



WARMTH

When & Where You Need It™

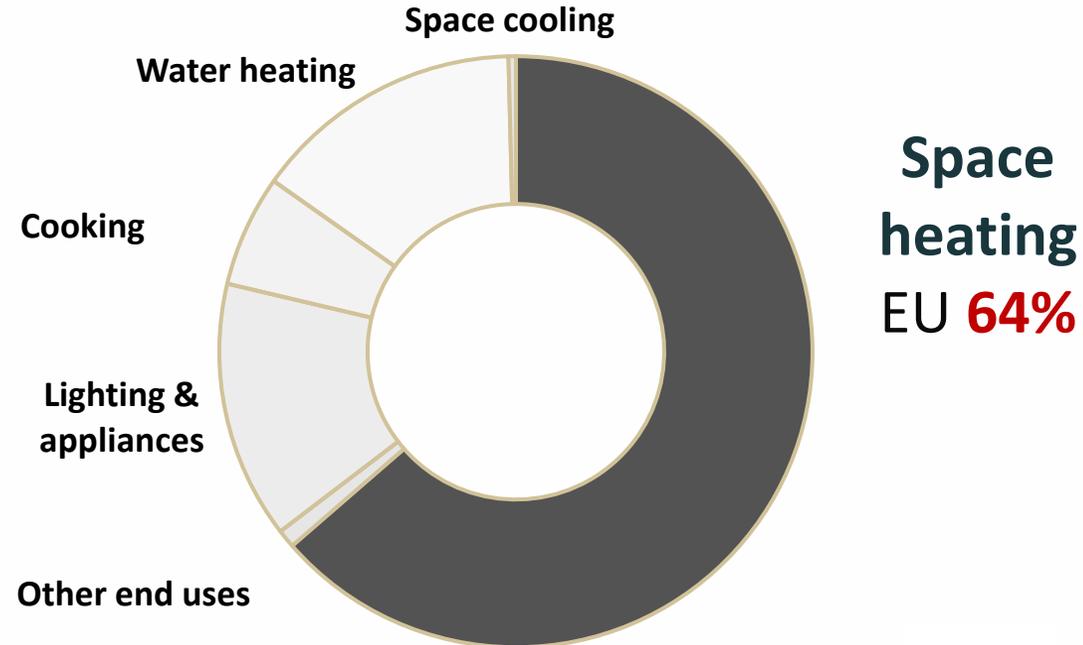
Jani-Mikael Kuusisto
Co-Founder & CEO



Energy Efficiency Renovation Wave in Europe Has Started

RESIDENTIAL ENERGY CONSUMPTION

EU-27, 2022



Space heating
EU **64%**

USA 48%

Source:  eurostat

Sources:
Energy consumption in households - Statistics Explained (europa.eu) 2022; European Environment Agency ; Statista; ec.europa.eu/info/strategy/priorities-2019-2024/

Regulatory Mandates

EU zero-emission targets

(announced Mar.2023)

2026

- New buildings operated by public authorities zero-emission

2028

- All new buildings zero-emission
- All new buildings equipped with solar technologies

2032

- Residential buildings undergoing major renovation to be zero-emission

Japan's Building Energy Conservation Act (Apr.2022) requires all buildings in Japan to be carbon neutral by 2050.

MEPs back plans for a climate neutral building sector by 2050.

All new buildings in EU to be zero-emission from 2028.



Warmth is a Matter of Health & Security

- 9.3% of EU population unable to keep their home adequately warm in 2021.

Source: Eurostat Sept.11, 2023

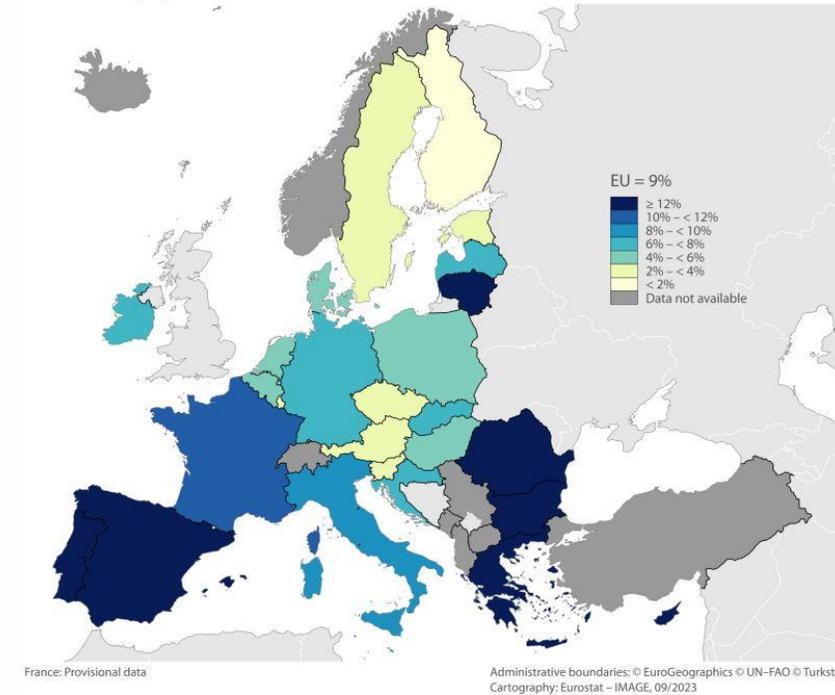
- In Europe on average 21% more people die in winter than in summer. (Portugal 36% ... Finland 13%)

Source: Economist Nov.26, 2022, "Russia is using energy as a weapon - How deadly will it be?"

- Energy crisis lead to an extra 68,000 deaths in Europe winter 2022-2023.

Source: Economist May 12, 2023, "Expensive energy may have killed more Europeans than covid-19 last winter"

Inability to keep home adequately warm, 2022
(% of total population)



eurostat

Our Solution

Halia®

Fast Response Heating

Our aim

- Save > 20% energy costs
- Without compromising health, comfort & work efficiency

Warmth When & Where You Need It



23°

20°

18°

21°

Increases comfort
Better health & work efficiency

Saves energy
Real-time
Operate warmth like lighting

Saves costs
Ease of installation & operation

Halia® Fast Response Radiant Heaters

A New Paradigm in Bringing Warmth to Living Spaces

Advantages of Radiant Heating

Over Other Forms of Heating*

- More healthy
 - as heating separated from ventilation
- More durable
- More comfortable
- More instantaneous & direct, energy efficient
- Can run at lower temperatures than conventional heating systems
- Space saving & unobtrusive
- Quieter
- Easier to maintain





Halia®

digital warmth

- ultra-thin
- ultra-fast
- energy saving
- less material
- effortless installation
- elevated designs

Our vision is
SUSTAINABLE WARMTH

We Do the Heating What LEDs Did to Lighting



Fast response

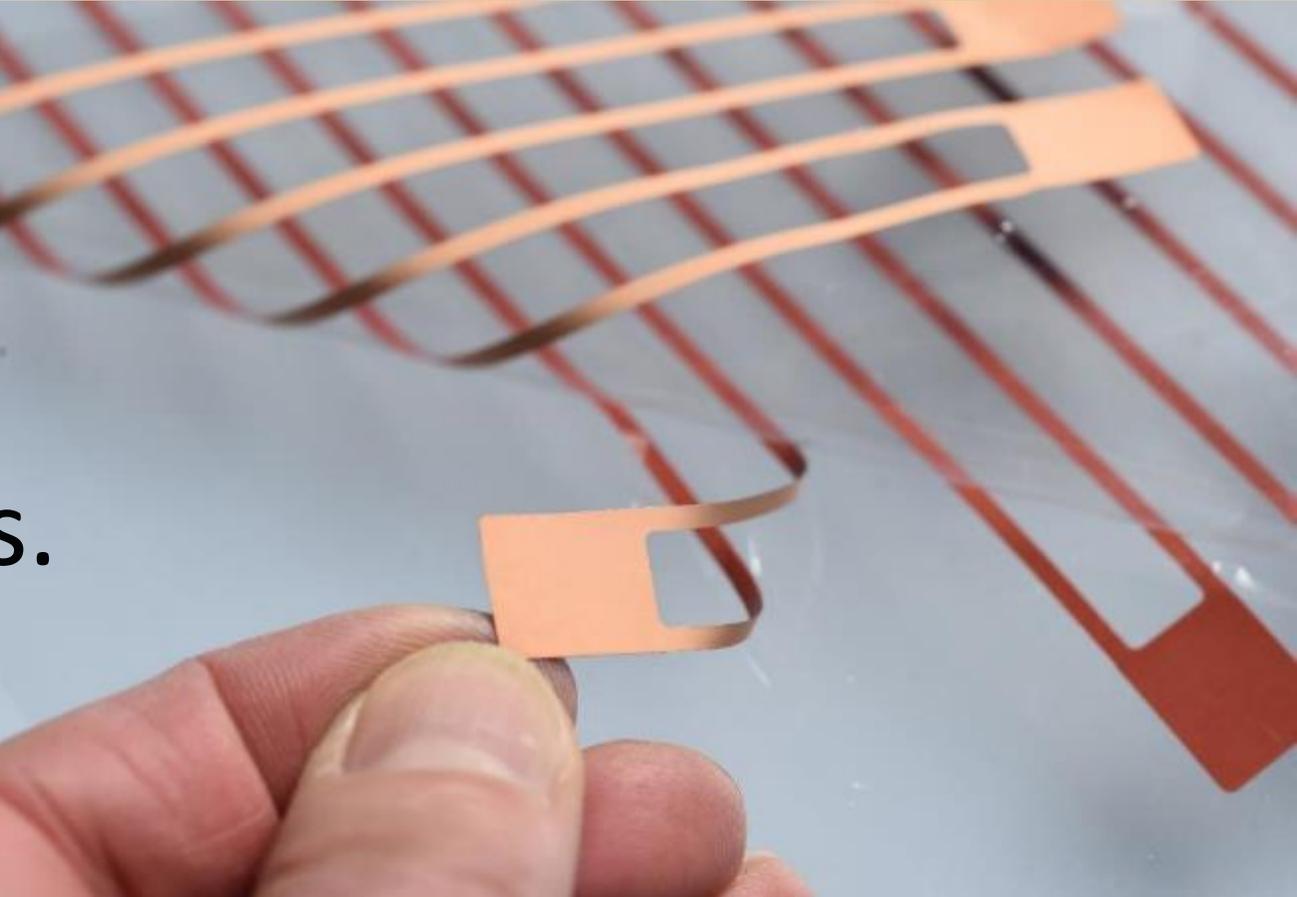
Low operating DC-voltages

Pixelation

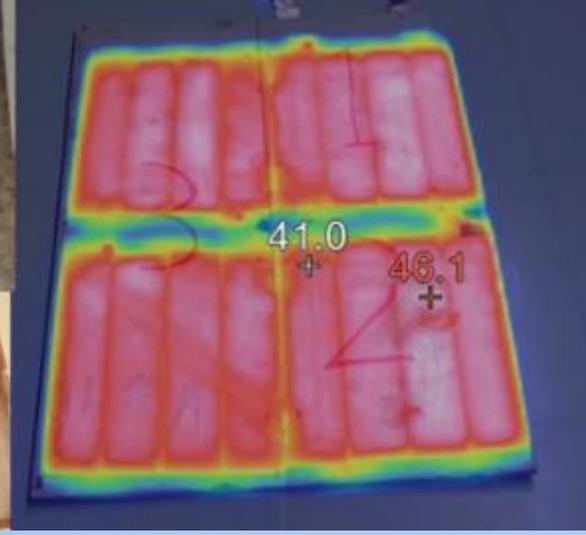
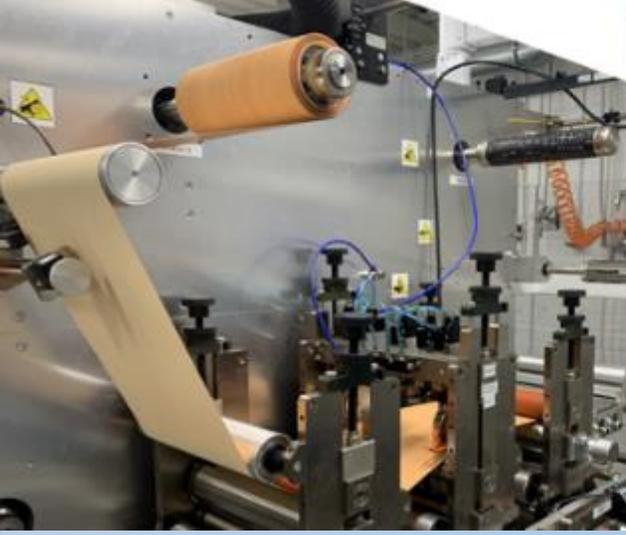
95% Less Materials, More Efficiency



VS.



Less weight | Recyclable | No plastics



Halia[®]

Patented

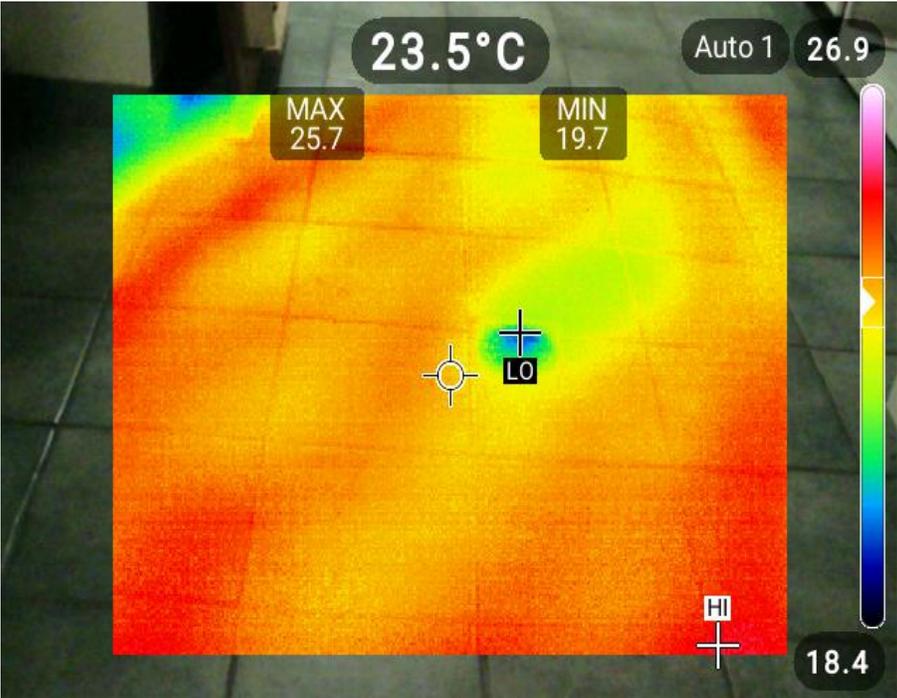
Proven in Industrial Scale Production

Low CAPEX

Opportunity Sizing

Several Advantages Over Under-Floor Heating

One Application Market Example



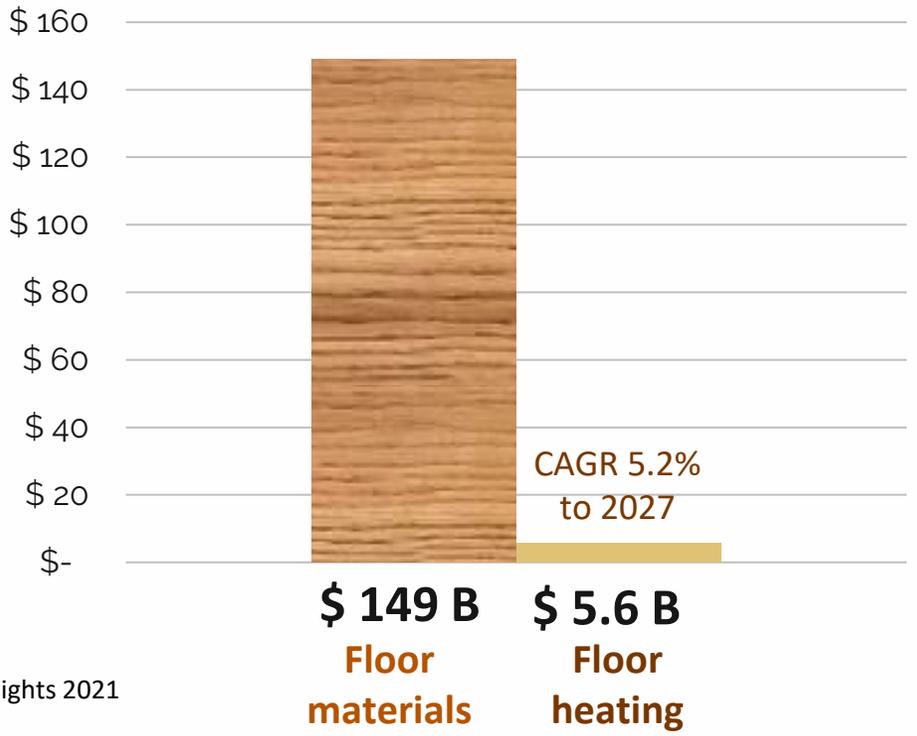
**Current underfloor heating
costly & inefficient**

PAIN POINTS	WARMING SURFACES SOLUTION
Current underfloor heating	
Slow	Quick on/off
Energy loss to subfloor	Heat close to surface enabling fast response
Continuous full area heating	Smart control of heating pixel by pixel (heater off under mats, furniture, etc.)
Costly to install	Installed with floor element
Limited use in old buildings	Best solution for retrofit & pre-fabricated elements

Floor heating is only one application space where warming surfaces technology can be applied, but as an existing market the most easily quantifiable.

Only 1/5 Floor Heating Installations Are Currently Installed in Existing Buildings, We Can Change That

Flooring Markets Today



1.2 Billion USD Serviceable Available Market by 2030

Pie chart: total forecast floor heating market 2027 in Europe & North America markets

Aim #1
Double market for floor heating market in renovation sites



Aim #2
Dominate modular buildings market

Sources:
Global Market Insights 2021
Statista 2021
Floor Covering Weekly 2021

In North America alone 3.6 billion m2 of new floor materials installed every year

More Value Than a Heating Solution

Design With Warmth



Micro-climates

Data can be linked to smart grid electricity trading

Warmth transactions



Smart Surfaces Platform

Market Opportunities Beyond Interior Surfaces

Licensing / JV opportunities in other markets

Smart warming surface solutions

Interior Surfaces

The Warming Surfaces Company

Electric Vehicles

- Interior heating
- Battery warmers

Portable Products

- Emergency services
- Food delivery

Deicing

- Windmill blades
- Airplane, marine
- Construction

Decoy Systems



Cost effective integration of heaters & intelligence inside surface materials



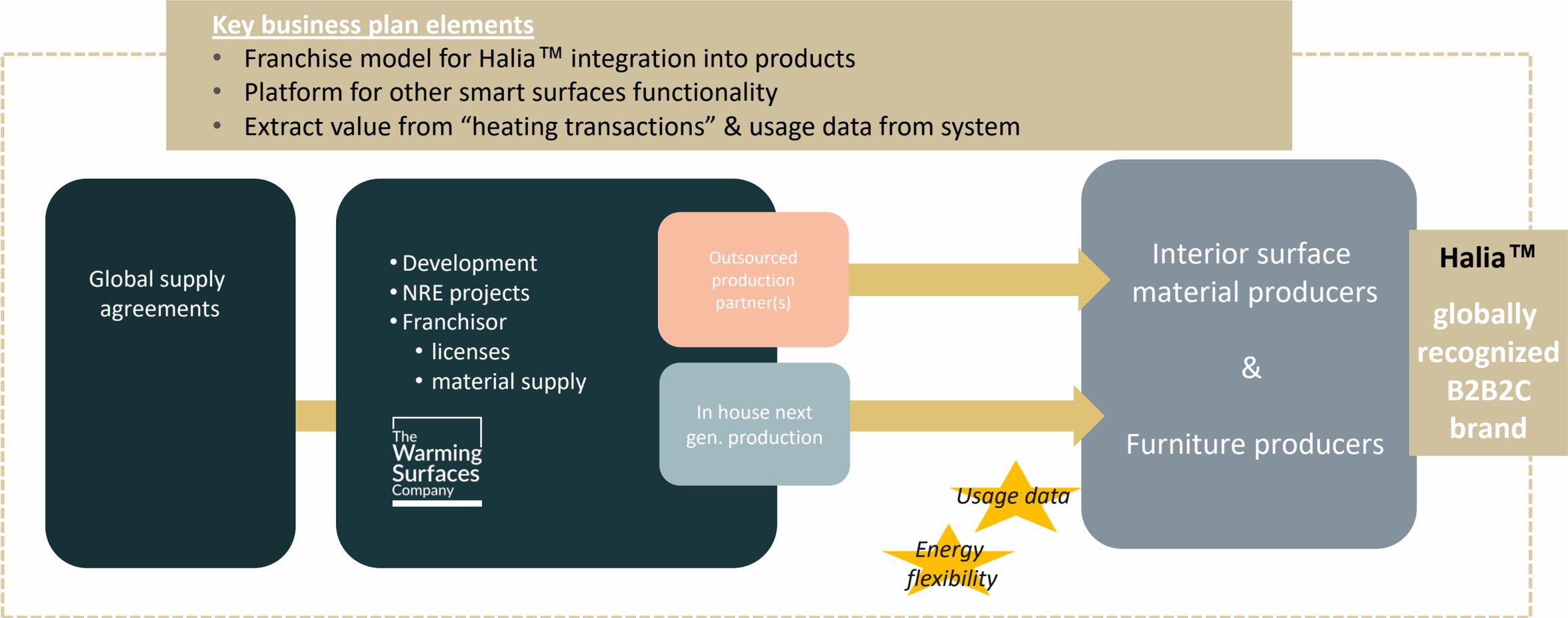
HEATING + SENSING + CONTROL & DATA

Our Ultimate Goal

Make Halia™ the “Gore-Tex” of Smart Warming Surfaces

Key business plan elements

- Franchise model for Halia™ integration into products
- Platform for other smart surfaces functionality
- Extract value from “heating transactions” & usage data from system



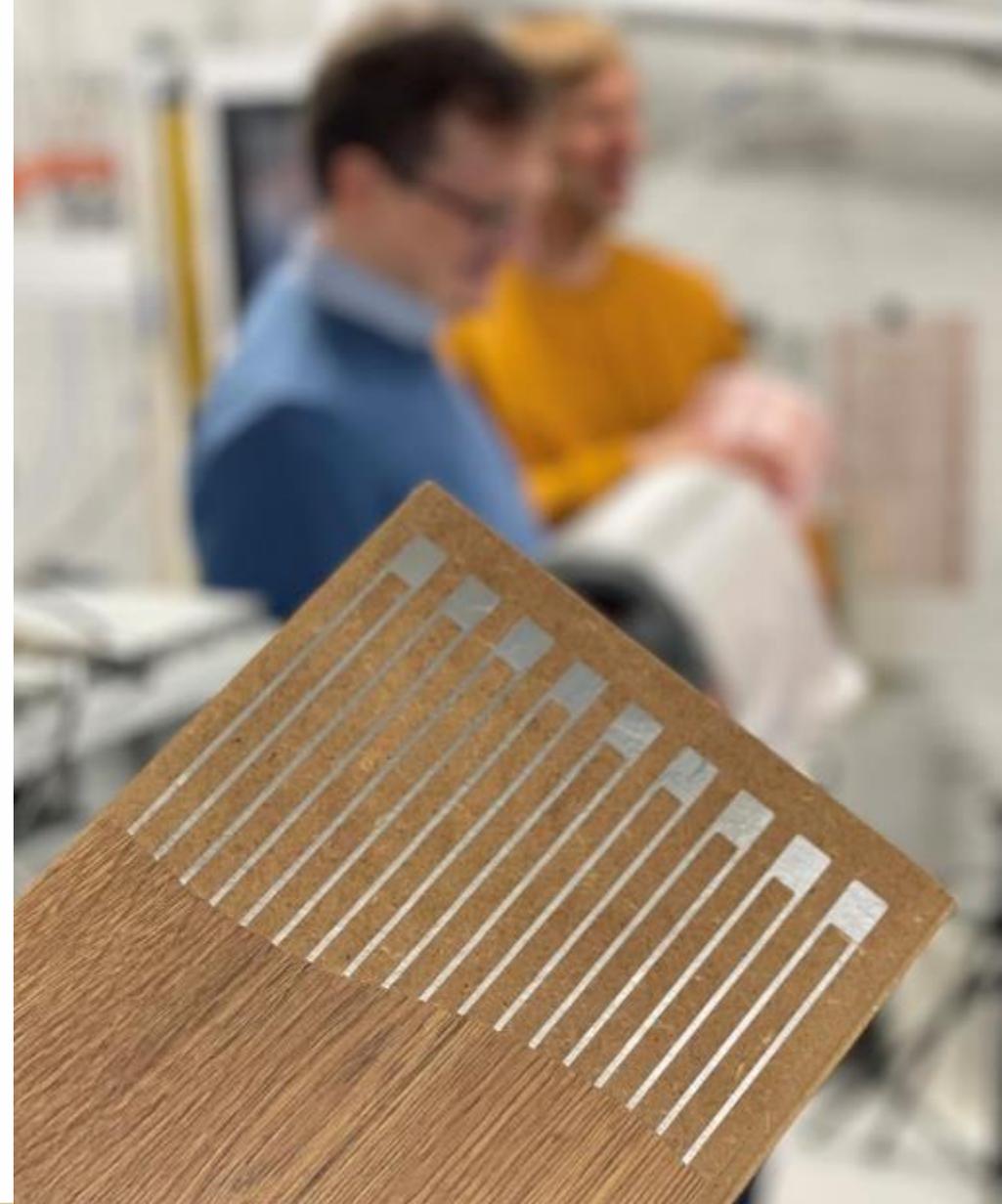
Piloting Autumn 2023 & Winter 2024

Market Initiation

2023 – 2024

PROOF OF PRODUCT VALUE IN MARKET

- 1st product launches with GTM partners in furniture & pre-fabricated building elements
- TCO & energy savings evidence through products & pilot installations
- Set up heater element R2R production at Nordic converter partner
- Build team | initiate Halia® brand | strengthen IPR



Growth Steps to Global Business

Market Initiation

2023 – 2024



Scale-Up

2025 - 2027

ROLL-OUT FRANCHISING MODEL

- Annual revenue >5M€ by 2026
- Strong marketing
- Establish production at several licensees / franchisee sites
- Roll out in Europe & N.America
- Establish global partnerships
- Wide-web developments (own pilot facility, sooner if possible)

Global Growth

2028 -

THE BRAND FOR WARMING SURFACES

- Target 2027 annual sales >20M€
- Global expansion (to be defined)
- Expand # of licensees/franchisees
- Global support to brand & customer experience
- 2nd gen. launch personalized micro-climates
- License solutions to new market spaces

Internationally Experienced Founding Team

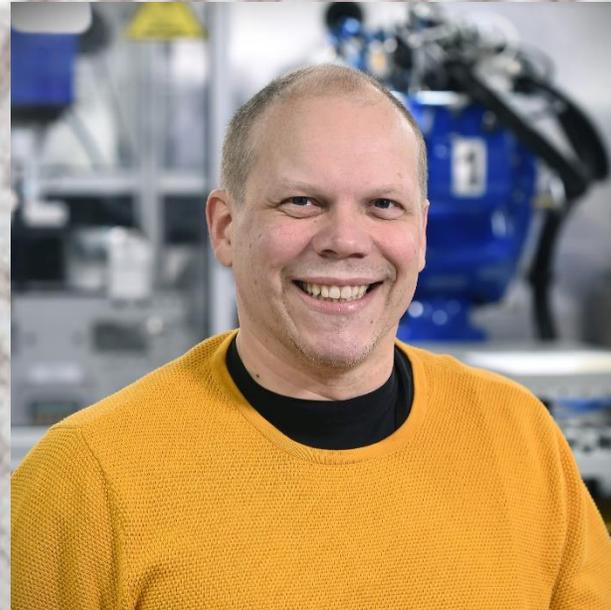
+ Board of Directors with Experience in Sustainable Building & Smart Building Systems



Jani-Mikael Kuusisto

CEO , MSc. Economics & Bus.

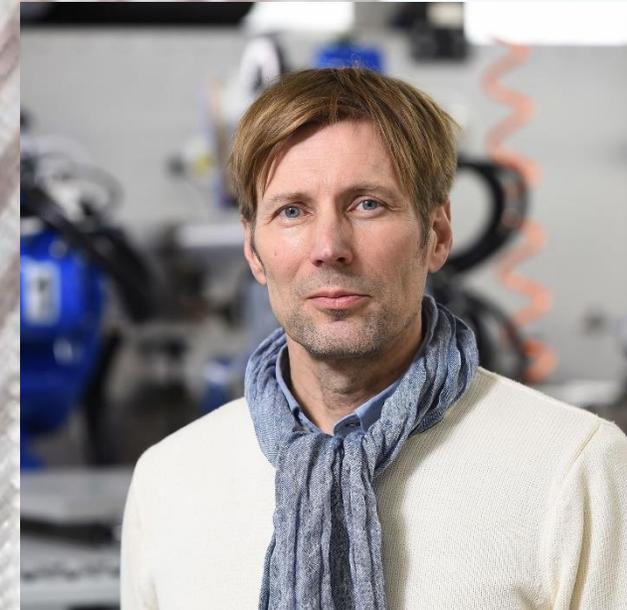
+20 years of international business development in printed electronics; e.g. former CEO of Ynvisible Interactive (TSXV:YNV).



Terho Kololuoma

CTO , PhD Chemistry

+20 years in R2R electronics research, pilot production, & commercialization. Wide national & international networks.



Jarno Vehmas

CPO , MA. Industrial & Product Design,

Electromechanical Engineer

+20 years of industrial design & product development based on printed & flexible electronics.

Building Our Team

Sustainable Warmth as Our Core Value

1/2023 Sanna Rousu joins team as Head of Sustainability & Projects

1/2023 appointment of Board of Directors

- Miimu Airaksinen (*SVP @ SRV, form. Prof. @ VTT*)
- Ari Virtanen (*form. Nokia, KONE, Ensto*)
- Petri Kalliokoski (*HighMetal, form. SVP VTT*)
- Terho Kololuoma (*co-founder, CTO*)

Advisory Board in the works.

We're delighted to have Sanna join in our team, and her help and experience as we build a basis for a sustainable business and culture for our company.



Go-to-Market Partners

Announcing our first go-to-market partners

Warmed HPL



SURFORMA[®]
Shaping Spaces

CASAIS

The
Warming
Surfaces
Company



FIRST KEY MILESTONES TO DATE

- **GTM partnerships**
- **1st public joint product demo**
- **1st pilots in Portugal & Finland autumn 2023**





interzum award



F2316

Warmed HPL





CO.DESIGN

This \$899 device could help you ditch flossing forever

CO.DESIGN

This airplane seat for wheelchairs users is simple and ingenious

IMPACT

This paper-thin tech turns your walls or furniture into an energy-efficient heater

PRESENTED BY DOW

Here's what store shelves will look like in 2035

Fast Company ran our story on the front page of their web-site June 13, 2023. This triggered wide global visibility and further press.

In the Media



Tekniikka
& Talous



Kaupparehti

Computer
Bild



GCR
GLOBAL CONSTRUCTION REVIEW



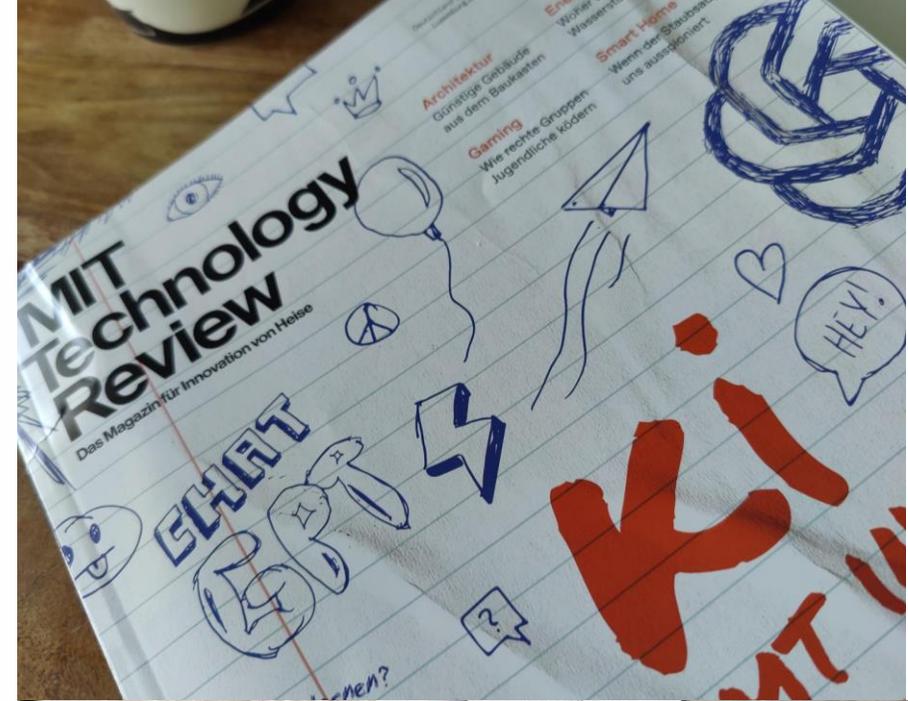
COURRIER

Talouselämä



CA CONSTRUCT
AMERICA

Pianeta
Design



Awards



SILVER

PROPTech STARTUP & SCALEUP
EUROPE AWARDS

2023



AWARD
High Product Quality

2023



**GRAND
WINNER**

2021

Investment Opportunity

Est. 11/2022 spin-out from VTT Technical Research Centre of Finland

Patented & pat.pending **Halia**[®] radiant warming technology

Fast response heating = control warmth like lighting

Low CAPEX, economical to scale

Pilots starting Q4/2023 & first customer product launches H2/2024

Now raising seed round: 4M€, pre-money valuation 8M€

Current investors: founders, board members, 4 bus.angels (Finland, Germany, Switzerland)





Warmth where & when you need it

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warmingsurfaces.com

7 AFFORDABLE AND CLEAN ENERGY



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION

