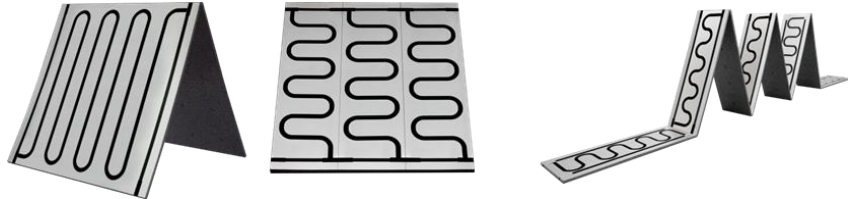




FINEThermo® – The Next Generation Low-Profile Hydronic Floor Heating System



1. Executive Summary

FINEThermo® is a next-generation, low-profile hydronic floor heating system engineered in Japan and optimized for European residential and commercial buildings.

With a total installed thickness of only **12–15 mm**, a **patented parallel-flow piping structure**, and **EPDM square piping**, FINEThermo® achieves rapid heat-up, uniform temperature distribution, and high energy efficiency — making it ideal for modern low-temperature heating systems such as air-to-water heat pumps (35–60 °C).

2. Product Concept

Low-profile design (12–15 mm): Minimizes floor build-up height, ideal for renovation projects and low-energy buildings.

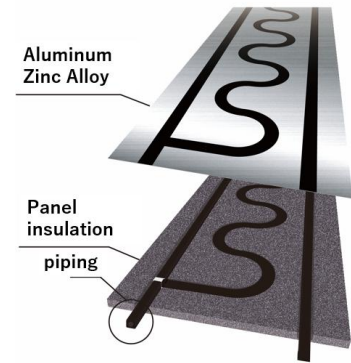
Foldable lightweight panel: Easy to carry, transport, and install on-site.

Patented parallel flow circuit: Circulates water through multiple short pathways, minimizing temperature drop and achieving highly uniform heat distribution — similar to the branching flow of the human vascular system.

Extremely low water volume: Only 0.79 liter of warm water is sufficient to heat a 10 m² room.

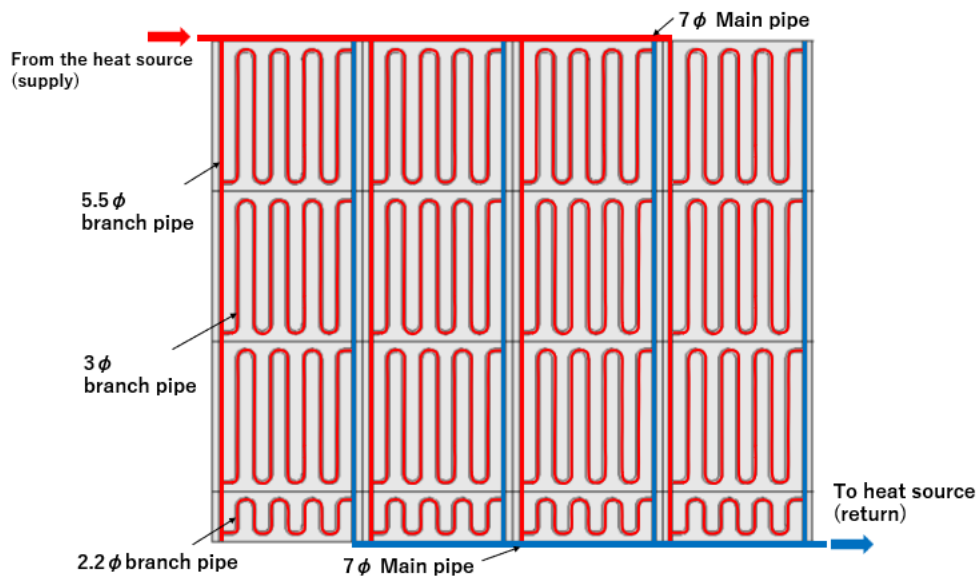
Compatible with all heat sources: Heat pumps, gas boilers, kerosene boilers, hybrid systems.

Low operating costs: up to 48% energy costs reduction demonstrated in Japan.



3. System Architecture

Component	Description
Surface material	Aluminium–Zinc alloy
Piping	EPDM square-profile (ID 2.2–7 mm)
Insulation	EPP (12 mm), EPS (15 mm)
Thickness	12 mm / 15 mm
Panel sizes	909 × 303 mm / 990 × 330 mm
Max. panels per circuit	24 panels (approx. 23sqm)



4. Technical Specifications

Thermal Performance (Sourced from Test Report 22-2024-1)



Parameter	Measured Value
Heat output Q'	233.6 W per panel at 60°C supply
Heat emission to floor surface	192.3 W (82.3%)
Average surface temperature	28.4 °C
Temperature uniformity	$\Delta T \leq 2.3$ °C across the panel

Heating Response (Test Report 22-2024-2)

- Time to reach 80% of equilibrium temp: **approximately 30 minutes**

Pressure Loss Characteristics (Test Report 22-2024-4)

Example (single panel):

Flow L/min	Pressure drop kPa
0.21	12.9
0.30	16.3
0.40	25.5
0.50	39.1

The low hydraulic resistance makes the system ideally suited for heat pump applications.

5. EN & EU Compliance

Designed to comply with the following:

- **EN 1264** – Water-based underfloor heating
- **EN 13501-1** – Reaction to fire (classification under preparation)
- **EN 13163 / EPS insulation**
- **CE Marking (CPR 305/2011)** – Process on going
- **EU Product Liability Directive 85/374/EEC**

DoP preparation is in progress for EU market entry.

6. Advantages vs. Competitors

Feature	FINEThermo®	Competitors
Panel thickness	12–15 mm	15–30 mm
Water volume	Very low water volume	Medium–high



Feature	FINEThermo®	Competitors
Flow circuit	Parallel (patented)	Serpentine/series
Installation	Rapid installation	Medium
Temperature uniformity	High	Moderate
Heat pump compatibility	Excellent	Varies
Weight	1-3 kg	5-12 kg

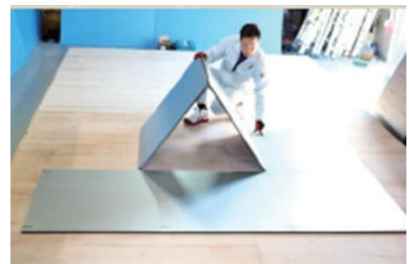
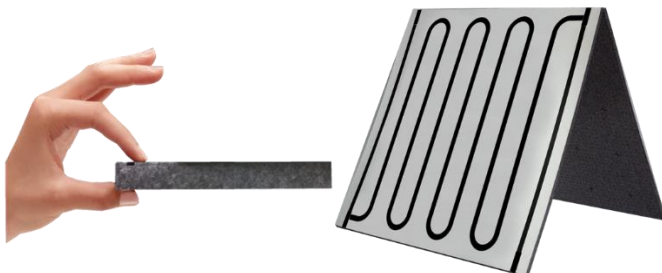
7. Floor Finishing Compatibility

- Engineered wood
- Vinyl, LVT
- Laminate
- Tile (with thin-set mortar / rigid underlayment)
- Dry screed boards
- Concrete, Mortar

8. Applications

The FINEThermo® system is versatile and suitable for:

- Residential apartments
- Renovation projects
- Hotels / wellness facilities
- Fitness / hot yoga studios
- Daycare centers / clinics
- Offices and retail



9. Warranty

- **10-year manufacturer's warranty**
 - Covers manufacturing defects & internal pipe leakage
 - Valid only when installed according to the official installation manual.
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10. Contact in Europe

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