

www.enerpia.com

ENERPIA EP BOARD

SMART HEATING SYSTEM

*Smart heating
specialist*



ENERPIA strives to create
a warm and safe world.



ENERPIA
Smart heating specialist

It's not conventional heating
where only the upper air is warm
while the lower air is cold.



Eco-friendly Enerpia is at a different level
Make all your living spaces warm

*Smart heating
specialist*

ENERPIA

HEATING SYSTEM

We will even fill your heart with the
warmth from the floor.

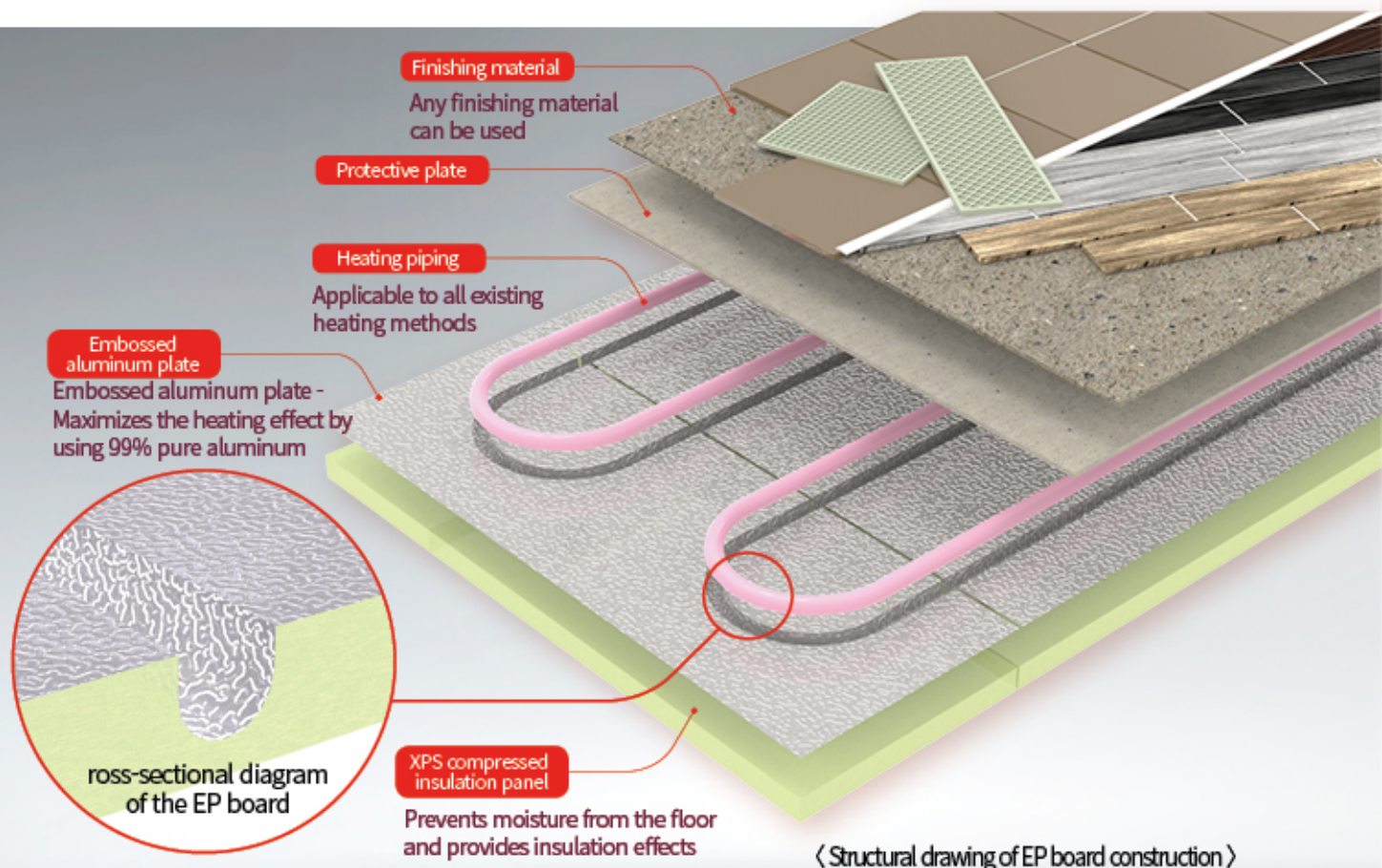
You can lay down any concerns
about the cold even in the bitter
winter months!

An innovative product, EP Board



No problem with all floor finishing materials! Applicable with any floor finishing material.

Increasing heating effect by **40 %** compared to conventional heating methods



✓ Flooring materials without the mortar process

As a building material for energy saving and mitigating noise between floors, the EP board is an innovative product that can enhance heating effects compared to wet construction methods and reduce heating costs by more than 40% by omitting the cement mortar process.

✓ Weight reduction of the building

The EP board can be applied to multi-story buildings or mobile & wooden houses by lightening the weight of buildings with its reduced weight.

✓ Semi-permanent use

Compared to the wet construction methods that use cement, the EP board is simple to install, and can be relocated and used semi-permanently.

✓ Reduces noise between floors by more than 30%

The EP panel can be applied to any space without being limited by boiler types and locations, and can reduce noise between floors by more than 30% by using the XPS compression insulation panel.

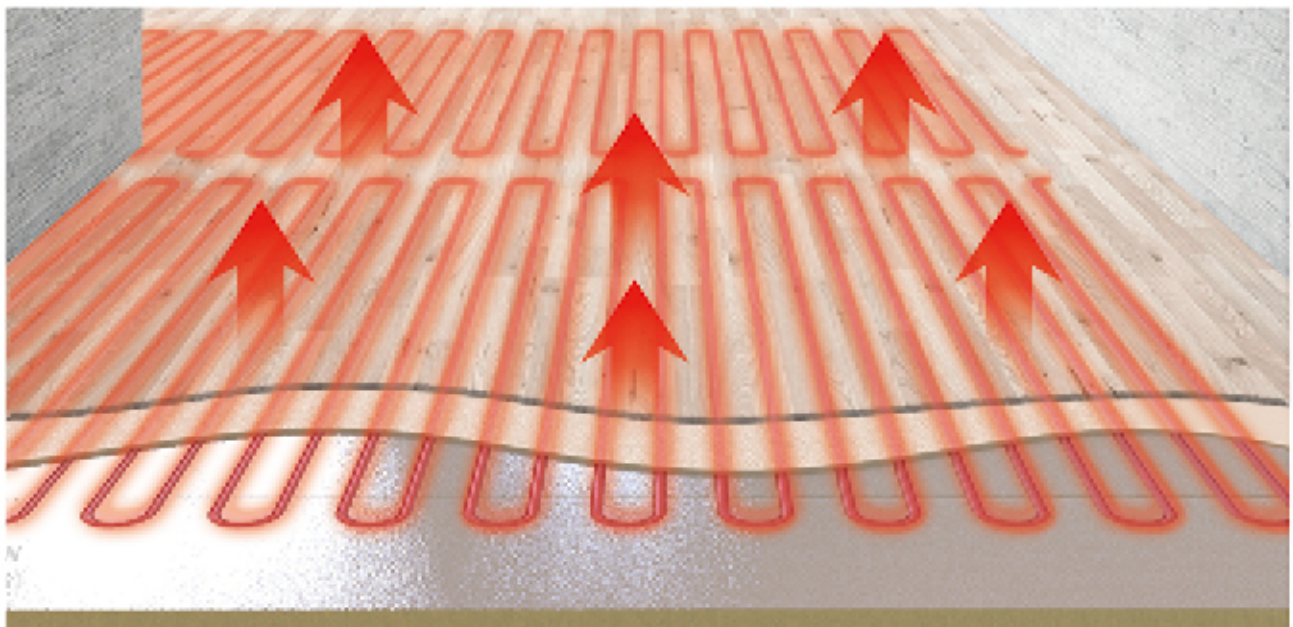
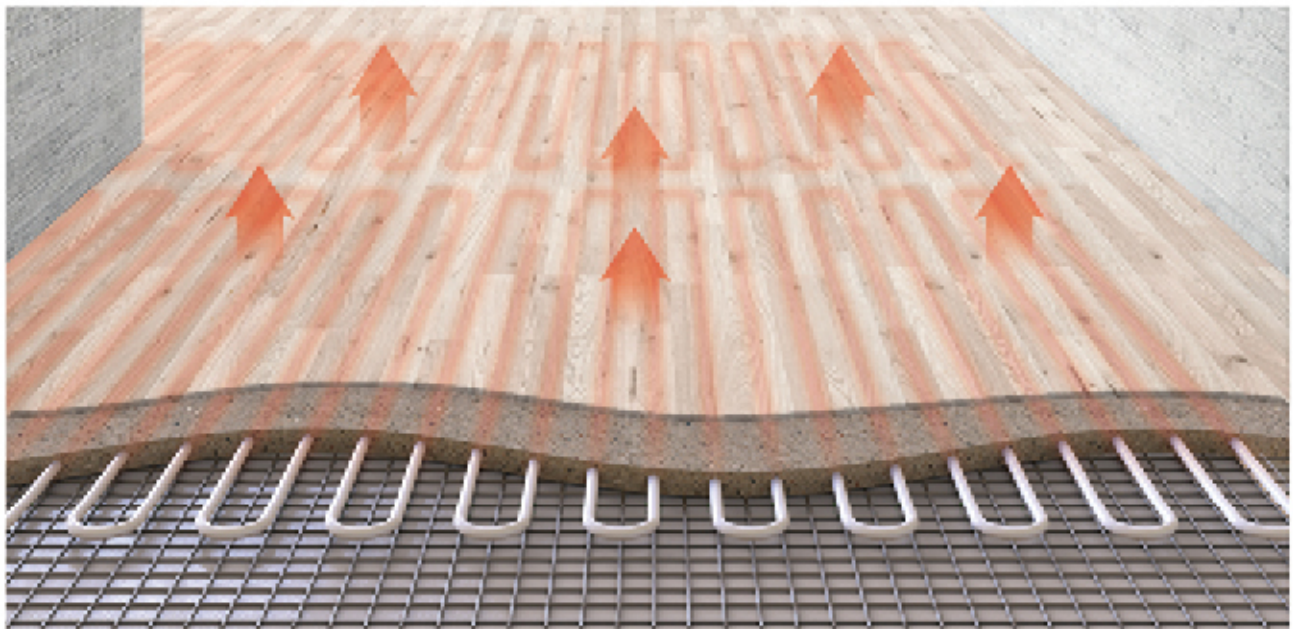
✓ Eco-friendly flame retardant

The EP board has a low risk of fire by using grade 2 flame retardants and is an eco-friendly building material where you don't have to worry about harmful substances such as endocrine disrupting chemicals (EDCs).

Effect of mitigating noise between floors and energy saving


Enables smart construction with the EP board

No cement mortar construction is required for floor heating piping when using the Enerpia EP board. Thanks to the XPS compression insulation panel that absorbs sound and heat, the EP board is effective in mitigating noise between floors and saving energy.



Various product specifications depending on the heating area

Specifications of EP board

| Item | Specification | Product | Size (L×W×H) | Remarks |
|------|--------------------|---|----------------|------------|
| 15A | Straight part |  | 1,500×600×30mm | φ 20,200mm |
| | A type curved part |  | 1,400×300×30mm | φ 20,200mm |
| | B type curved part |  | 600×400×30mm | φ 20,200mm |
| 12A | Straight part |  | 1,500×600×25mm | φ 16,150mm |
| | A type curved part |  | 1,500×300×25mm | φ 16,150mm |
| | B type curved part |  | 600×300×25mm | φ 16,150mm |

※ B type curved part: The upgraded curved part supplements the weaknesses of the existing curved parts and does not require to cut straight parts for one-to-one matching.

- Unit weight : 36 ~ 38kg/m³ ▪ Compressive load : 300kPa ▪ Heat conductivity : 270W/mk
- Composition: 99% pure aluminum plate, XPS compression panel

Why?

Why Enerpia EP board?



A safe product that passed the KS B 8025 test



Same-day construction & use is possible without disassembling the existing floor



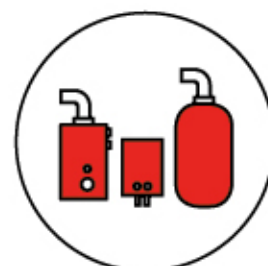
Reduces heating costs by more than 40%, compared to conventional mortars



Reducing boiler operating hours by more than 80%
Extends boiler lifespan



Enables quick heating within 20 minutes with its high thermal conductivity of 270W/mk



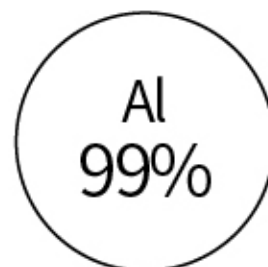
Applicable to all types of boilers (oil, gas, electricity, firewood boilers, etc.)



Lightens building weight with its reduced weight.



Reduces noise between floors by more than 30% by using XPS compression insulation panel



Provides effective heating by using 99% pure aluminum



The toughness of the aluminum plate is increased through heat treatment, making it damage resistant when used for a long time




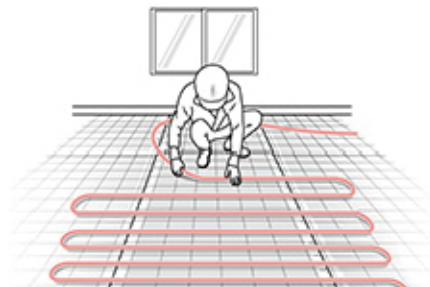
Strong against corrosion through double-sided oxidation treatment and there is no discoloration even when used for a long time



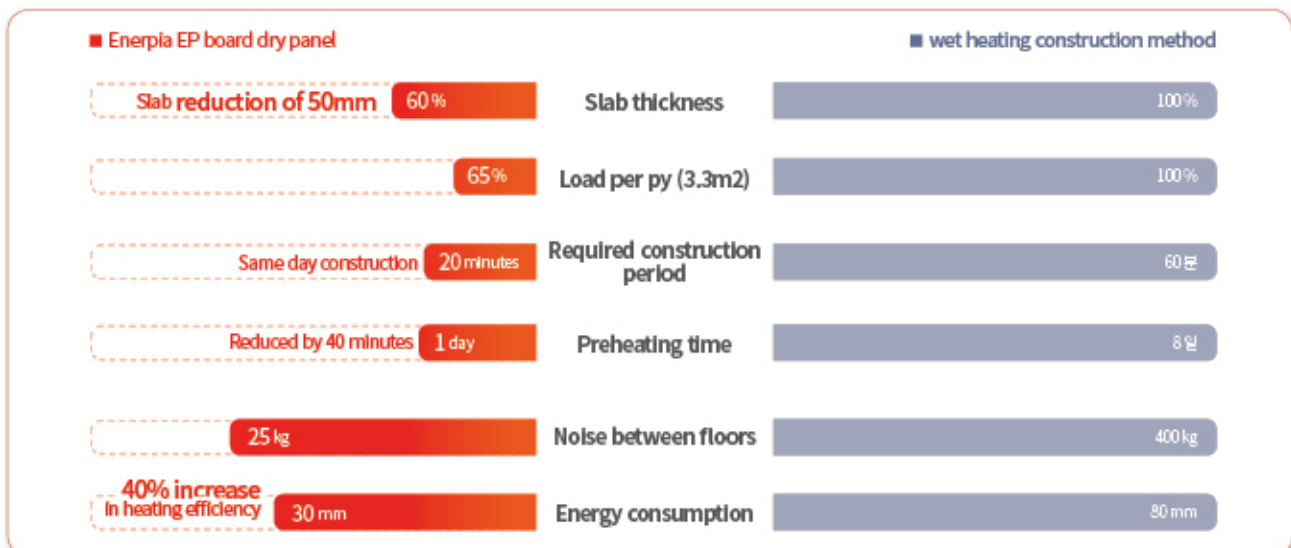
Noise is reduced while wear resistance is increased due to surface embossing of the aluminum plate

Comparison between dry construction method (EP board) vs. Wet construction method

EP board vs. Comparison between construction method with cement mortar

| Item | Dry construction method (EP board) | Wet construction method (cement mortar) |
|----------------------|---|--|
| |  |  |
| Thickness | Thin slab layer(20~35mm) | Thick slab layer (60~80mm) |
| Weight | Reduced structure load (20~30kg/py) | Heavy structure load (400~700kg/평) |
| Construction period | Reduced construction period (can be finished on the same day) | Long construction period (7-14 days) |
| Heat efficiency | Rises to the appropriate temperature in a short time(5~15minutes) | Takes long to preheat the floor (1~3 hours) |
| Noise between floors | Reduced by more than 30% compared to the existing wet construction method | Problem of noise between floors (increased slab thickness) |
| Process | Simple (A single company carry out the whole process) | Complex (schedule coordination/professional skills are required) |
| Maintenance | Simple and convenient repairs | Unable to repair & risks of cement mortar removal |
| Hazardous substances | 100% eco-friendly flame retardant material | Release of radon, formaldehyde, etc. |


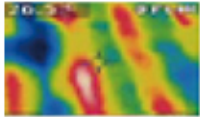
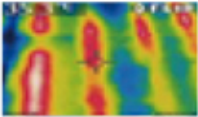
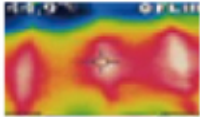
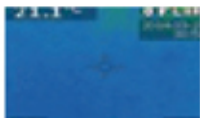
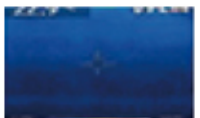
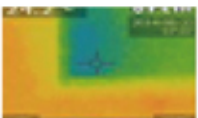

EP board vs. Comparison of usability with cement mortar



Effective sound absorption, excellent heating! Accurate and complete EP board performance test

Enerpia is doing its best to supply products that meet customer expectations.

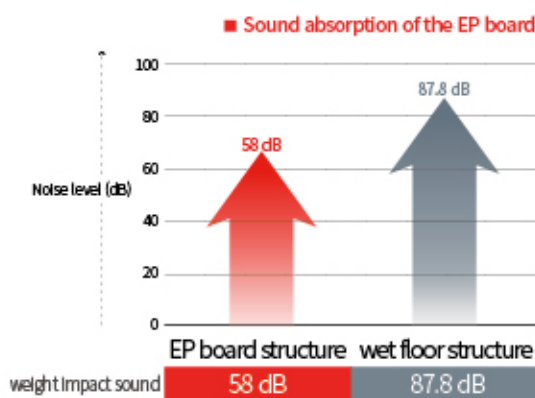
Heat distribution test

| Item | 0 minute | 10 minutes | 20 minutes | 30 minutes |
|-------------------------|---|---|--|---|
| EP board |  |  |  |  |
| | 18.1°C | 26.5°C | 35.3°C | 44.9°C |
| Wet construction method |  |  |  |  |
| | 21.1°C | 22.9°C | 24.2°C | 30.4°C |

wet construction method < Comparison between dry construction method (EP board)

According to the heat distribution test within the same timeframe, the **EP board** demonstrated to be more effective in indoor temperature increase and heat rise than the wet heating construction method.

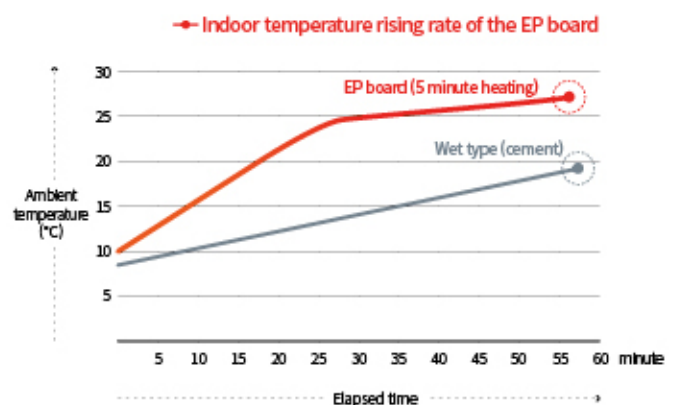
Weight impact sound test



According to the experiment results, the dry heating structure reduced the weight impact sound by about 30dB compared to the wet heating structure, and reduced the lightweight impact sound by about 49dB.

According to the grade classification established by the Korea Conformity Laboratories (KCL), the heavy impact sound is classified as 4th grade and the lightweight impact sound is classified as 2nd grade.

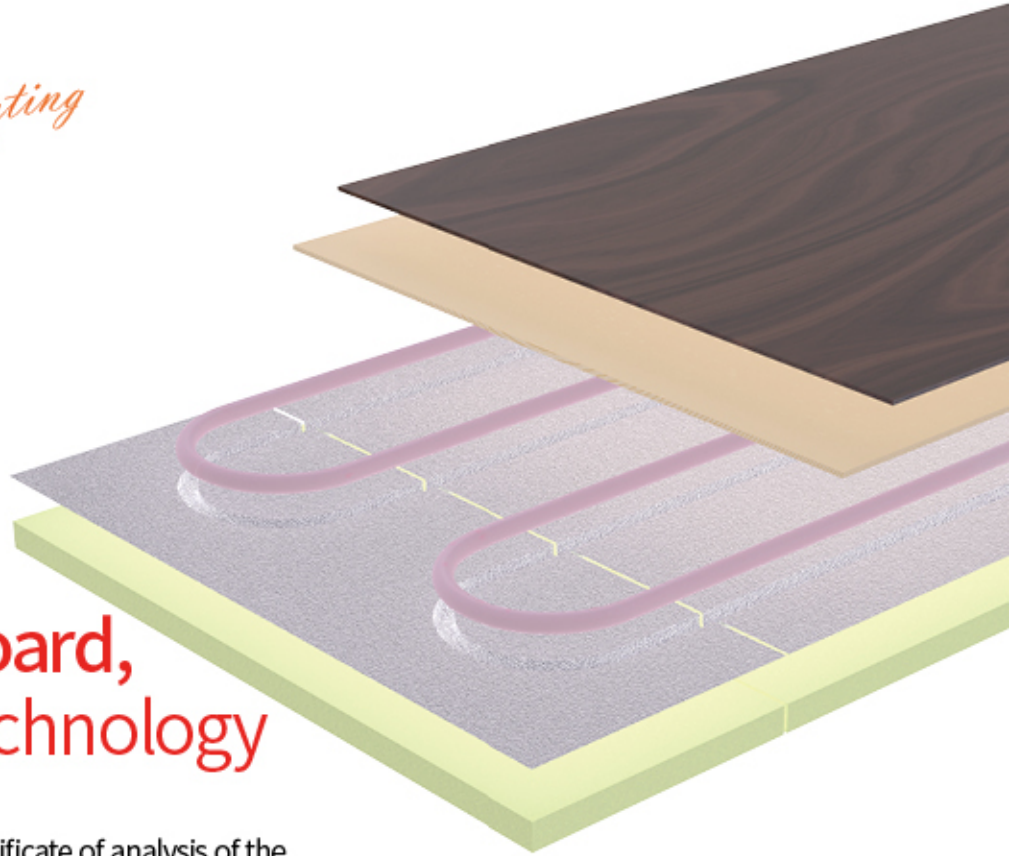
Temperature change over time



According to the experiment results, the temperature increase was about twice as high when dry heating was installed. When analyzed using the slope of the graph, it has been scientifically proven that the indoor heat rise effect of dry heating does not fall behind the effects of wet heating.

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Enerpia EP board, A Patented Technology

Patent certificates of the
Enerpia EP board

Certificate of analysis of the
Enerpia EP board



Certificate Of Patent
(No. 10-1433912)



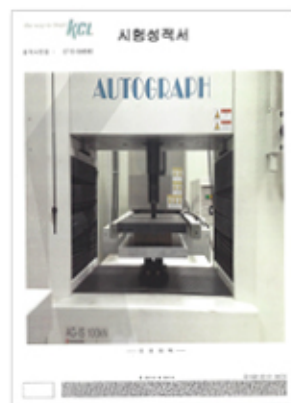
KEAA test certification
(KS B 8025 certification)



KEAA test certification
(KS B 8025 certification)



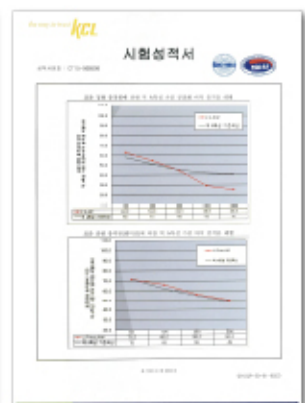
Certificate of analysis on
compressive load



Certificate of analysis on
compressive load



Certificate of analysis on
compressive load



Certificate of analysis on
compressive load

A company you can trust! Enerpia

Certificates of Enerpia



Certificate Of Patent
(No. 10-1746775)



Letter of Q-Mark
designation



Russia GOST Standard



CU (Russia compulsory
certification)



CE



G-PASS certificate



Quality management
system certificate



Environmental management
system certificate



Certificate of the
company-affiliated
research institute



Letter of designating as
a promising export SME



Letter of pre-star
company designation



Membership card of
the Korea International
Trade Association



Design registration
certificate



Design Registration/
Inno-Biz



Certificate of the
company specialized in
material parts

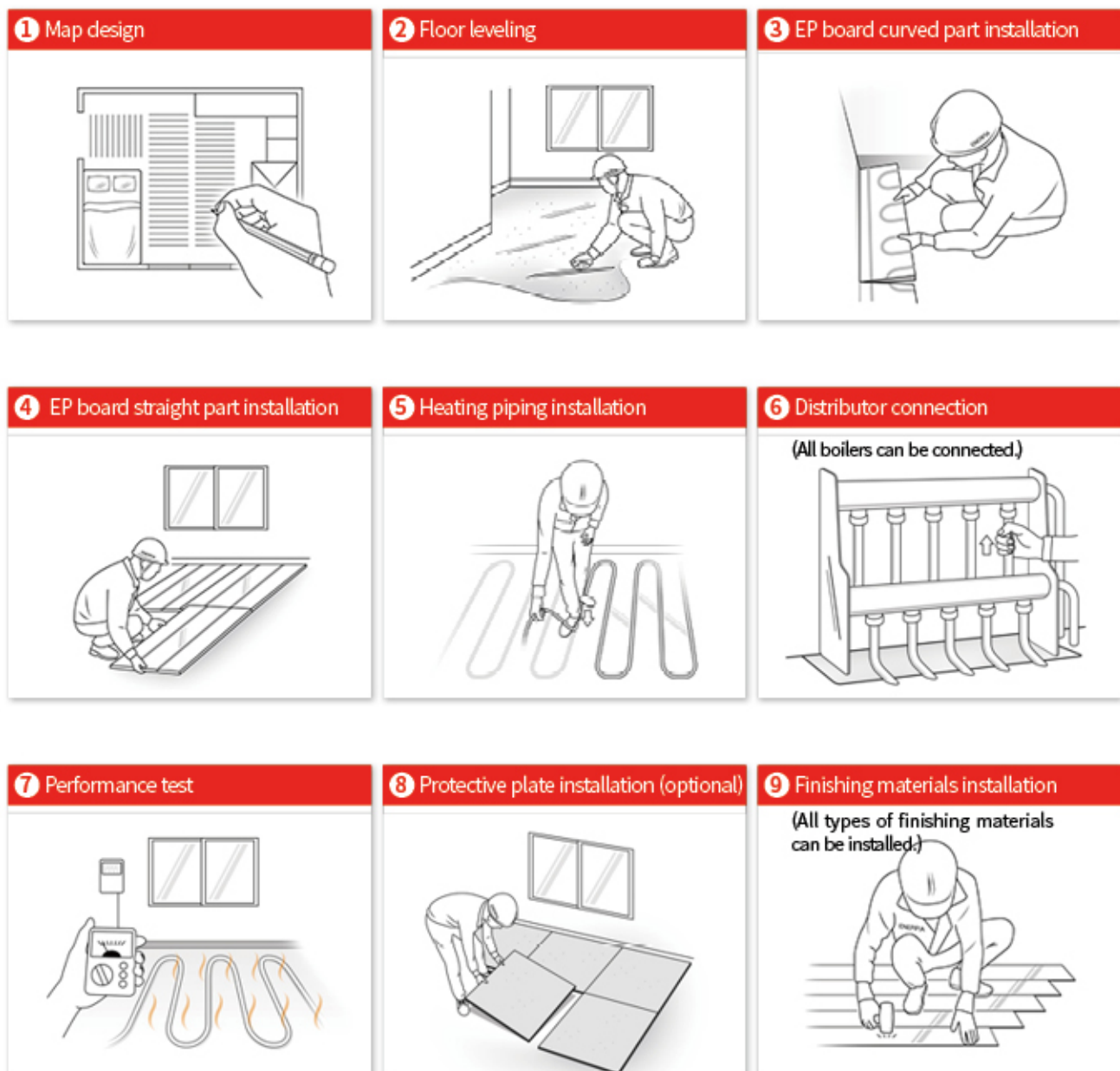


Venture company
certificate

The only Company in the Field That carries out the whole process of Manufacturing to Construction

Construction method

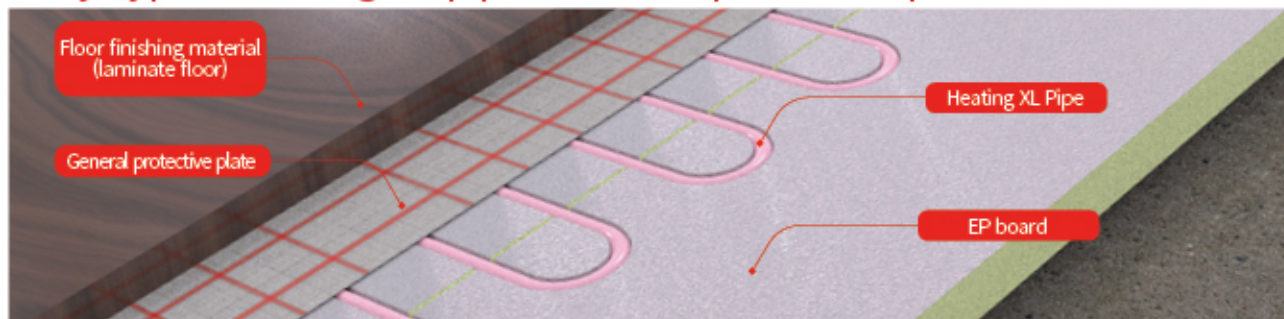
Enerpia provides convenience to our customers with our total solution - from design to repairs after construction completion.



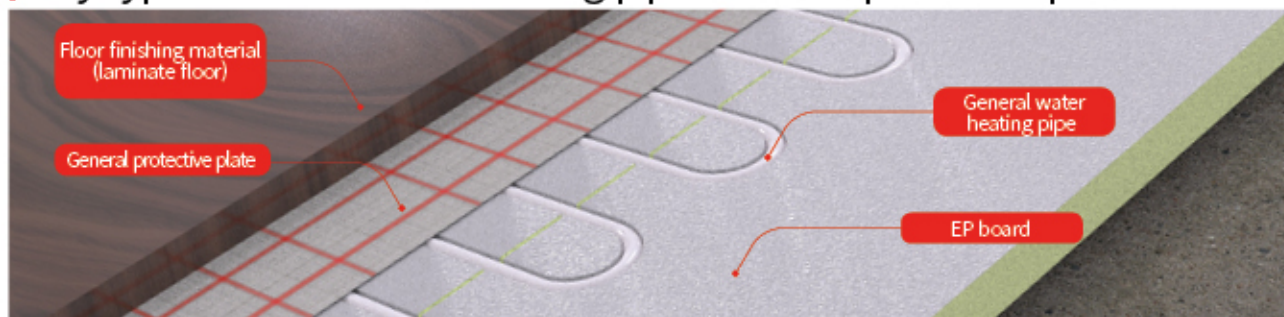
Construction structural map of the Energy EP board

It is recommended to install along with Heating XL Pipe

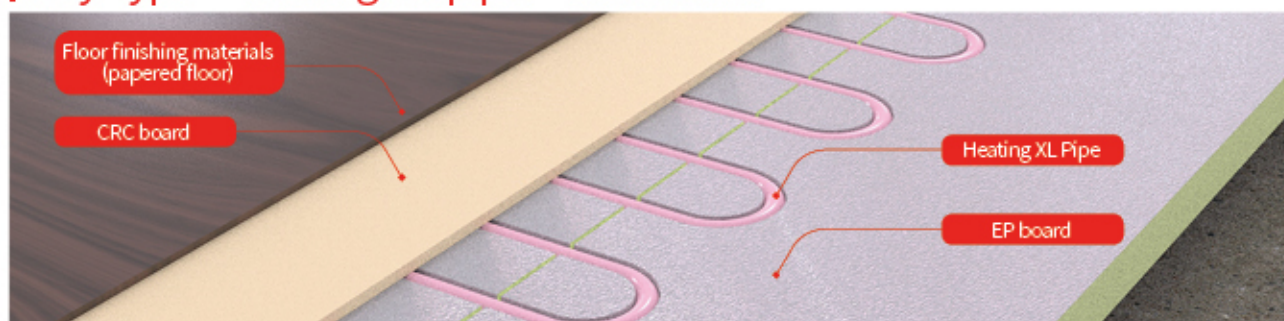
| Dry type + Heating XL pipe - General protective plate



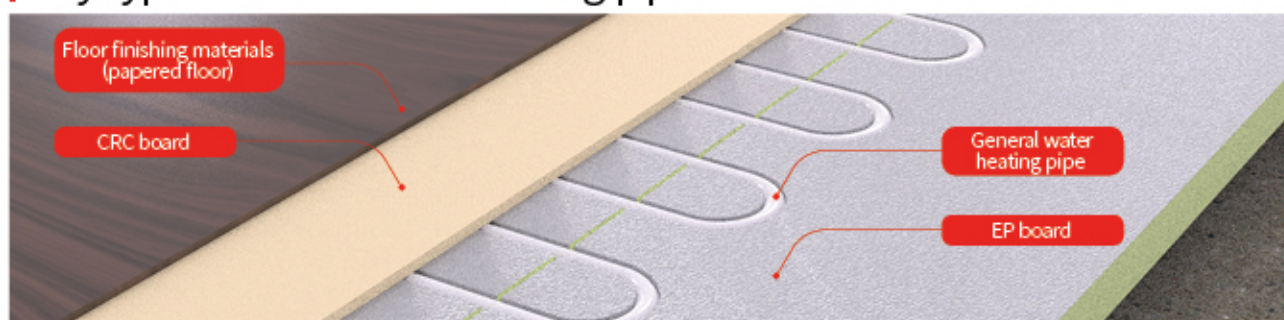
| Dry type + General water heating pipe - General protective plate



| Dry type + Heating XL pipe - CRC board



| Dry type + General water heating pipe - CRC board



Enerpia Continues To Make Warm Spaces.

Smart heating specialist

The Enerpia EP board is an innovative product that can be applied to any space regardless of the type of boiler or installation location, and can improve heating effects further while reducing heating costs by more than 40% compared to other existing products.

| Installation recommended in various places.

The Enerpia dry heating method is suitable for places where **there are leaks in existing heating pipes, or sites that needs to reduce weight, or sites with a short construction period, or remodeling sites.**



Childcare centers



Daycare centers



Motels







Double-floor studios



Enerpia is a global company
that has **successfully entered**
markets in 28 countries.

Enerpia is a **global company** that has successfully entered markets in **28 countries** including Russia and Europe.

Enerpia established local factories in  China,  Uzbekistan,  Kyrgyzstan,  Russia.

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ENERPIA HEATING SYSTEM

The center of global
connection!
It all starts here, in **Korea.**



A length that can circle the earth two and a half times

100,000km

Enerpia installed about 100,000km of Heating XL Pipes around the globe, which is long enough to circle the earth two and a half times.

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The only company in the industry that both
manufactures and constructs the product

Enerpia provides convenience to our
customers with our total solution - from design
to repairs after construction completion.



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