

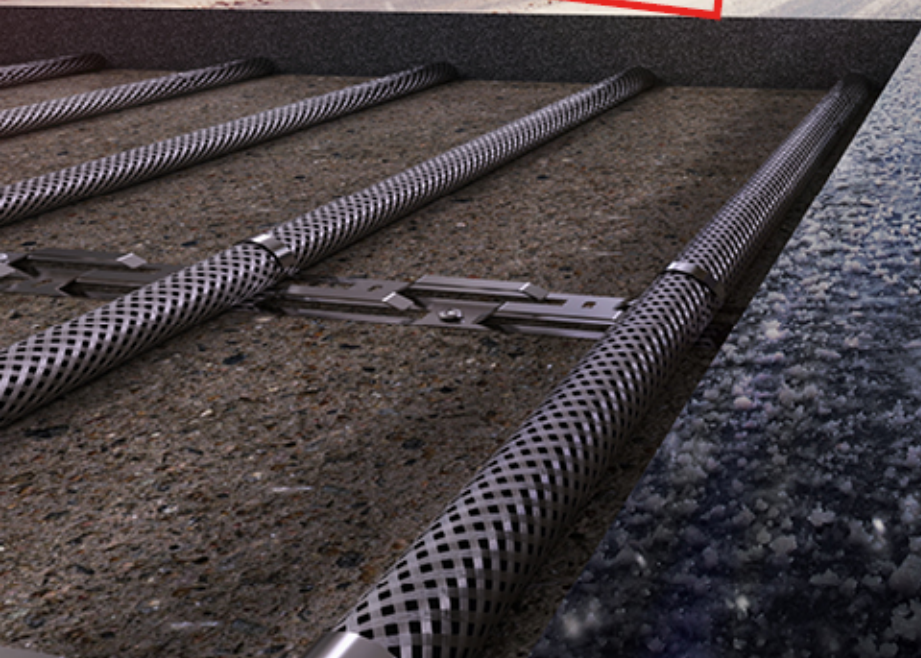
www.enerpia.com

ENERPIA

SNOW MELTING CABLE

SMART HEATING SYSTEM

*Smart heating
specialist*



ENERPIA strives to create
a warm and safe world.



ENERPIA
Smart heating specialist

Eco-friendly, advanced road snow melting system

Enerpia snow melting cables

Enerpia snow melting cables have excellent heat efficiency and strong durability, making it good at preventing freezing in winter and suitable for road heating wire work.

Enerpia snow melting cables apply the road heating system to prevent the occurrence of freezing (black ice) on the road surface due to snowfall or temperature difference in winter.

remove snow effectively from places that are not easily accessible by snow removal equipment, which provides an eco-friendly system without environmental pollution and prevents the corrosion of bridges and vehicles caused by calcium chloride



Enerpia guarantees the safety of drivers and pedestrians

A more eco-friendly and more complete construction capability
Snow Melting, an advanced ice and snow melting system !



Why?

Why Enerpia Snow melting cables?



Prevents accidents in areas with vulnerable snow removal infrastructure, limitation of snow removal work, and secondary accidents



Construction costs can be reduced because it is easy to use as it uses electricity and does not require additional personnel.



An eco-friendly advanced snow removal system that prevents environmental damage factors, road life reduction, and vehicle corrosion due to the use of calcium chloride.



Cables can be installed easily in narrow places where snow cannot be easily removed by people, or equipment cannot fit in.



Maintenance costs can be reduced using unmanned automatic control systems by installing sensors in case of heavy snowfall.



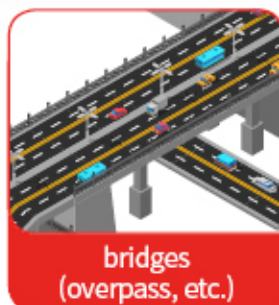
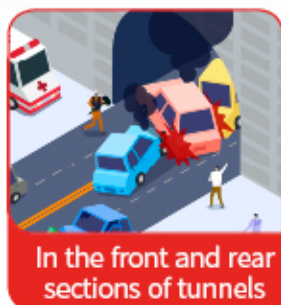
Cables can be used safely by adding cables with excellent strength, triple insulation, and SUS braiding

Prevents environmental pollution and black ice.

Unrivalled technology! Snow melting system

Black ice, an assassin on the road

Where does it
usually form?



Black ice refers to the freezing of snowmelt in the winter roads during sudden drops in temperature, and it is often observed in areas such as tunnel entrances and bridges in the mornings. However, even without precipitation, it can also easily form in areas with big daily highs and lows, such as lakeside roads or shaded intersections. In particular, if calcium chloride that is sprayed on the road combines with snow, black ice increases further because the remaining moisture on the road makes the road surface more slippery, increasing the black ice effect. The system that solves these existing snow removal problems is the **snow melting system**.

Snow melting, the most reliable response method!

Now, it is a requirement, not an option.

The Snow Melting System, which uses electricity instead of chemical snow removal methods, activates heating lines buried at a certain depth under the pavement using automatic detection sensors installed in places such as steep slopes on the road and where accidents are likely to happen in the occasion of snowfall or freezing. This eco-friendly, advanced ice and snow removal system guarantees the safety of people, vehicles, and buildings by preventing slip and fall injury and car accidents caused by snow and freezing.

The perfect product for protective pipe in the winter!

Structural map of the snow melting cable



1 SUS braiding

Snow melting cables are manufactured using a special method, where the application of excellent corrosion resistance, durability, and flexibility to the outer sheath give it high compressive and tensile strength making them optimal products for protective piping.

2 Jacket heat-resistant PVC

It has a durable and strong outer jacket without having to worry about breakage.

3 Copper braiding

It is strong against heat, and electrical and thermal conductivity is high.

4 Primary silicone insulation

It can be easily and conveniently handled even in difficult installation environments, as cables are made of soft silicon materials.

5 Secondary Teflon insulation

It has excellent heat resistance and flexibility, does not easily wear out, and is effective against corrosion.

6 Heating wire (resistive conductor)

It generates heat, making them good at preventing freeze and burst in winter.

GOOD CHOICE!

Various product specifications

| Specifications of Snow melting cable

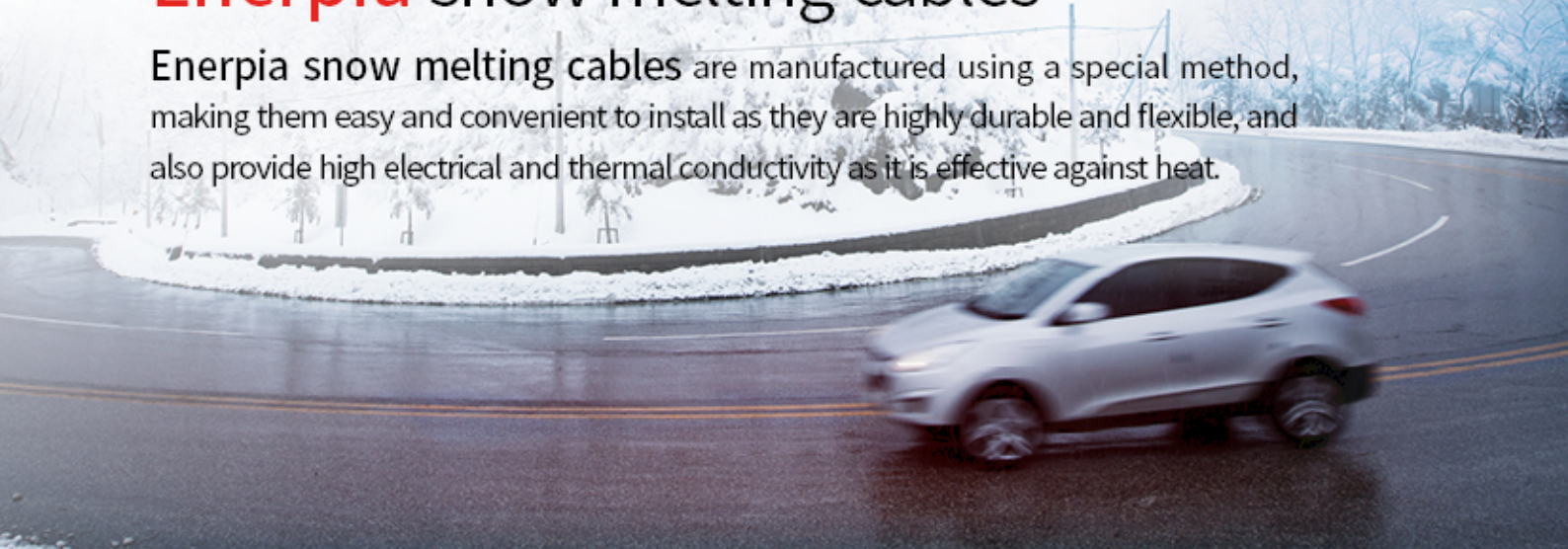
Model no.	Product specification	Voltage	Power consumption	Remarks
EP22SA	22m X 8.2 mm	220v	0.9Kw	40W/m SUS Braided
	38m X 8.2 mm	380v	1.5Kw	
	44m X 8.2 mm	440v	1.8Kw	
EP44SA	44m X 8.2 mm	220v	1.8Kw	
	76m X 8.2 mm	380v	3.0Kw	
	88m X 8.2 mm	440v	3.5Kw	
EP66SA	66m X 8.2 mm	220v	2.6Kw	
	114m X 8.2 mm	380v	4.6Kw	
	132m X 8.2 mm	440v	5.3Kw	
EP88SA	88m X 8.2 mm	220v	3.5Kw	
	152m X 8.2 mm	380v	6.1Kw	
	176m X 8.2 mm	440v	7.0Kw	
EP110SA	110m X 8.2 mm	220v	4.4Kw	
	190m X 8.2 mm	380v	7.6Kw	
	220m X 8.2 mm	440v	8.8Kw	

※ Product specification (length), power consumption, and application area can be customized.





Eco-friendly, advanced road snow melting system

Enerpia snow melting cables

Enerpia snow melting cables are manufactured using a special method, making them easy and convenient to install as they are highly durable and flexible, and also provide high electrical and thermal conductivity as it is effective against heat.



Comparison of snow melting (cutting/spreading) and snow removal

Item	Snow melting		Snow removal equipment and calcium chloride	Automatic salt water spraying method
	Cutting method	Cable spreading method		
Construction type	A construction method that cuts the road at regular intervals and inserts snow melting cables	A construction method that wires and installs snow melting cables before spreading the cables on the road (before re-pavement and new pavement)	A method of spraying calcium chloride spraying and using snow removal equipment	Salt water spray equipment and salt water storage Separate tank installation (salt water filling method)
Photo				
Advantages	<ul style="list-style-type: none"> • Excellent initial response capability • Automatic response is possible during heavy snowfall • Easy maintenance • Eco-friendly equipment 	<ul style="list-style-type: none"> • Automatic response is possible during heavy snowfall • Clean construction pavement surface • Easy maintenance • Eco-friendly equipment 	<ul style="list-style-type: none"> • Can be carried out immediately 	<ul style="list-style-type: none"> • Excellent initial response capability • Low construction and maintenance costs
Disadvantages	Undesirable appearance due to the exposure of the cutting surface		It is difficult to remove ice immediately if several sites are frozen at the same time. In particular, there is an environmental pollution problem and snow removal personnel are required.	Vehicle corrosion and road life reduction Snow melting liquid needs to be replenished continuously and environmental pollution problems occur.

Eco-friendly, advanced road snow melting system

Enerpia snow melting cables

| Examples of the snow melting cutting method



Photo of tunnel entrance cutting completion



Completed road cutting completion



Construction completion

| Examples of the snow melting spreading method



Photo of the completion of spreading at the steep slope section



completion of spreading on the road



Construction completion

Eco-friendly and advanced system

Environmental destruction factors and vehicle corrosion caused by the use of calcium chloride can be prevented.

Accident prevention in winter

Limits of snow removal work and secondary accidents caused by the lack of manpower can be prevented.

Solving problems caused by heavy snow

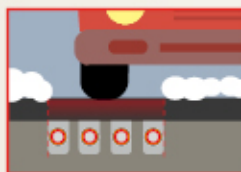
It is applicable in large airport aprons and runways that are heavily affected by weather, such as flight cancellation, and can provide safety and convenience.

Cutting construction method of snow melting

Materials by layer and construction structural map

The situation of the site such as the burial depth and pitch intervals should be discussed and the capacity of heating wires should be determined according to the material and thickness of the road finishing material, in order to design and construct to completely prevent freezing.

Cutting construction method



The construction structural map by layer shows an enlarged image of snow melting cables that is installed on the surface as a burial type.



1

Snow melting cable

By automatically sensing the temperature and humidity after installation, this product is suitable as an ice removal and snow removal equipment that ensures the safety of people, vehicles, and buildings in winter by spreading the cable at a certain depth under the pavement.

2

Roadbed

A layer between the surface layer and the road, which prevents freezing and disperses the stress on the road.

3

Substratum

Plays a role of transferring the stress applied to the surface to the roadbed evenly.

4

Filling material

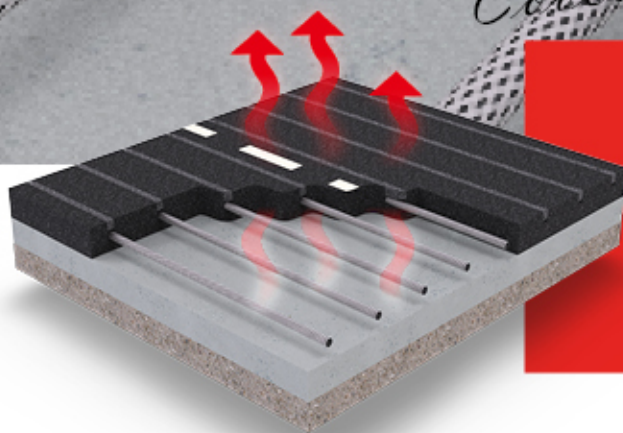
A material that blocks noise, vibration, and shock for facilities, buildings, etc.

5

Existing road

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

*Any Floor
Covering Materials*

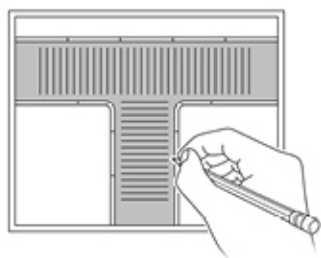


Thanks to thorough
inspection and field testing,
the safety of the product has
been enhanced!

Cutting construction method

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

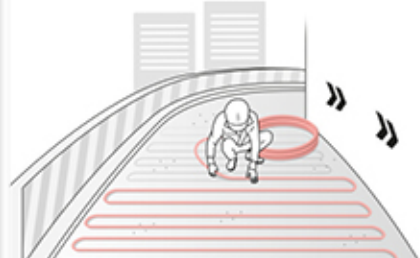
1 Calorific value design



2 Road cutting



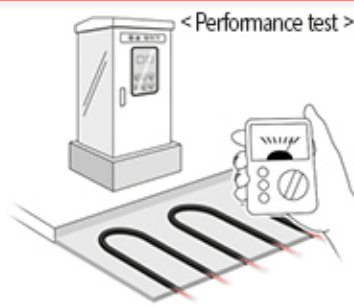
3 Snow melting cable insertion



4 Road finishing



5 Snow melting controller installation

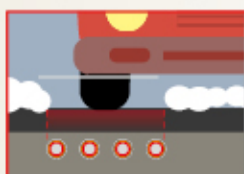


Snow melting spreading method

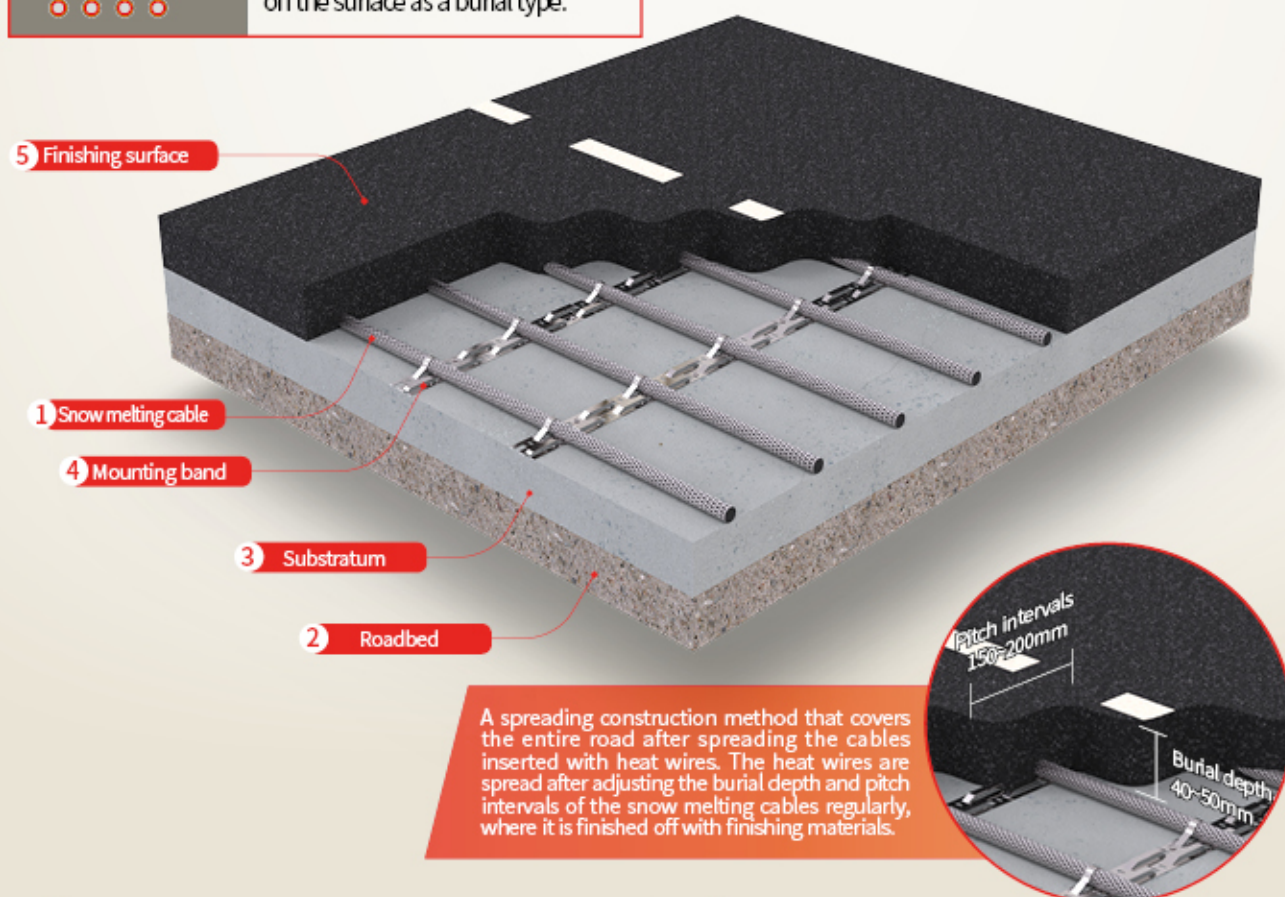
Materials by layer and construction structural map

The situation of the site such as the burial depth and pitch intervals should be discussed and the capacity of heating wires should be determined according to the material and thickness of the road finishing material, in order to design and construct to completely prevent freezing.

Spreading method



The construction structural map by layer shows an enlarged image of snow melting cables that is installed on the surface as a burial type.



A spreading construction method that covers the entire road after spreading the cables inserted with heat wires. The heat wires are spread after adjusting the burial depth and pitch intervals of the snow melting cables regularly, where it is finished off with finishing materials.

1

Snow melting cable

By automatically sensing the temperature and humidity after installation, this product is suitable as an ice removal and snow removal equipment that ensures the safety of people, vehicles, and buildings in winter by spreading the cable at a certain depth under the pavement.

2

Roadbed

A layer between the surface layer and the road, which prevents freezing and disperses the stress on the road.

3

Substratum

Plays a role of transferring the stress applied to the surface to the roadbed evenly.

4

Mounting band

Fix and install the product.

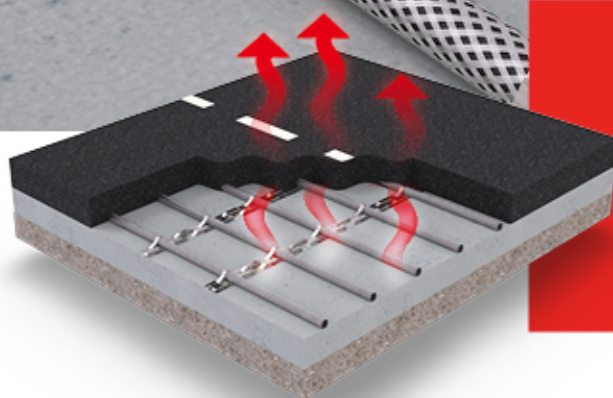
5

Finishing surface

Finishing and decoration of the exterior of the building.

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

*Any Floor
Covering Materials*

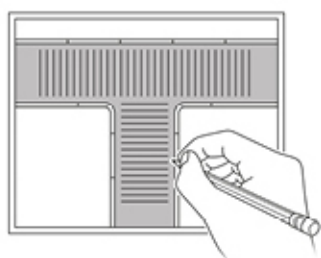


Thanks to thorough
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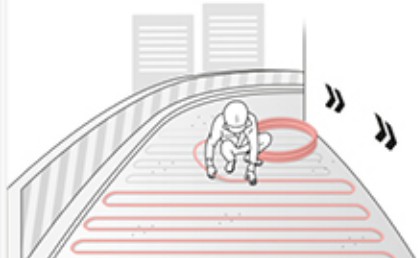
Spreading construction method

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

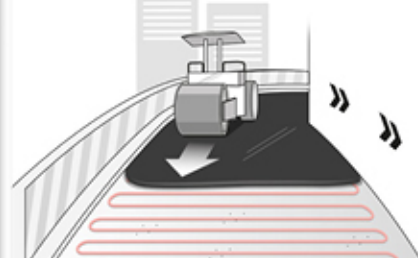
1 Calorific value design



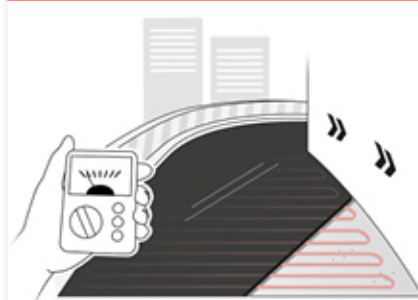
2 Snow melting cable spreading



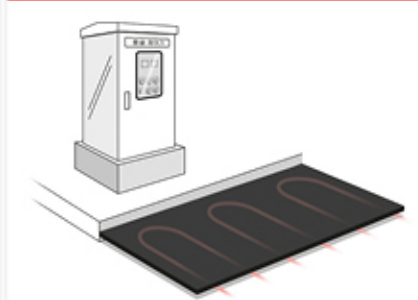
3 Packing materials placement



4 Performance test



5 Snow melting controller installation



Enerpia snow melting automatic control system, optimized with patented technology and long experience

The system is activated by sensing the overall road surface conditions (temperature, humidity, snow, ice) even though a person does not check for snowfall in person. In addition, the system is automatically stopped when the snow on the road melts. Therefore, this system can be operated automatically to prevent the freezing of the road surface while minimizing power consumption.

- ✓ Excellent **automatic control** system that automatically responds during heavy snowfall
- ✓ **Automatic detection sensor** that can minimize power consumption

| Automatic snow melting control system of Snow Melting

Snow melting controller
(EP-SMC100S)



Temperature and humidity sensor
(EP-SMC200S)



Motion sensor
(EP-SMC300S)



Use

A snow melting controller developed to automatically control snow melting cables, which helps pedestrians and drivers alike, for the purpose of melting snow and ice when the temperature drops below the freezing point (0°C) and freezing occurs due to snow or rain in exposed spaces such as the roads, outdoor stairs, car wash, etc.

It was developed to automatically control snow melting cables, which are designed for snow and ice melting, by exposing the top part only on the surface to sense the surface temperature and moisture like snow and rain, and sends signals to the snow melting controller.

A motion sensor designed to automatically control snow melting cables, which are designed for snow and ice melting, by exposing itself outdoors or outside to sense the surface temperature, the amount of snow, snowfall time, and sends signals to the snow melting controller.

Operating principle

It is programmed in such a way that the input of the ground temperature sensor and external motion sensor is received and the output is turned on if two setting values of the sensor (temperature, humidity, number of snow crystals, etc.) are met at the same time, or turned off if any of the two setting values are disabled. (The product is designed to be safe for the human body by using a non-voltage contact output method.)

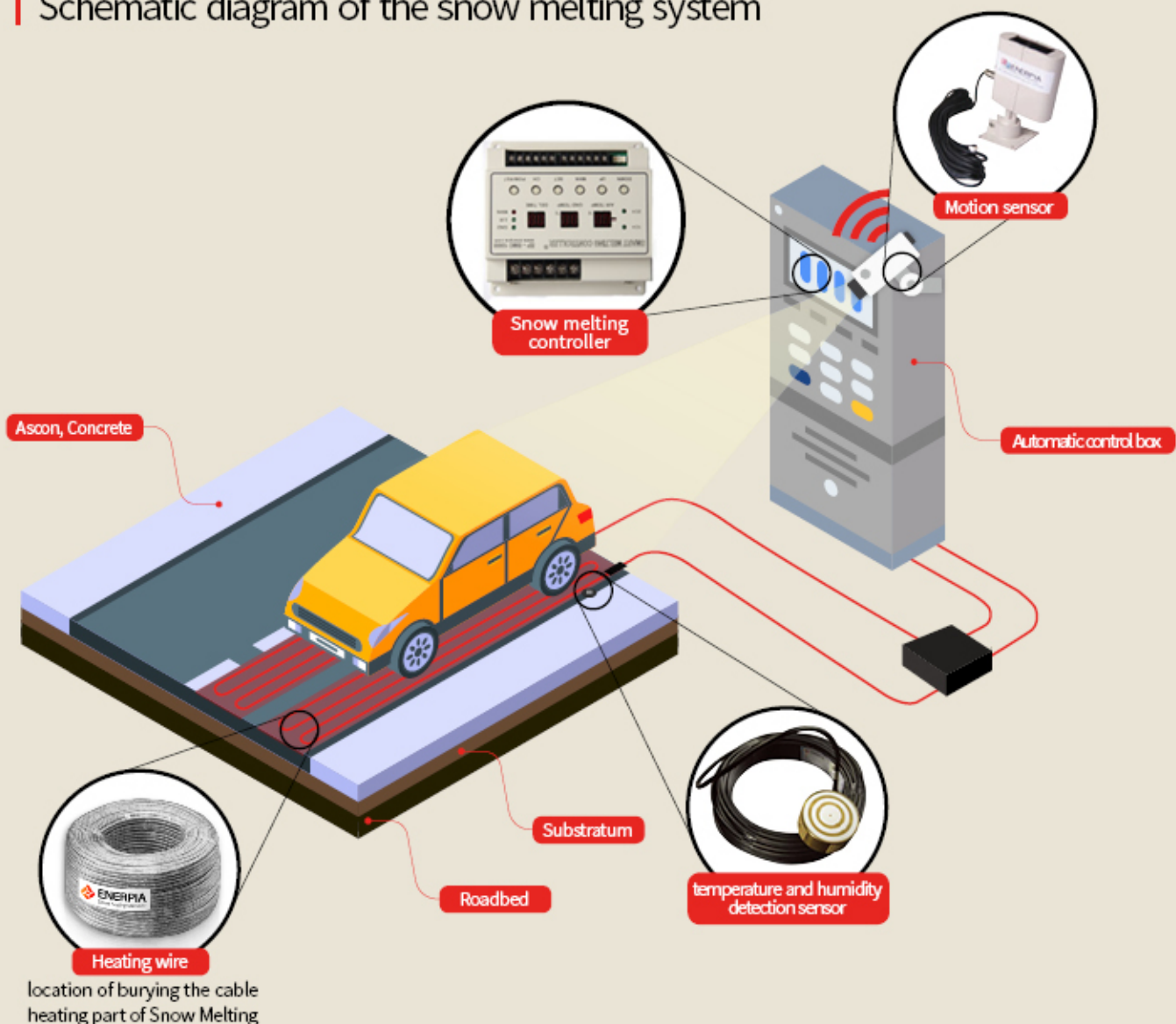
Sensors are connected to the connection part of the sensor 1 and sensor 2 indication part. It is programmed in such a way that output is turned on if two conditions are met (the ground surface temperature of the ground temperature sensor is below the set temperature, and humidity is above the set humidity), or turned off if any of the two setting values are disabled.

Sensors are connected to the connection part of the MO indication part. It is programmed in such a way that the output is turned on if two conditions are met (the current outdoor air temperature is below the set temperature, and the set number of snow crystals (or, snowfall during the set period of time)), or turned off if any of the two setting values are disabled.

Enerpia snow melting automatic control system, optimized with patented technology and long experience

The system is activated when two external conditions are met, the outdoor air temperature and road surface moisture. Temperature and humidity is detected by the temperature sensor and the humidity sensor installed on the road surface. If the temperature drops below the set value from the controller inside the control panel and the humidity sensor installed on the road surface detects humidity, the controller system is activated to melt snow and prevent freezing.

| Schematic diagram of the snow melting system



Enerpia is creating a safe space. *Smart heating specialist*

Eco-friendly, energy-saving, and high-efficiency snow melting technology! The snow melting system has been receiving trust from many organizations and companies for a long time, based on numerous construction cases and know-how.

| Installation recommended in various places

Enerpia snow melting cables are suitable for **places where snow removal equipment cannot be used, steep roads, bridges (overpass, etc.), stairs, parking lots, and tunnel entrances and exits.**



Airfield runways



Tunnel entrances and exits and parking lot entrances and exits



Hill roads, steep slope roads



Bridges (overpass, etc.)



Underground passage stairs and crosswalks



access roads of shopping centers and apartment buildings

Advanced road snow melting system

Key construction sites of **Enerpia Snow Melting**

| Water spring in Seoul Achasan Ecological Park



| Driving inspection road of Ulsan Hyundai Motors



| Parking lot at Woraksan National Park, Jecheon, Chungcheongbuk-do



| Access road of Chungju Nonghyup, Chungcheongbuk-do



| Export port road of Kia Motors, Pyeongtaek, Gyeonggi-do

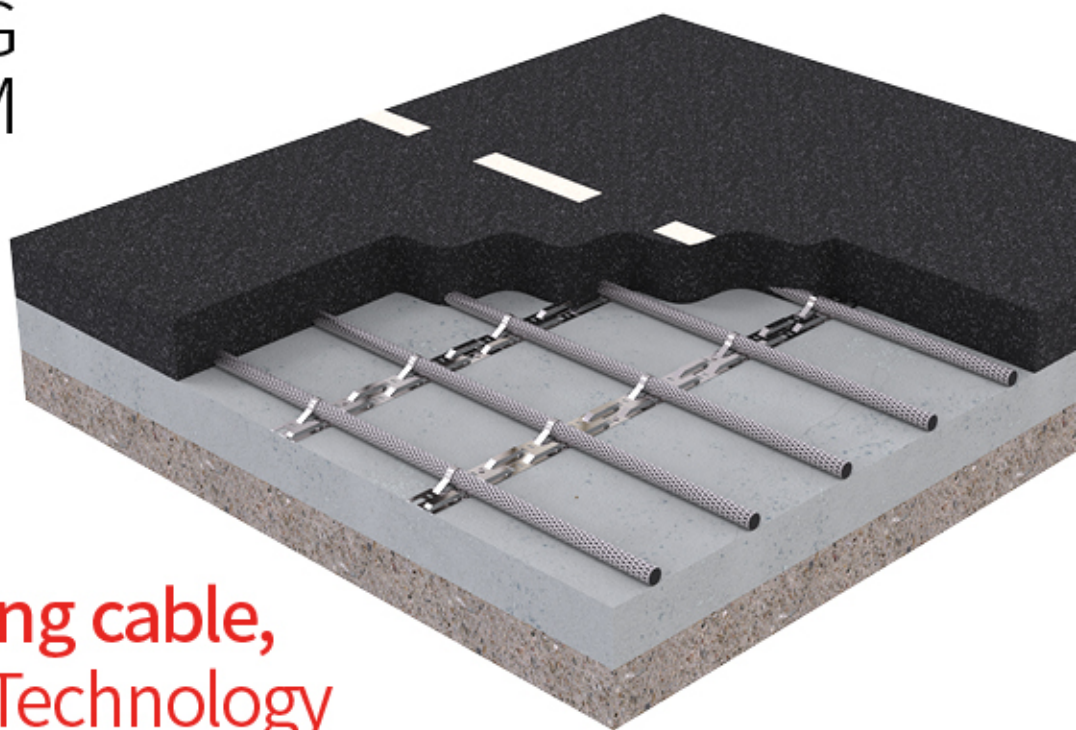


| Kia Motors, Dangjin Port, Pyeongtaek, Gyeonggi-do



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Enerpia Snow melting cable, A Patented Technology

Patents of Enerpia
Snow melting cable



Certificates of Enerpia
Snow melting cable



Certificate Of Patent
(No. 10-1157187)



Certificate Of Patent
(No. 10-1292327)



CE

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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
designation



Membership card of
the Korea International
Trade Association



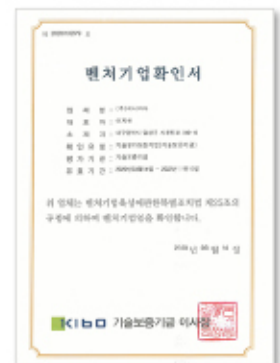
Design registration
certificate



Design Registration/
Inno-Biz



Certificate of the
company specialized in
material parts







Venture company
certificate



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.**



ENERPIA For Your Health & Energy Saving System

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

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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.



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