www.enerpia.com

ENERPIA

HEATING XL PIPE(SHIELDED)

Smart heating specialist

SMART HEATING SYSTEM

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!

ENERPIA
Smart heating specialist

Eco-friendly advanced heating system
Enerpia Shielded Heating XL Pipe
The only product in Korea!
A patented product that **maximizes electromagnetic wave shielding**

No worries about electromagnetic waves-no EMF electromagnetic field

전자기장 환경인증 EMF 한국기계전기전자시험연구원

Registration of a patent NO. 10-1746775

Pleasant and economical heating

70% More than of heating costs can be reduced, compared to oil heating.

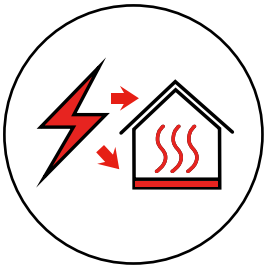
The product is made in consideration of the environment and health.

This product enables healthier and more comfortable heating by blocking electromagnetic waves in the electric heating hot water pipe, and heats for a long time using less amounts of energy owing to the heat accumulation effect of the heat-transfer fluid in the pipe and the flooring. It is advantageous for space management because it does not require a boiler room as it is specialized for individual heating.

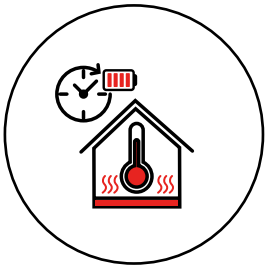
Why choose Enerpia Heating XL Pipe?

Why?

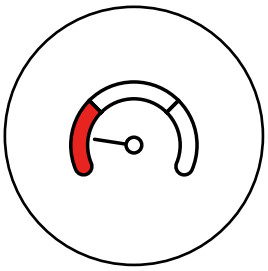
A product that implements **ondol-style heating** through an **electric floor heating system.**



All electrical energy is **converted into heat** for **100% use in actual heating.**



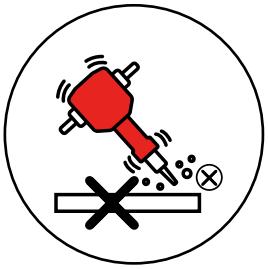
Heat accumulation effect guarantees **long heating with less energy usage.**



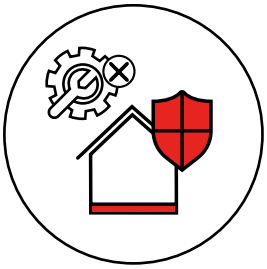
Reduce energy usage using the heat transfer effect.

A heating system that does **not** produce **freeze, smoke, or gas.**

No noise and excellent space management as there is no boiler room.



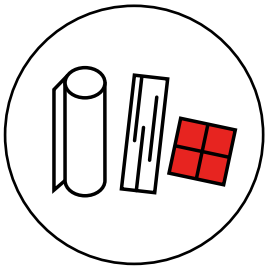
A remodeling system that supports **perfect repairs without dismantling the existing floor.**



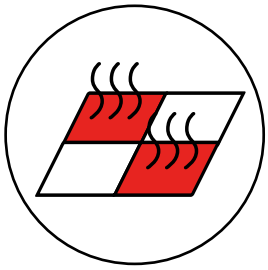
Safe usage **without additional maintenance.**

Reduces construction costs due to its short construction time as **equipment piping is not required.**

This product enables healthier and more comfortable heating by **blocking electromagnetic waves in the Shielded Heating XL Pipe**



Any floor finishing materials can be used.



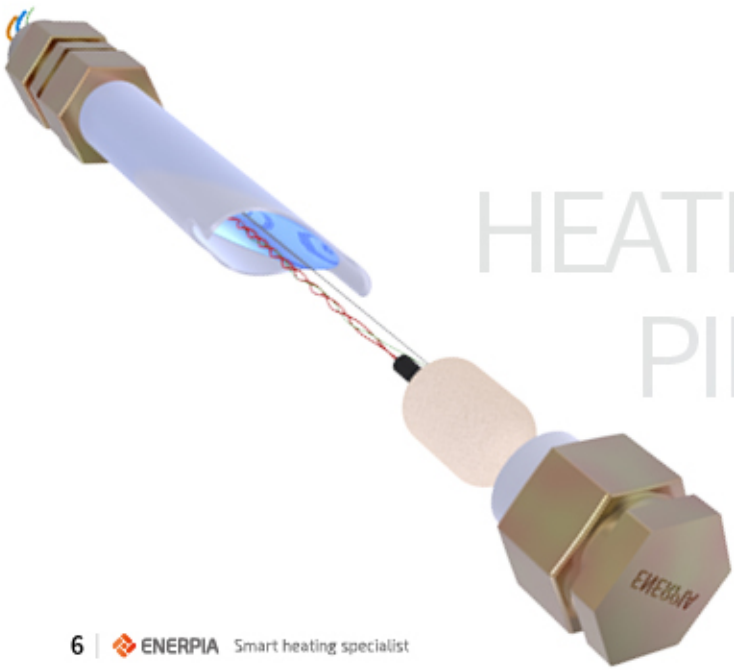
Reduces unnecessary heating costs by using partial heating.

Various product specifications depending on the heating area

Specifications of Shielded Heating XL Pipe

Model number	Product specification	Power consumption	Heating area	Average power consumption
EPDW-005	7m ×15A	265Wh	1.65㎡ (0.5py)	
EPDW-010	14m ×15A	530Wh	3.30㎡ (1.0py)	
EPDW-015	21m ×15A	790Wh	4.95㎡ (1.5py)	
EPDW-020	28m ×15A	1,060Wh	6.60㎡ (2.0py)	
EPDW-025	35m ×15A	1,330Wh	8.25㎡ (2.5py)	
EPDW-030	42m ×15A	1,590Wh	9.90㎡ (3.0py)	
EPDW-035	49m ×15A	1,860Wh	11.60㎡ (3.5py)	160Wh/㎡
EPDW-040	56m ×15A	2,120Wh	13.20㎡ (4.0py)	
EPDW-045	63m ×15A	2,390Wh	14.90㎡ (4.5py)	
EPDW-050	70m ×15A	2,660Wh	16.50㎡ (5.0py)	
EPDW-055	77m ×15A	2,920Wh	18.15㎡ (5.5py)	
EPDW-060	84m ×15A	3,190Wh	19.80㎡ (6.0py)	
EPDW-065	91m ×15A	3,445Wh	21.45㎡ (6.5py)	

※ Product specification (length), power consumption, and heating area can be order-made.



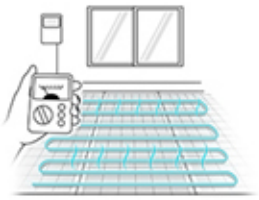
HEATING X-L PIPE(SHIELDED)

Any Floor Covering Materials

No problem with all floor finishing materials!

Applicable with any floor finishing material.

Comparison between the Shielded Heating XL Pipe and conventional boilers

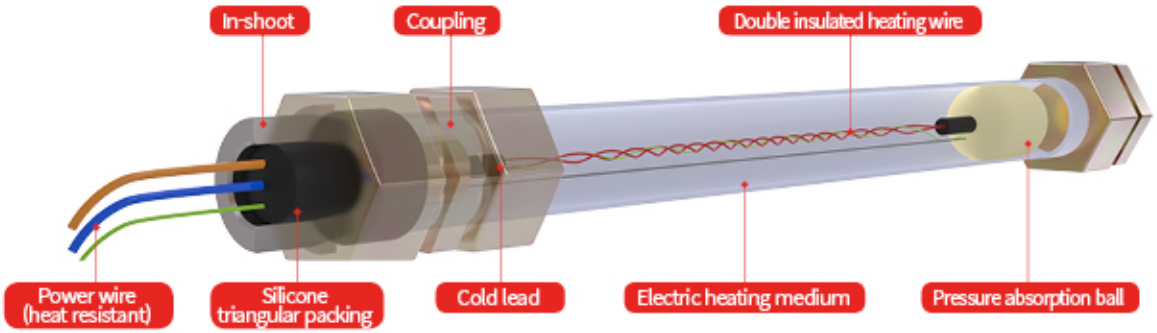
Item	Shidlded Heating XL Pipe	Oil boiler	Gas boiler (city gas)	Electric boiler	Radiator	Air Handling Units (AHU)
						
Life	Semi-permanent	7-10 years	7-10 years	7 years	7 years	5 years
Heat efficiency	100%	85%	78%	78%	78%	75%
Safety	Good	Fire risk	Gas leaks, explosion risk	–	Fire risk	Good
Noise/ smoke	No	Yes	Yes	No	No	Yes
Installation space	No boiler room is needed	Boiler room is needed	Boiler room is needed	Boiler room is needed	No boiler room is needed	Space for the outdoor unit is needed
Radiant heat	Yes (Space heating similar to Ondol-style heating)	Yes	Yes	Yes	Yes	Yes
Energy per (3.3m²)	0.56kWh	0.086L/h	0.075m3/h	0.66kWh	1.20Kwh	2.30Kwh

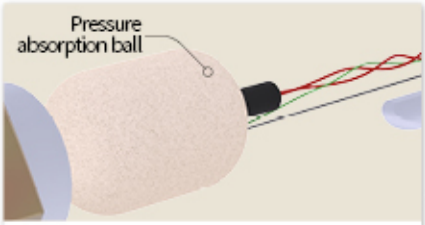
1. 10 hours of daily boiler use based on the energy unit price as of June 2015, where standard insulators in accordance with Article 59 of the Building Act and Article 21 of the Equipment Rules are used. Detailed specifications are subject to change depending on indoor insulation conditions.

Eco-friendly advanced heating system Enerpia Shielded Heating XL Pipe

The **shielded Heating XL Pipe** is an eco-friendly advanced heating system that maximizes heating efficiency by using the heat and expansion pressure generated from the heat of a special heat-transfer fluid when the electric heating wires inside the sealed XL pipe are heated, which does not require a boiler (a means of heating the floor) or a circulation motor (a means of deliberately circulating hot water).

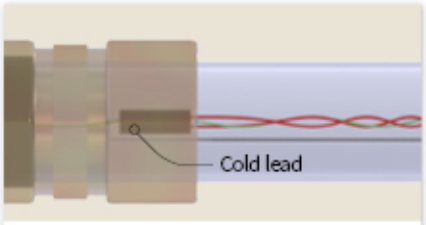
Internal structure map of the Shielded Heating XL Pipe





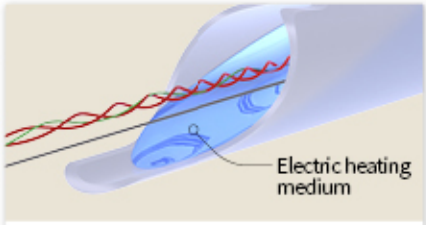
Pressure receiving device

The excessive pressure generated by nucleate boiling can be internally received using the pressure absorption ball.



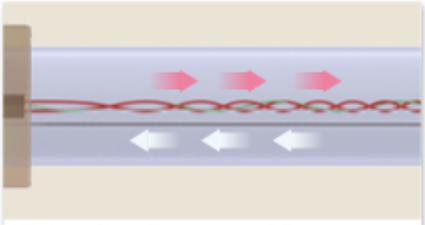
Double insulation

Double insulated heating wires must be used for conductor and insulation treatment because it directly affects the lifespan of the product.



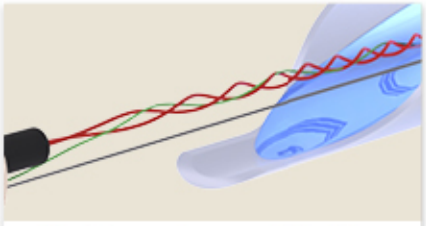
Heat-transfer fluid filling

A heat-transfer fluid that does not freeze at -20°C is filled.



Zero electromagnetic waves

The magnetic field is offset due to the twister structure of the heating wire
The electric field is shielded by combining the heat-transfer fluid and the ground wire



Heating wire specification

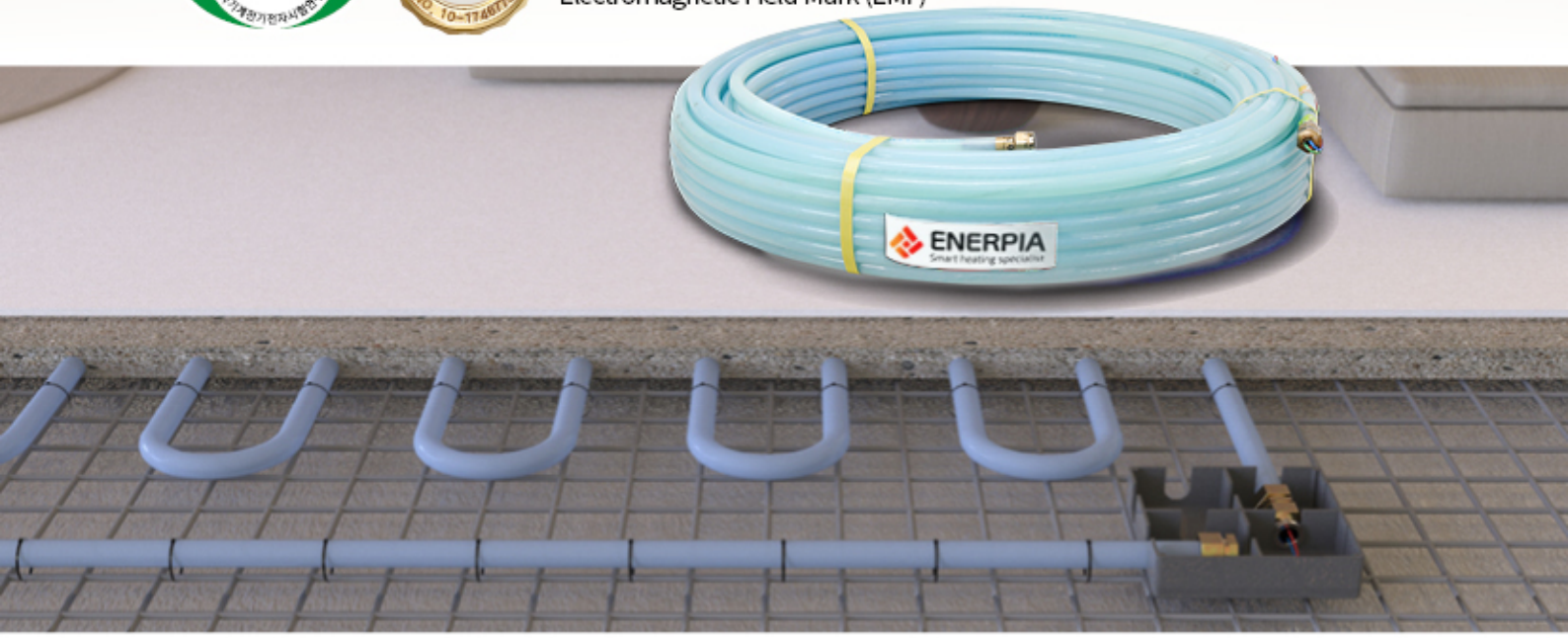
Heating wires should not exceed 20W/m. Solving the problem of the 1-wire method (Article 255, Clause 5 of the Electric Equipment Technology Standard Decree)

Primary insulation Silicone rubber insulation that can withstand high temperatures (200°C) and provides excellent insulation performance
Secondary insulation Teflon insulation that has excellent heat resistance, water resistance, chemical resistance, and physical properties

No worry about electromagnetic waves by using a non-electromagnetic field heating wire! Enerpia Shielded Heating XL Pipe

A certification mark given by the Korea Testing Certification (EMF) only when the amount of electric field, magnetic field, and electromagnetic waves emission does not adversely affect the human body.

Patent No. 10-1746775 (Sealed type Shielded Heating XL pipe for offsetting and shielding electromagnetic waves)
Electromagnetic Field Mark (EMF)



Quality and A/S guaranteed when a genuine product serial number is registered

Smart factory system

Enerpia is committed to guaranteeing the quality of all delivered products.
If you register your Enerpia genuine serial number, you can safely receive services, where we provide quality assurance through agent companies in each country.

- ✓ The manufacturing process and product tests can be checked in person.
- ✓ Quick and accurate A/S is guaranteed

※ An **individual bar code is printed** on all Enerpia products using the production system in which the ICT combined with a digital automation solution is applied.

Shielded Heating XL Pipe
The Core principle of Heat efficiency

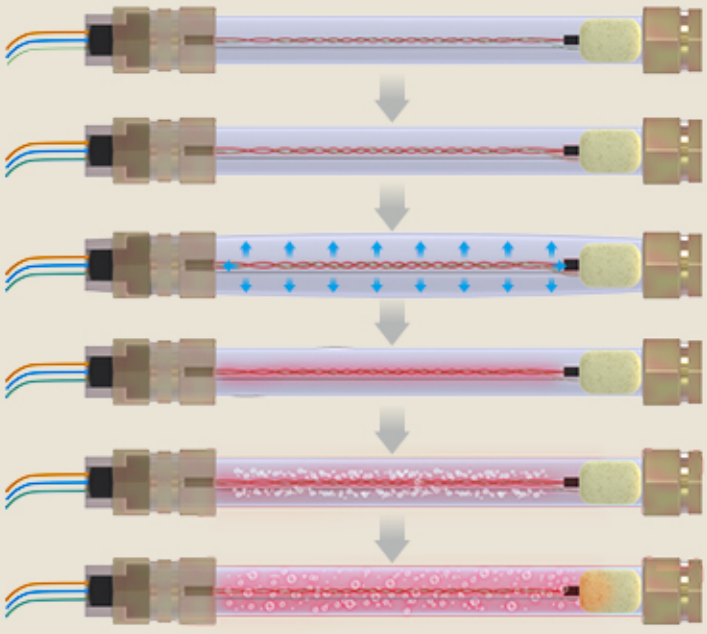
Shielded Heating XL pipe and nucleate boiling phenomenon

A heating method that produces heat by applying electric power to the electric heating wires inside the sealed XL pipe. When electric power is applied, heat is generated that increases the temperature of the heat-transfer fluid (liquid) inside the pipe. Unlike the existing boiler that supplies heat by circulating heated hot water, this method supplies heat using electric power.

Nucleate boiling occurs when the liquid temperature reaches the saturation temperature and the temperature of the heat-generating surface is 5°C or higher than the liquid saturation temperature. It is a phenomenon where the **heat conductivity of the liquid rapidly increases when air bubbles are formed on the electric heating surface, and air bubbles containing thermal energy rise and comes into contact with the liquid, and transfers the heat to the liquid.**

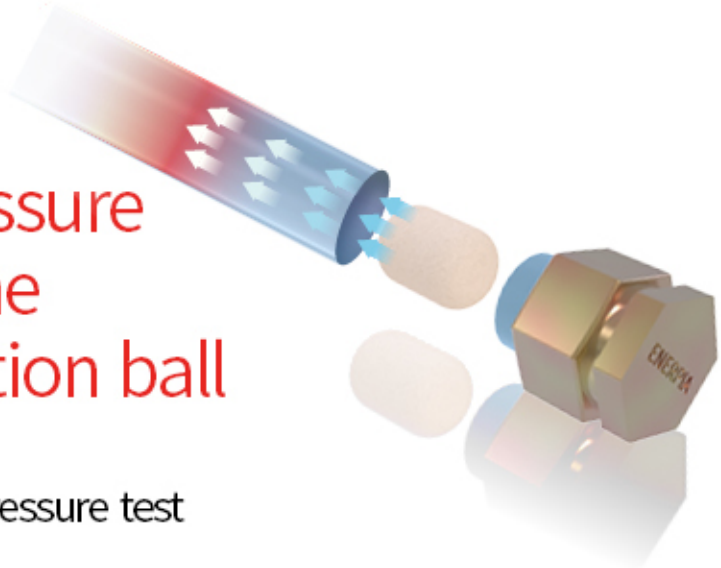
If electric power is applied to the heating wire in the electric heating tube, the temperature increase of the heat-transfer fluid raise the internal pressure, and the saturation temperature of the heat-transfer fluid increases proportionally. Therefore, nucleate boiling is unlikely to happen in general, sealed electric heating hot water pipes because the heat-transfer fluid cannot reach the saturation temperature from a rise in the saturation temperature caused by pressure increase, or the temperature difference between the saturation temperature and the electric heating surface does not exceed 5°C. However, Enerpia's electric heating hot water pipe can cause nucleate boiling, because the pressure absorbing ball (Patent No. 10-0805702) suppresses pressure increase in the electric heating pipe, allowing the heat-transfer fluid reach the saturation temperature quickly, and the temperature of the electric heating surface (130°C based on 20w) is different from the saturation temperature by more than 5°C.

〈Nucleate boiling and film boiling〉



1. The temperature of the heat-transfer fluid rises when electric power is applied to the heating wire in the electric heating pipe.
2. Pressure builds up in a sealed space.
3. The excessive pressure is absorbed by the built-in pressure absorption ball, and the heat-transfer fluid easily reaches the saturation temperature.
4. At this point, hot air bubbles are generated on the heating wire if the heating wire is hotter than the heat-transfer fluid by more than 5°C (nucleate boiling).
5. Even if the electric power supply to the heating wire is cut as the air bubbles rise, the remaining hot air bubbles heat the heat-transfer fluid warm.

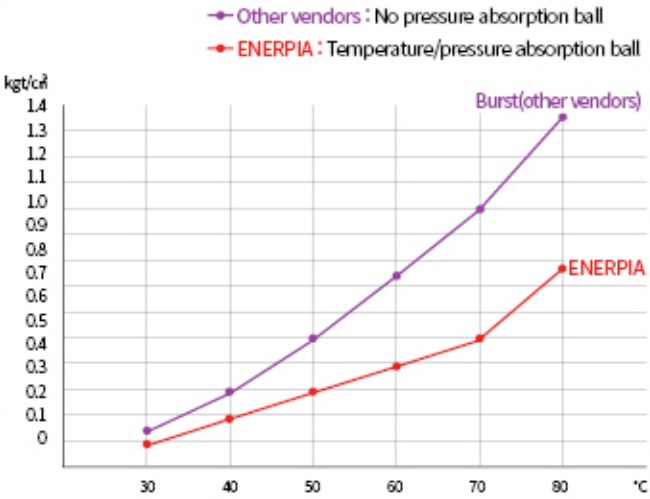
Suppressing pressure increase using the pressure absorption ball



Shielded Heating XL Pipe pressure test

kgf/cm²

Temperature(℃)	pressure absorption ball (EP) is available	No pressure absorption ball
		
30	0	0.05
40	0.1	0.2
50	0.2	0.4
60	0.3	0.65
70	0.4	0.9
80	0.68	Burst



※ The construction interval is 7cm depending on the purpose and conditions of the site.

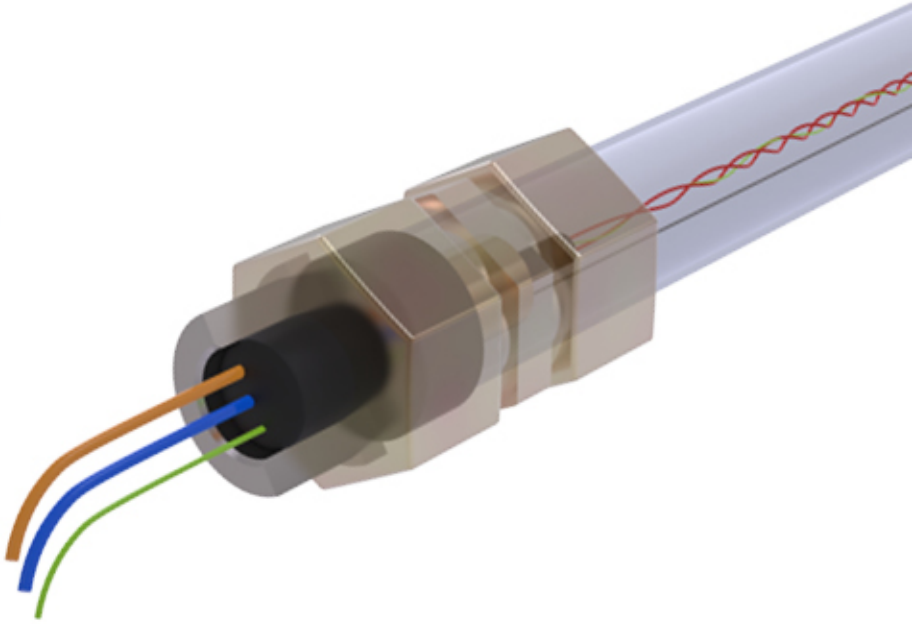
- Heating wire length : 9.8m(XL-Pipe 4.9m)
- Heating wire resistance : 182Ω(266Wh)
- Measuring gauge : WISE(Germany) 3kgf/cm²

An eco-friendly heating system

A company completed with its extensive experience and patented technologies! Enerpia puts customers and the environment first

Smart heating specialist

ENERPIA HEATING SYSTEM



Enerpia Shielded Heating XL Pipe, A Patented Technology

Patents And Utility Models of Enerpia Shielded Heating XL Pipe

Certificate Of Patent (No. 10-1746775)

Certificate Of Patent (No. 10-0805703)

Utility Model (No. 20-0442474)

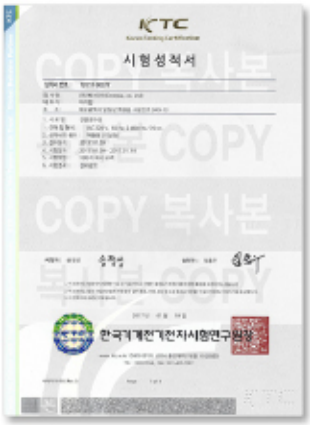
Certificates of Enerpia Shielded Heating XL Pipe

Russia GOST Standard

CE

Electromagnetic Field Certificate

Test Results of Enerpia Shielded Heating XL Pipe



KTC Certificate of Analysis

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

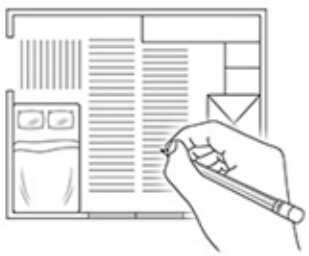
Venture company certificate

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

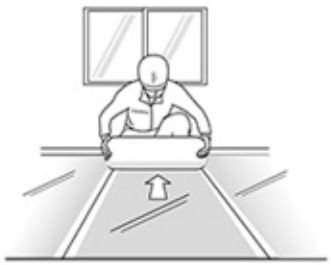
Construction method

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

① Design floor plan



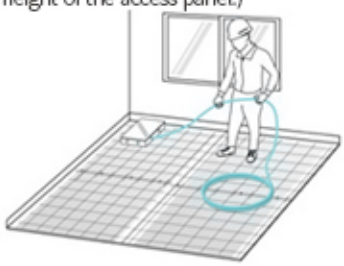
② Install Silver film mat



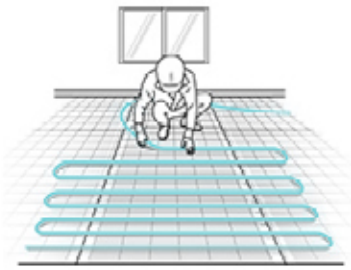
③ Install wire mesh installation

④ Access panel installation

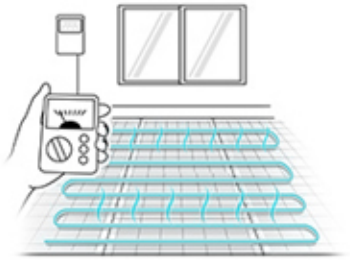
(Spread cement mortar up to 4cm - the height of the access panel.)



⑤ Install Shielded Heating XL Pipe



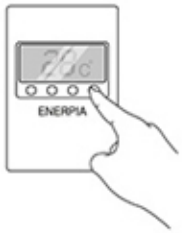
⑥ Performance test



⑦ Spread cement mortar

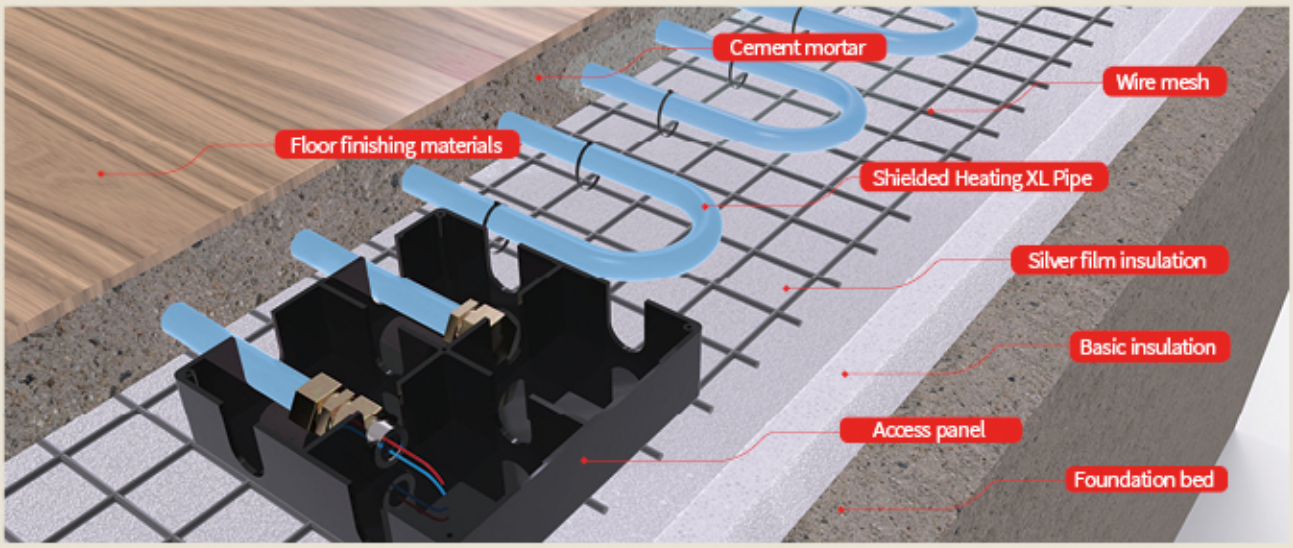
⑧ Install finishing materials

⑨ Install thermostat

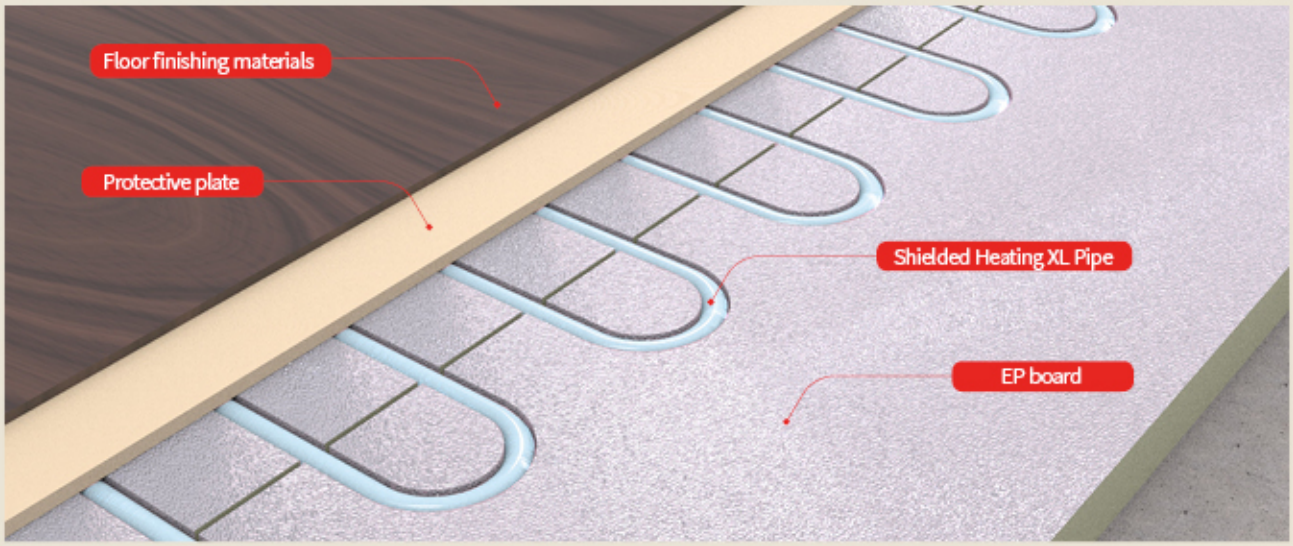


Structural plan of the Enerpia Shielded Heating XL Pipe

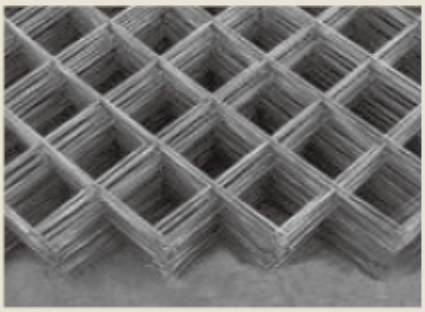
Structural plan wet type (cement mortar) construction



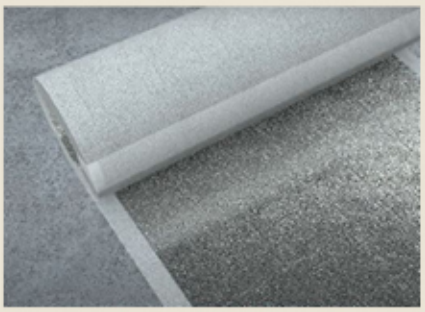
Structural plan of dry type (EP board) construction



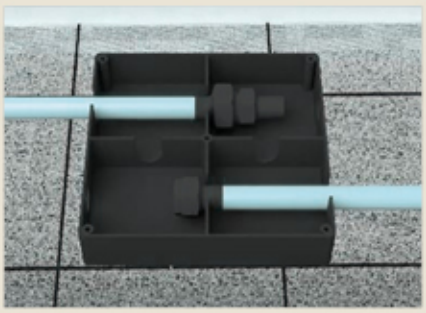
Main construction subsidiary materials of the Shielded Heating XL Pipe



Wire mesh



Silver film insulation



Access panel

Simple operation, but many functions Enerpia thermostat

It is a controller that can adjust temperature and time for the electric floor heating, and can also be changed into an individual type or communication type according to the capacity, facility, and site.

Recommended thermostat

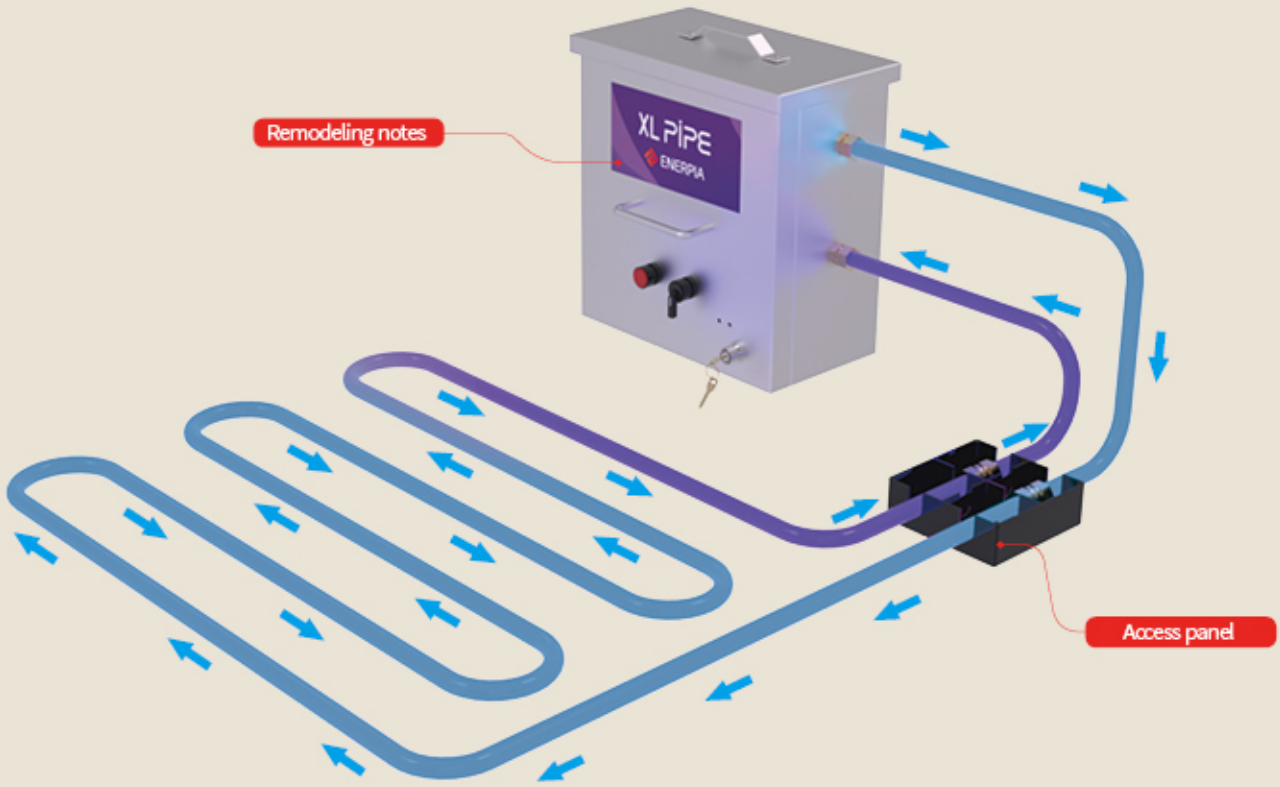
	UTH-170	UTH-200	UTH-300
			
TYPE	Digital Type		
Temperature range	-20°C ~80°C (Temperature range can be changed.)	0 °C ~ 80 °C (Temperature range can be changed.)	-20°C ~80°C (Temperature range can be changed.)
Number of circuits	Individual 1 circuit	Individual 1 circuit	Individual 2 circuit
Size	70(W) X 120(H) X 27(D)	70(W) X 120(H) X 27(D)	120(W) X 120(H) X 34(D)
Input power	AC 85V ~ AC 265V (SMPS method)		
Allowable current	1 heating * 18A	1heating * 18A	2heating * 16A(total 32A)
Load capacity	4KW	4KW	6KW
Construction type	Exposed type		
Display Type	High luminance yellow FND (present temperature, set temperature display), LED (status display)		
Processor Type	Sensor type (NTC 5K Ω) /Timer setting available/ Intensity type setting available/Control using a wireless remote control	Sensor type (NTC 5K Ω) /Timer setting available/ Intensity type setting available/Control using a wireless remote control	Sensor type (NTC 5K Ω) / Timer setting available
Option	#1: Excess sensor (optional) #2: Error message alert function (Temperature range settings can be changed.), Output blocking #3: Excess sensor (An output blocking error message is displayed if excess occurs.)	#1: Excess sensor (optional) #2: Error message alert function (Temperature range settings can be changed.), Output blocking #3: Excess sensor (An output blocking error message is displayed if excess occurs.)	#1: When an error occurs A warning buzzer sound is generated. #2: Excess sensor (optional) #3: Error message generation function (Temperature range setting can be changed.), output blocking #4: Excess prevention sensor is attached inside the regulator (overheating prevention)

Remodeling existing Boilers As Electric Hot Water Pipes

Special repair method of the Shielded Heating XL Pipe

A revolutionary process of replacing conventional high-cost, low-efficiency hot water circulation type heating facilities with sealed type electric water heating pipe facilities that provide excellent heat efficiency. This system is being applied to government offices, local governments, condominiums, motels, dormitories, and health care centers, based on Enerpia's invention patent No. 0805703.

- There is no need to relocate furniture and the finishing materials are not damaged as only the maintenance box is opened for remodeling.
- Heat efficiency can be improved because old heating pipes can be cleaned.
- All places that uses existing XL piping can replace to the Shielded Heating XL Pipe.



Enerpia continues to make warm spaces.

Smart heating specialist

Keep your floor and space warm while reducing costs with Enerpia electric floor heating. The Shielded Heating XL Pipe is more economical when used longer, thanks to the heat storage effect.

Installation recommended in various places.

Religious facilities

Accommodations

Educational facilities

Lecture rooms

Apartments/houses

Restaurants

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.

ENERPIA
Smart heating specialist

Enerpia continues to make different ways to create a warm world.

Smart heating specialist

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 ultra-power saving electric heating hot water pipes around the globe, which is long enough to circle the earth two and a half times.

Smart heating specialist

ENERPIA
HEATING SYSTEM

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.

ENERPIA
Smart heating specialist

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