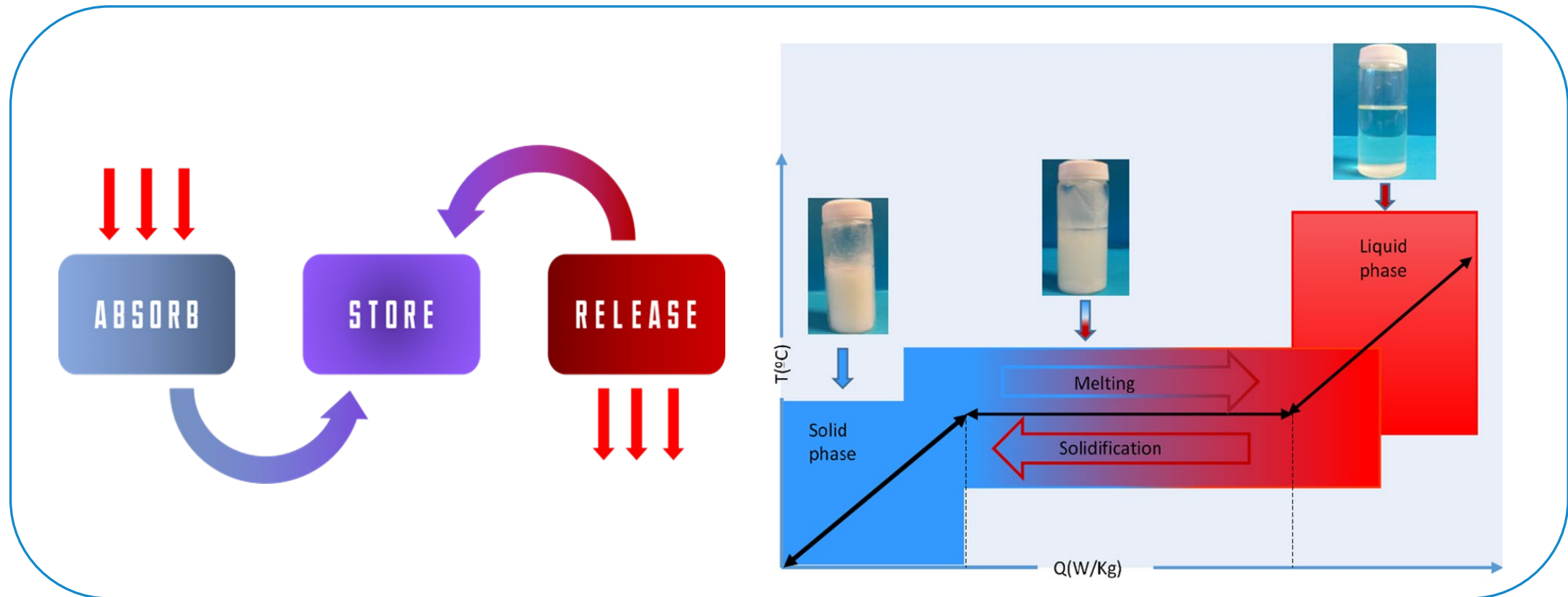
Challenge

BIO-NRG-STORE develops **99% bio-based solutions for thermal storage** in building elements by developing sustainable materials that replace high environmental footprint products.

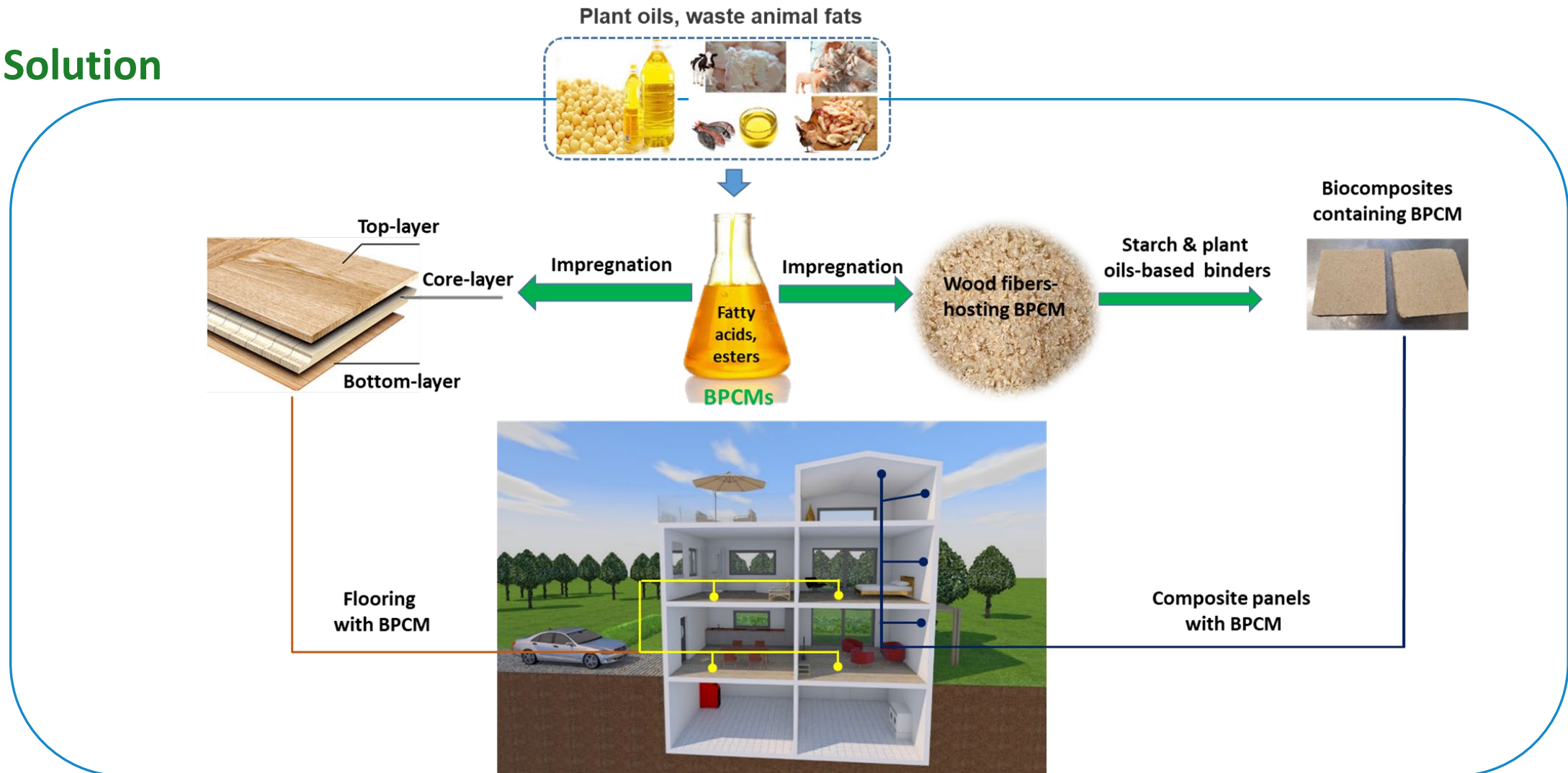
Our solution demonstrates incorporation of **bio-based phase change materials (bioPCMs)** into **solid wood and wood fibres** bound by **bio-resins** to produce novel bio-composite building materials with improved thermal properties.



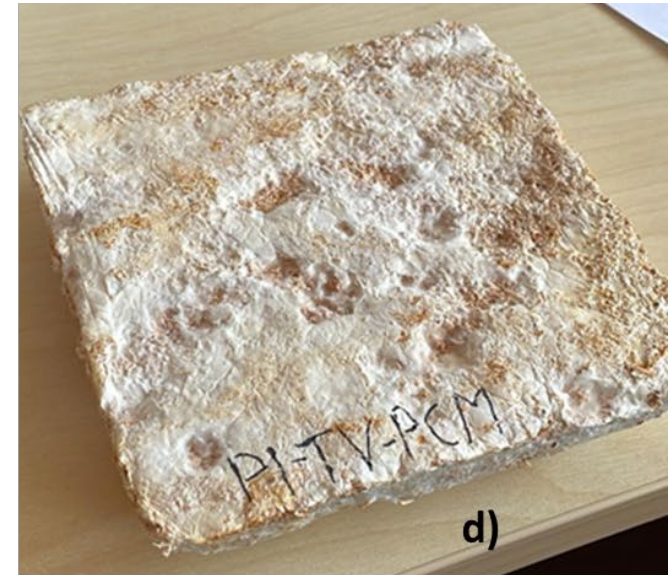
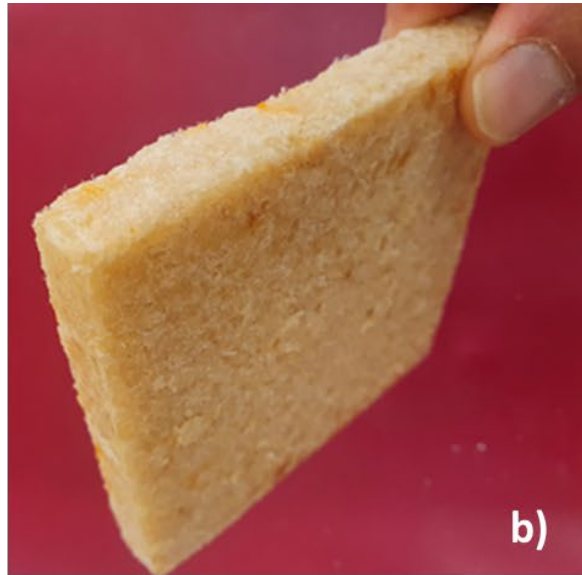
Basics



Solution



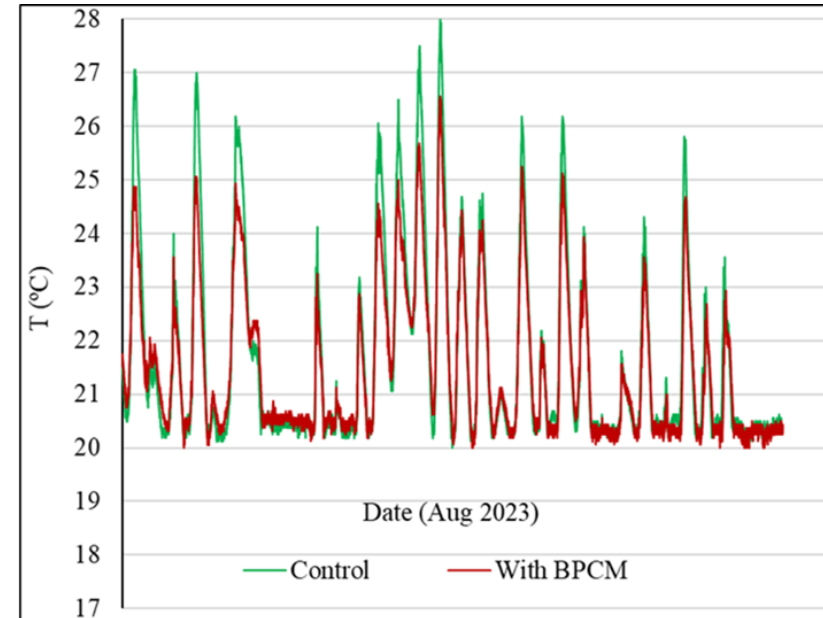
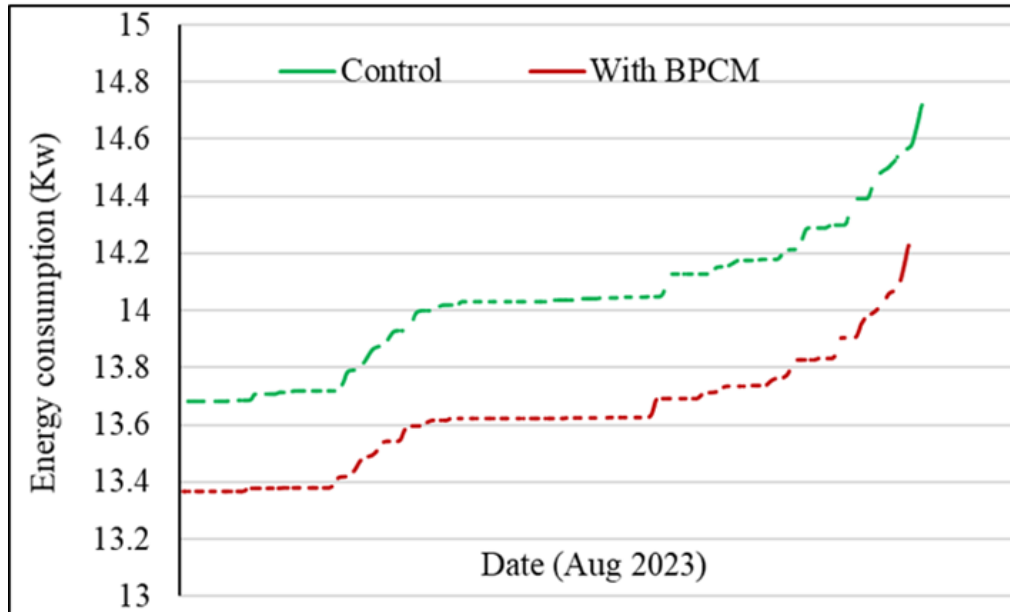
Solution



Solution

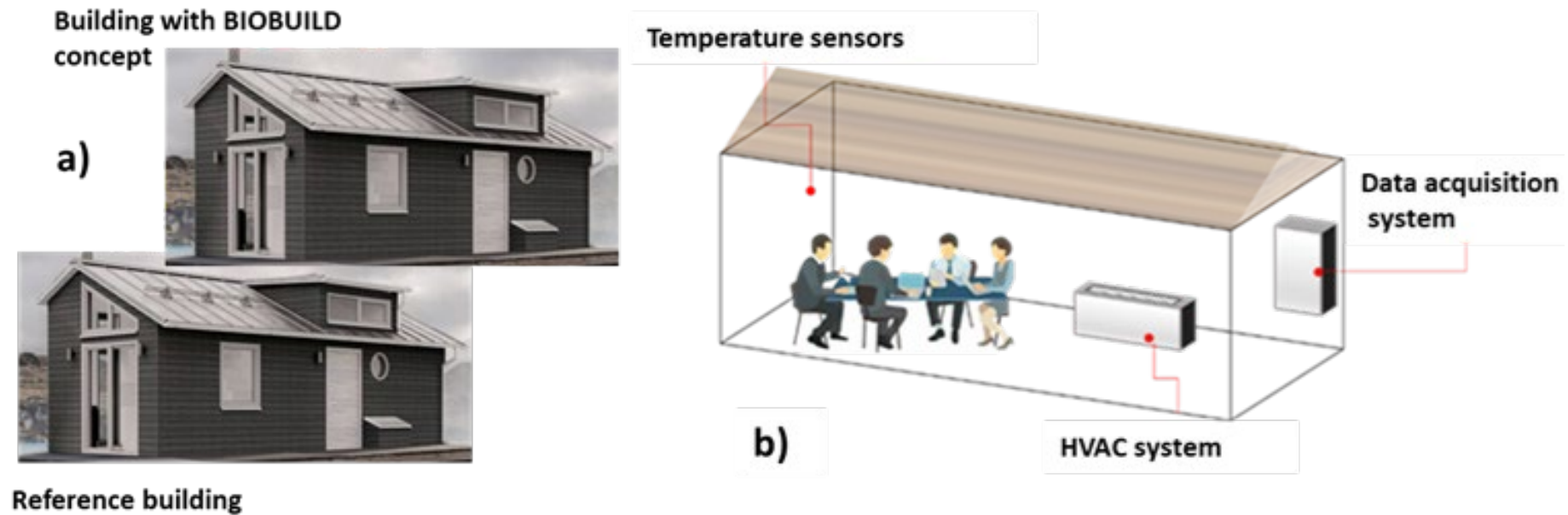


Solution



Our next step: to upscale the idea to TRL7, i.e., DEMO!

Call: HORIZON-CL6-2023-CircBio-01-8 – Eco-friendly consumer products – low-toxicity/zero pollution construction bio-based materials. Project BIOBUILD.



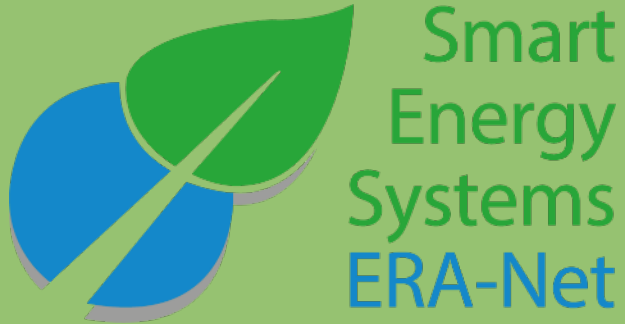
- Thank you for your interest!
- For more information contact:

Nasko Terziev

nasko.terziev@slu.se

tel. +4618672589

Funding Partners



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Drs. Ing. Tim Rutten
Director at ARES.



Heat and cold storage R&D:

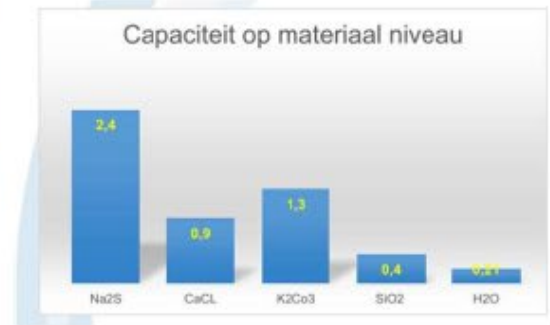
- MERITS
- MMIP 9.3
- EnergyPad 1 and 2
- SWeKOS 1 and 2

Coordinator of SorpTES.

Title: Pilot test of a thermal energy storage system for the built environment.

SorpTES

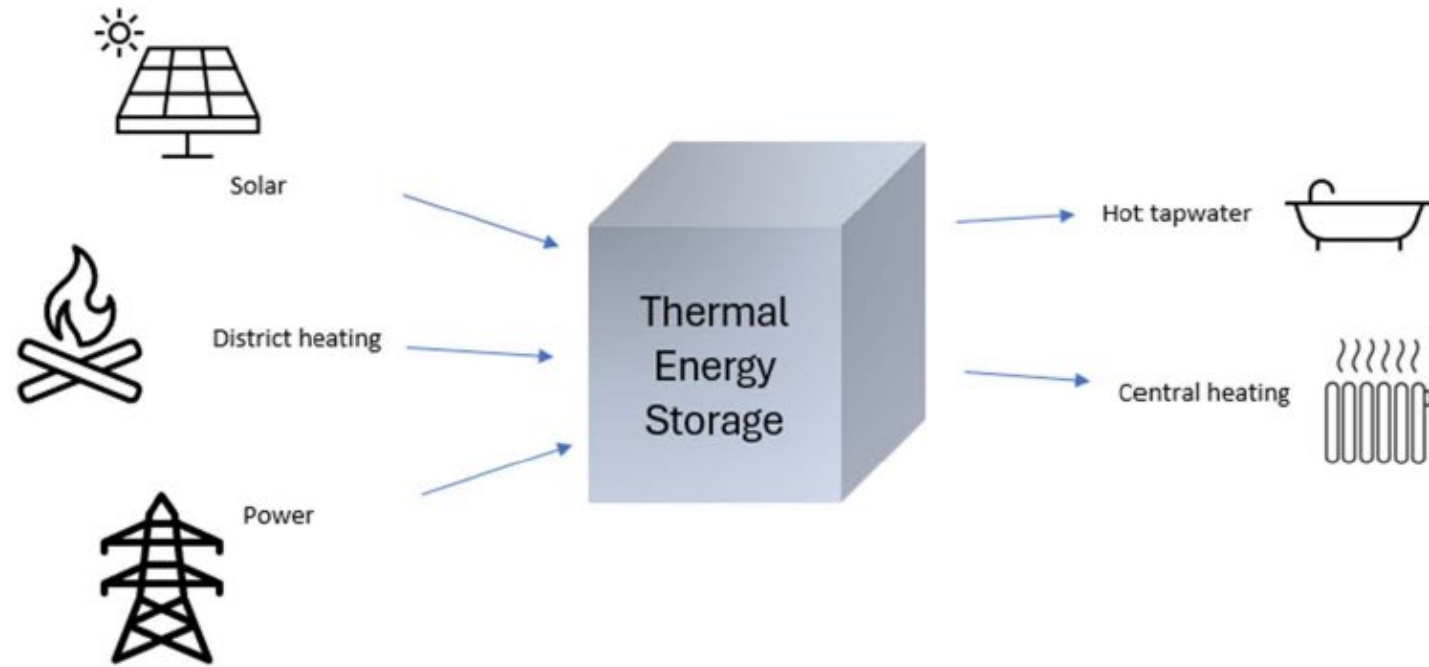
(Sorption Thermal Energy Storage)



	Heat storage density in use-case	Desorption temperature	Heat effect per kg adsorbens	Density (bulk)
	[GJ/m ³]	[°C]	[kJ/kg]	[kg/m ³]
Na ₂ S·5H ₂ O	2,4	80	1685	1430
CaCl ₂ ·4H ₂ O	0,9	>42	328	2804
K ₂ CO ₃ ·1,5 H ₂ O	1,3	80-120	597	2180

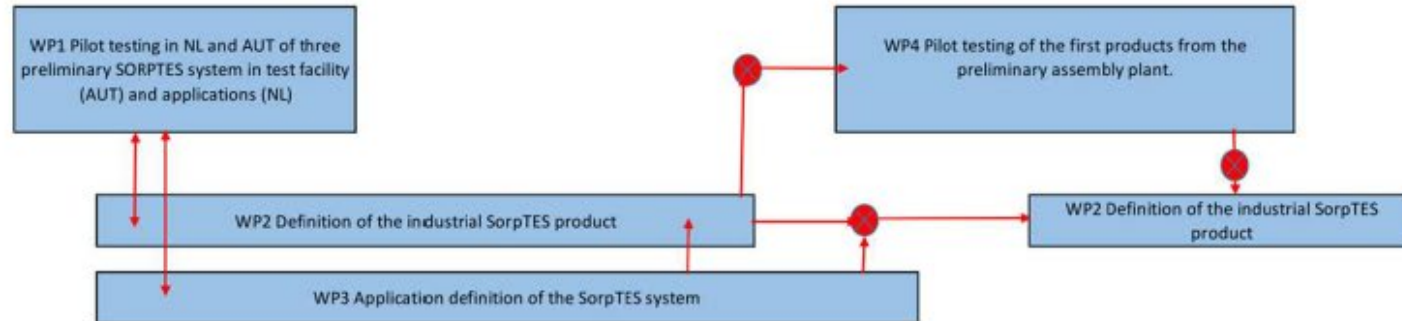


Thermochemical Heat Pumps: Revolutionizing heat and cold storage



Solution

1. Share knowledge via our pilot systems with experts;
2. Include the feedback in the design and processes;
3. Increase the maturity of the product to commercially successful.



Our next step

We are looking for a local partner (not NL and AU) to set up a pilot of our heat and cold storage system.

The desired outcome:

1. Feedback from the local market;
2. Awareness in the market;
3. New distribution channel to the local market;

Thank you & contact information

- Thank you for your interest
- For more information contact:



Drs. Ing. Tim Rutten

t.rutten@aresystems.nl

www.aresystems.nl

+31 (0)316-238030



Funding Partners



Smart
Energy
Systems
ERA-Net



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AND INNOVATION OFFICE
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et de la Maîtrise de l'Énergie

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Energy Agency

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of Norway

Scottish Enterprise

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ENERGETSKU UČINKOVITOST

Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology



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[Immediate feedback, comments or questions](#)
- 13:00 Closing of the event

Name of the project and acronym

DEmonstrate Production enhancement with LOw cost sIde-track drilling for HEAT

DEPLOI THE HEAT

Consortium partners

- Coordinating organisation: **Canopus Drilling Solutions**
- Main contact person: Diederik Wawoe
- Partners
 - **TNO** (NL)- Research Institute
 - **Well Guidance** (NL)- Directional Drilling Company
 - **Tullip Energy** (NL)- Operator
 - **University of Calgary** (CA)- Research Institute
 - **ETH** (CH)- Research Institute
 - **VersuchsStollen Hagerbach** (CH)- Test site
 - **Services Industriels Genève** (CH)- Geothermal Operator
 - **Services Industriels Lausanne** (CH)- Geothermal Operator
 - **Grob Gemüsebau** (CH)- Geothermal Operator



Rijksdienst voor Ondernemend
Nederland



BFE



Schweizerische Eidgenossenschaft
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Confederazione Svizzera
Confederaziun svizra

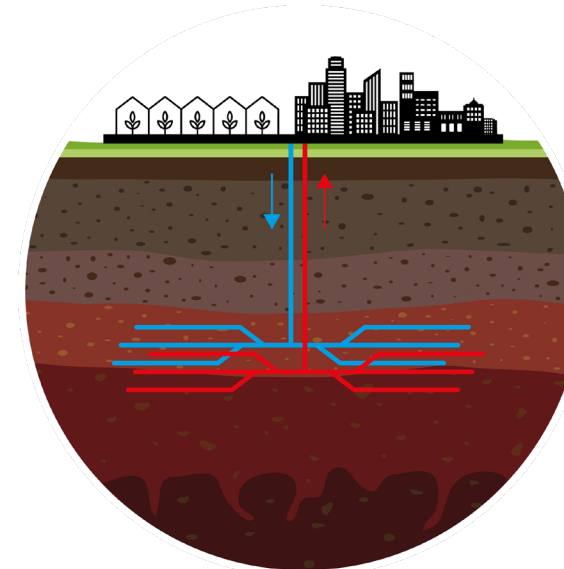
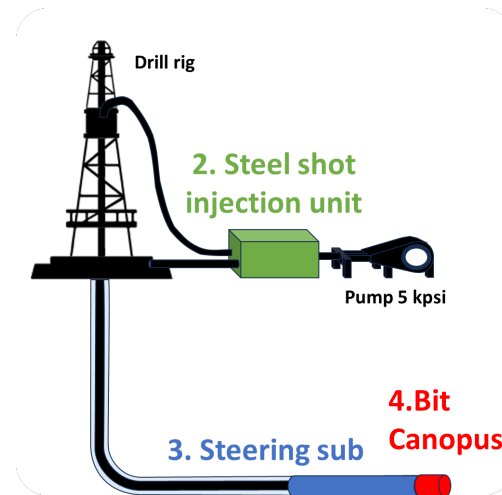
SFOE

DEPLOI THE HEAT 2/4

Challenge

Multilateral wells enhance reservoir productivity up to 3x
 Conventional drilling with steering is expensive
 The project tests multilateral drilling based on steelshot

1. Steel shot 1 mm



DEPLOI THE HEAT 3/4

Solution

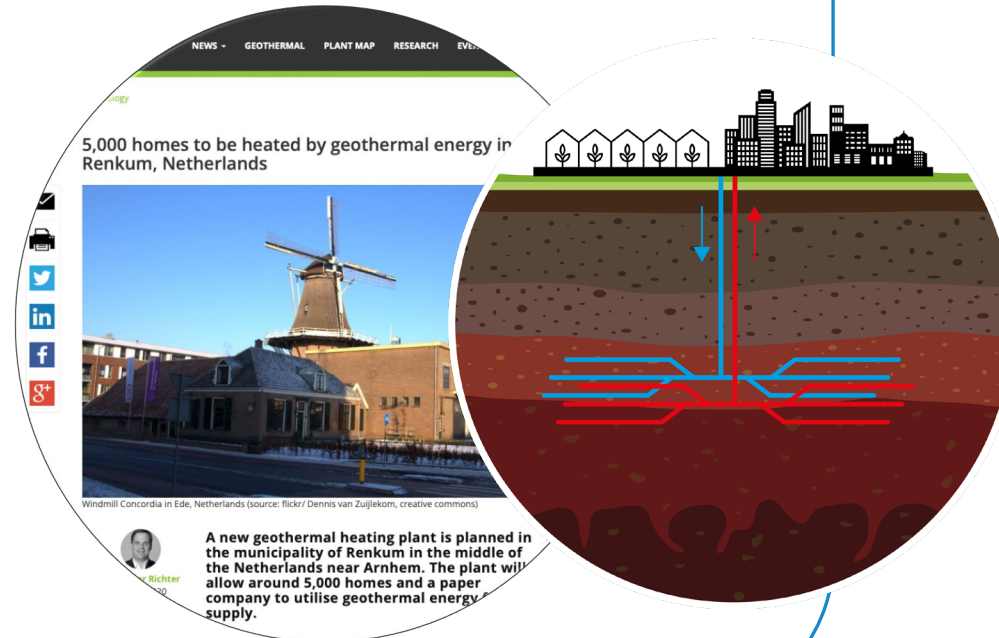
- Building a directional steel shot drilling system
- Testing at TNO, Hagerbach and in Ede (2024)



Testing at TNO (Q1 2023)



Testing at Hagerbach (Q3 2023)

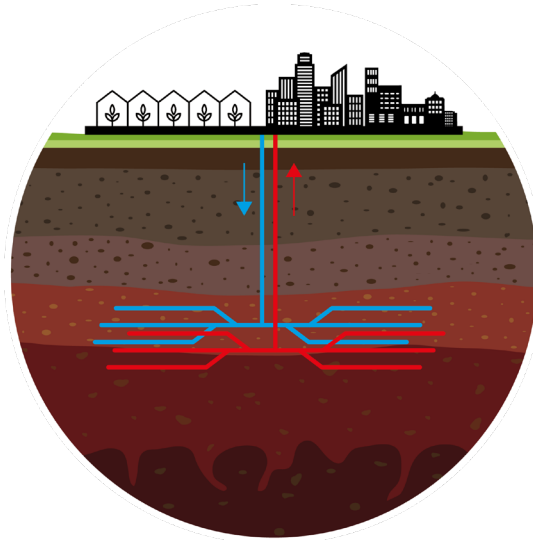


Drilling in Ede (2024)

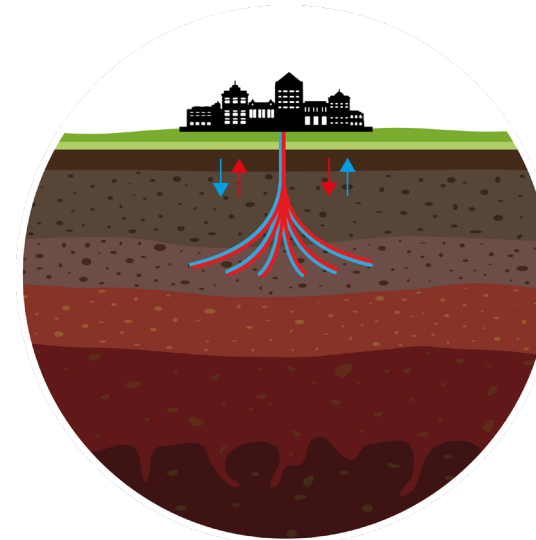
Cheaper, Faster, Better Steering

Our next step

Directional Steel Shot Drilling drills faster and with better and cheaper steering
There are applications for



Enhancements of reservoir productivity



Shallow drilling with less surface use

LOOKING FOR APPLICATIONS IN THE BUILD ENVIRONMENT

Thank you & contact information

- Thank you for your interest
- For more information contact:

Diederik Wawoe

dwawoe@canopusdrillingsolutions.com

+31655101519