



**FELIX KOREA**

[www.felixkorea.com](http://www.felixkorea.com)

HEATING SYSTEM FOR TODAY AND TOMORROW

**FELIX**

**TOTAL HEATING  
SYSTEM**

**FELIX is the leader  
in 21st Century heating.**

Our environmentally friendly,  
top of the line products  
are the best in electric heating systems.



# TO THE FUTURE WITH HUMANITY

---

03	CONTENTS	18	EXCEL NON-MAGNETIC HEATING CABLE
04	INTRODUCTION	20	EXCEL NON-MAGNETIC MAT HEATING CABLE
06	HISTORY	21	EXCEL HYBRID HEATING CABLE
07	VISION	22	INSULATION SHEET
08	HEATING FILM	24	ELECTRICAL HEATING MARKETABILITY
10	EXCEL HEATING FILM	26	GLOBAL ELECTRIC HEATING MARKET
12	BLACK DIAMOND HEATING FILM		
15	HEATING FILM MADE WITH CUSTOMERS TO		
16	OK ONDOL HEATING FILM		

---

# FELIX

---

FELIX KOREA is honored to present an Environmentally friendly Total Heating Solution for the future.

Continuous advancement in design and quality, we will always strive to offer the finest products on the market.

Moving into the next century with a cleaner and safer heating system for all to enjoy.



# GLOBAL HEATING NETWORK

## A NEW ERA IN HEATING



# FELIX HISTORY

**WORLD'S FRIENDLIEST  
HEATING COMPANY**

FELIX KOREA is at the forefront of a growing movement towards an environmentally safe approach to alternative heating. For over a decade, we have dedicated ourselves to maintaining the highest quality carbon heating film. Our dedication to our buyers is what has earned their trust.

Our buyers from across the globe trust in our quality as well as our service. From The Americas to Europe and all the way back to us in Asia, we adhere to the overall safety and performance our clients have come to know.

FELIX KOREA will continue to strive to better ourselves and our products so that our buyers can offer their customers the finest carbon heating film on the market.

## 2007-2014

- 2014** Acquired certification of EU FTA certified exporter (certified exporter by item)  
Acquired CE.ROHS certification  
Changed Company Name to Felix Korea
- 2013** OKONDOL Trademark Registration
- 2012** Women's Enterprise Selection
- 2011** Management Innovation Small and Medium Business Selection (MAIN BIZ)
- 2010** Acquired ISO 14001, ISO 9001 certification  
EXCEL, FELIX Trademark Registration
- 2007** 2007 Company Established

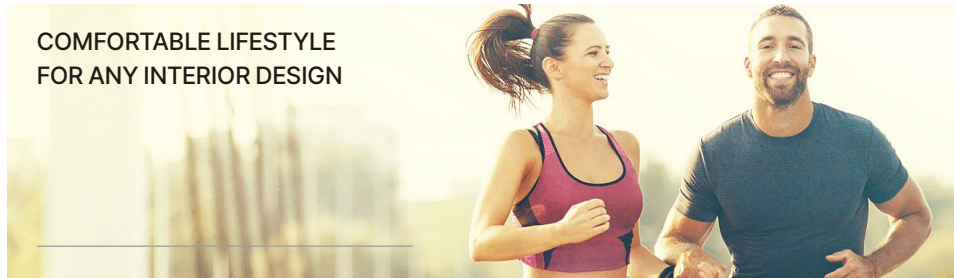
## 2015-2023

- 2023** Selected as Promising Energy Enterprise
- 2022** Established Research Department  
Acquired UKCA, FCC Certification
- 2021** DISCOVERY Trademark Registration  
BLACK DIAMOND Trademark Registration
- 2020** Acquired NRTL Certification
- 2019** Ministry of Trade, Industry and Energy's selection of world-class products Exports heating films and heating cables to 25 countries around the world
- 2018** Acquired additional CE, Rohs Certification (Heating cable)
- 2017** Obtain Film Certification for Changed CE Specifications
- 2015** Selection of promising small and medium-sized enterprises for export  
Patent acquisition of heating film  
Acquired patent for electrical hot water pipe heating system.

# STAY AHEAD OF THE CHANGES

As the future of energy is always changing, so must the ways in which we consume energy. Changes are here regarding the use of clean energy, and FELIX KOREA will be there to keep your family warm in an environmentally friendly way.

## COMFORT AND CONVENIENCE



## MAXIMUM SPACE



## NEW ERA IN HEATING SYSTEM



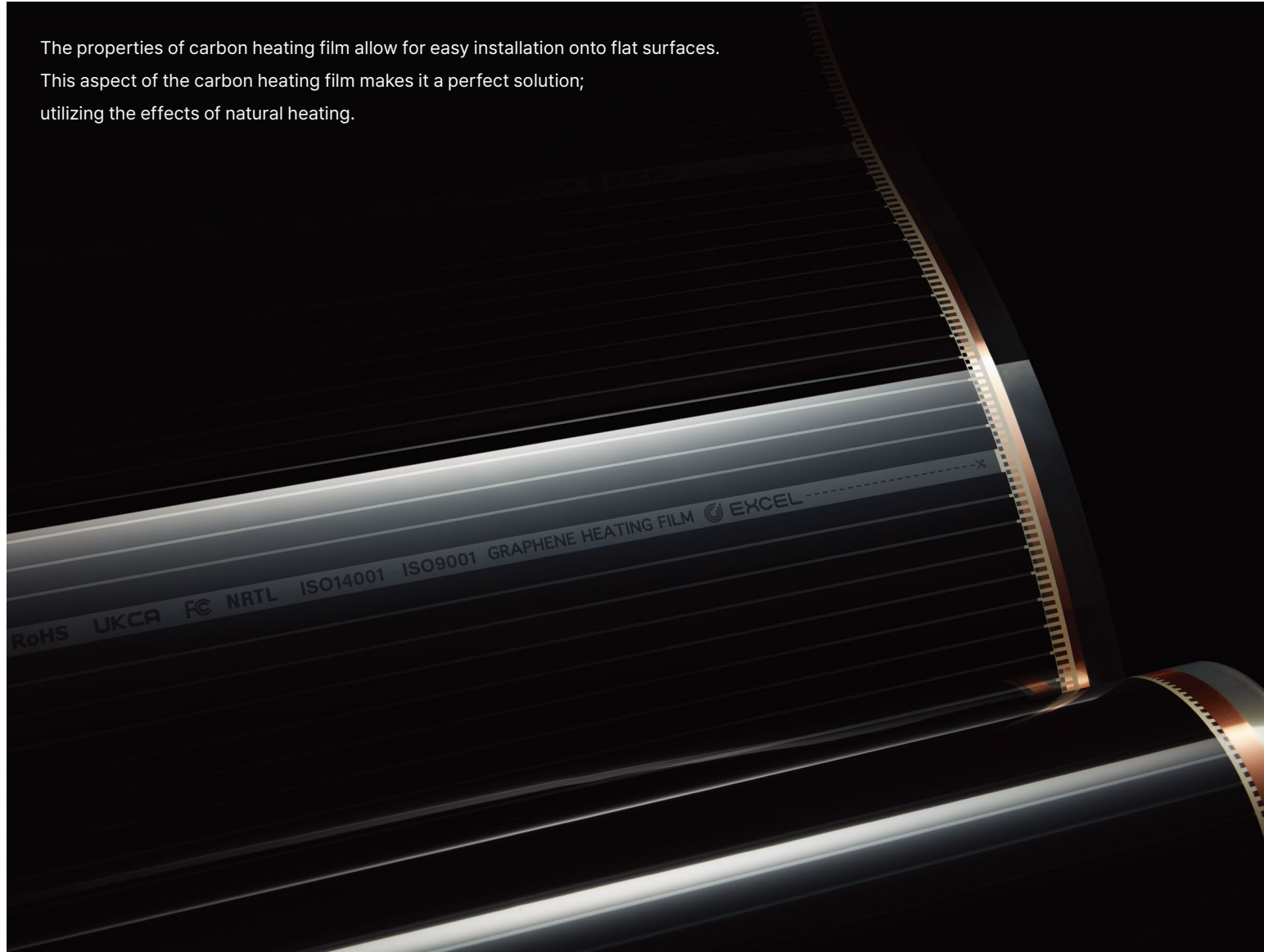
# HEATING FILM

HEATING FILM

At the start of the heating film revolution, this was the standard in carbon heating film.

Still going strong today as the most widely sold heating film, the efficiency in both economical and heating cannot be matched.






The properties of carbon heating film allow for easy installation onto flat surfaces. This aspect of the carbon heating film makes it a perfect solution; utilizing the effects of natural heating.





# WHY?

## WHY CHOOSE HEATING FILM?

 <p><b>ECONOMICAL</b></p> <p>STRATEGIC INSTALLATIONS</p>	 <p><b>EASY INSTALLATION</b></p> <p>SIMPLE AND AFFORDABLE</p>	 <p><b>QUICK HEATING</b></p> <p>STABLE HEATING SOURCE</p>
 <p><b>VARIOUS SELECTION</b></p> <p>FORM TO FIT ANY INSTALLATION</p>	 <p><b>VARIOUS APPLICATIONS</b></p> <p>USED FOR MANY HEATING NEEDS</p>	 <p><b>PTC BONUS SAFETY FEATURE</b></p> <p>POSITIVE TEMPERATURE COEFFICIENT AVAILABLE</p>

## EXCEL HEATING FILM APPLICATIONS

- HOTELS, APARTMENTS, SUMMER/WINTER HOMES
- CHURCHES, MOSQUES, TEMPLES
- SCHOOLS, KINDERGARTENS, FACILITIES
- REST AREAS, SLEEPING QUARTERS

### FEATURES OF EXCEL PREMIUM HEATING FILM

- |                                 |   |
|---------------------------------|---|
| <b>SAFE</b>                     | Worry free from accidents                             |
| <b>HEALTH</b>                   | Healthy anion from far infrared rays                  |
| <b>ECONOMIC</b>                 | More economic than other electric heaters             |
| <b>ENVIRONMENTALLY FRIENDLY</b> | Quiet and without any emissions                       |
| <b>SIMPLICITY</b>               | Easy for anyone to use                                |
| <b>NON-PERMANENT</b>            | Can be removed and installed in other areas as needed |

### TECHNICAL FEATURES OF EXCEL PREMIUM HEATING FILM

- |                                    |   |                                 |
|------------------------------------|---|---------------------------------|
| <b>UNIFORM HEATING SURFACE</b>     | → | Prevention of local overheating |
| <b>STABLE CURRENT</b>              | → | Overload, spark protection      |
| <b>USE OF INSULATING FILM</b>      | → | Prevent leakage from moisture   |
| <b>USE OF SPECIAL LAMINEX FILM</b> | → | Best bonding strength           |

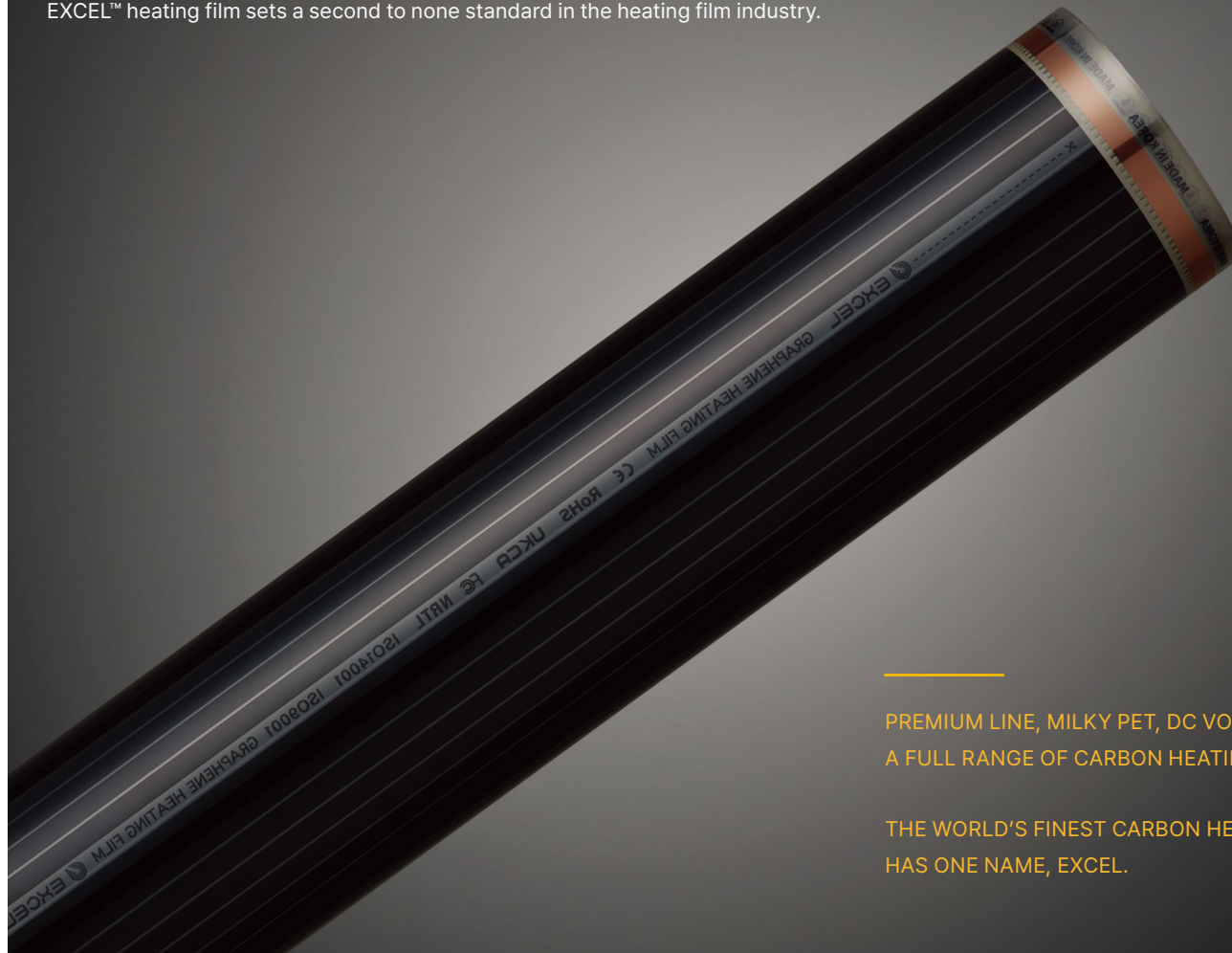
# EXCEL™ HEATING FILM

EXCEL™ HEATING FILM

A STEP ABOVE  
THE REST

## EXCEL™ HEATING FILM

FELIX's premium heating film EXCEL is a world-renowned brand that satisfies customers with quality, design, and price. EXCEL film is made with selective PET brand materials, highest quality Carbon Paste, use of copper that is over CU99.92% pure, and silver powder that is 99.99% pure with the latest technology facilities to produce the best product in Korea. EXCEL™ heating film sets a second to none standard in the heating film industry.



PREMIUM LINE, MILKY PET, DC VOLTAGE;  
A FULL RANGE OF CARBON HEATING FILM

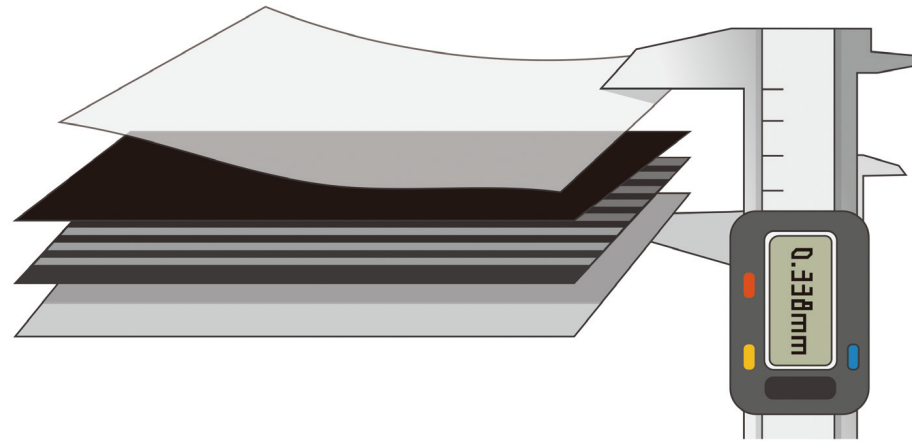
THE WORLD'S FINEST CARBON HEATING FILM  
HAS ONE NAME, EXCEL.

### EXCEL [iksél]

to exceed, to surpass the norm;  
be superior in some aspect or area.

Producers of the finest carbon heating film and heating cable

## EXCEL™ HEATING FILM STRUCTURE



## EXCEL™ HEATING FILM PRODUCT SPECIFICATION

Width (mm)	Thickness (mm)	Voltage	Power Consumption (per m)	Power Consumption (per m2)	Package (M/Box)	Weight (kg)	Remark
250	0.338mm	DC 12, 24 / AC 110, 220, 330	55	220Watt/m2 or Customer's request specification	100	14	Production upon order
300			65		100	15.74	
400			88		100		
500			110		100	25.4	Always in stock
500		AC 220, 230	200	400	100	25.4	Always in stock *High-Temperature
600		AC 110, 220, 230	220Watt/m2 or Customer's request specification	132	100		Production upon order
750				165	100		
800				180	100	39.18	Always in stock
1000				220	100	48.72	
1250				275	50		Production upon order

- \* Watt is the simple conversion of 220Watt/m2 to width. Watt can be changed upon customer request.
- \* The weight is based on the 0.338mm product. It may vary depending on the thickness and packaging.
- \* For high-temperature films, a width of 500 mm or less and 400 Watt/m2 are recommended.

# BLACK DIAMOND™ PREMIUM PTC HEATING FILM

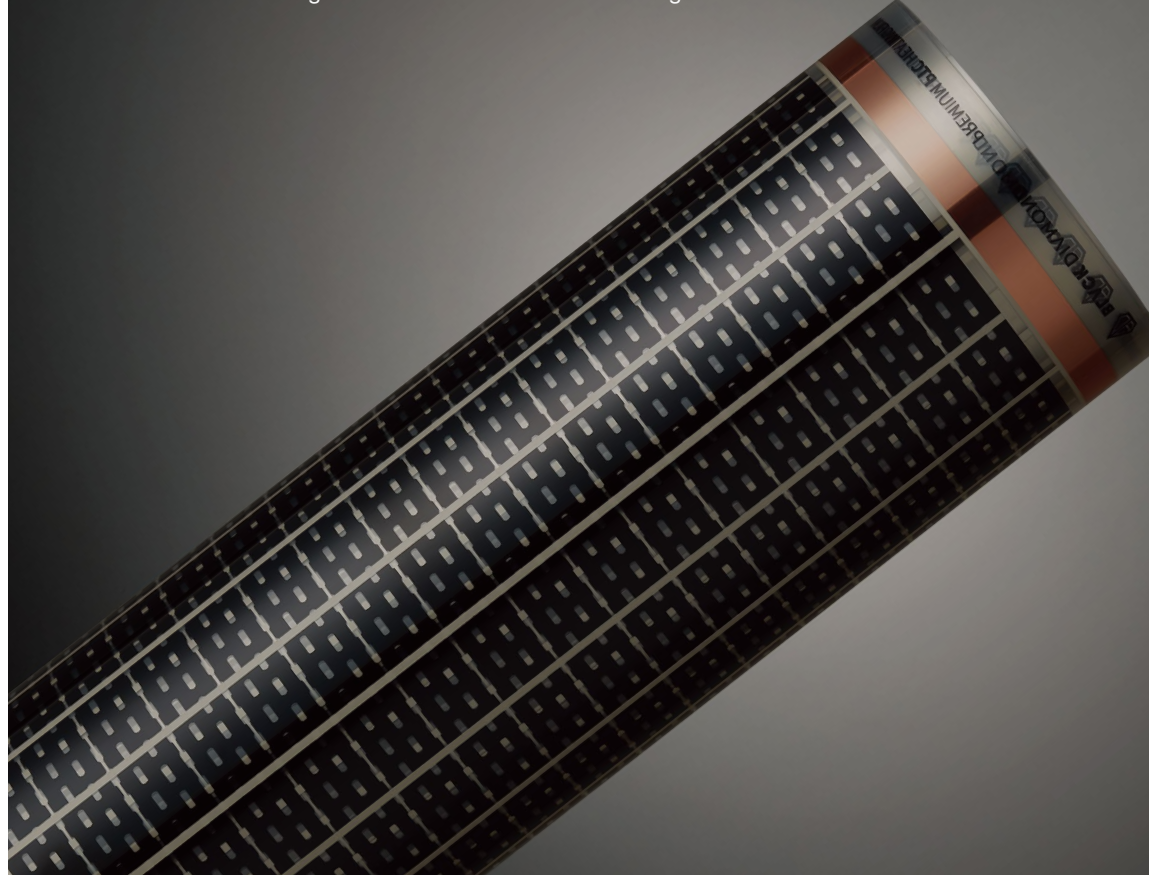
BLACK DIAMOND™ PREMIUM PTC HEATING FILM

SATER  
SMARTER

**BLACK DIAMOND™**  
Premium PTC  
Heating Film

PTC stands for Positive Temperature Coefficient and refers to the characteristic of a heating element adjusting its own temperature. When the film reaches a high temperature, it automatically regulates the temperature to prevent overheating, providing a safer operating environment for users. In addition, as the temperature goes up, power consumption decreases in inverse proportion, making it a futuristic type of heating that also satisfies energy efficiency.

By adding FELIX's premium PTC, which is an upgraded version of the existing general PTC function, BLACK DIAMOND is taking the lead in the era of smart heating that satisfies the world.



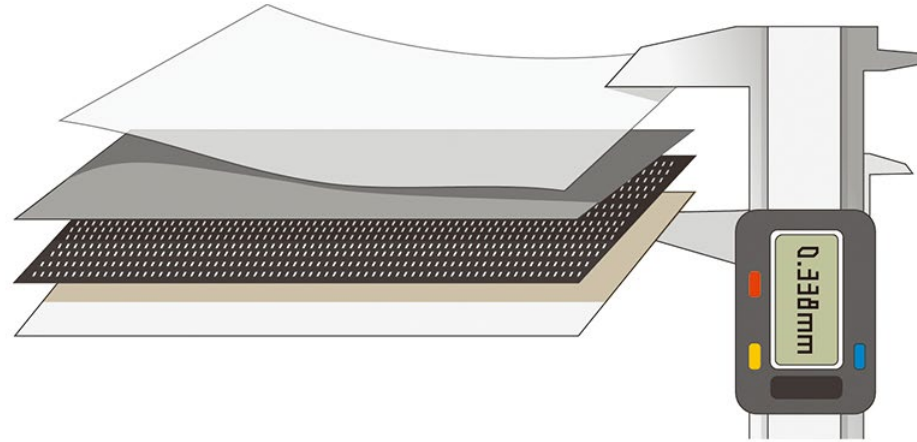
**For customers**

DUE TO ELECTRICAL CONSUMPTION  
IN DIFFERENT COUNTRIES, PLEASE  
REFER TO THE REGULATIONS  
REGARDING YOUR LOCATION.

Producers of the finest carbon heating film and heating cable

## BLACK DIAMOND™

### HEATING FILM STRUCTURE



## BLACK DIAMOND™

### HEATING FILM PRODUCT SPECIFICATION

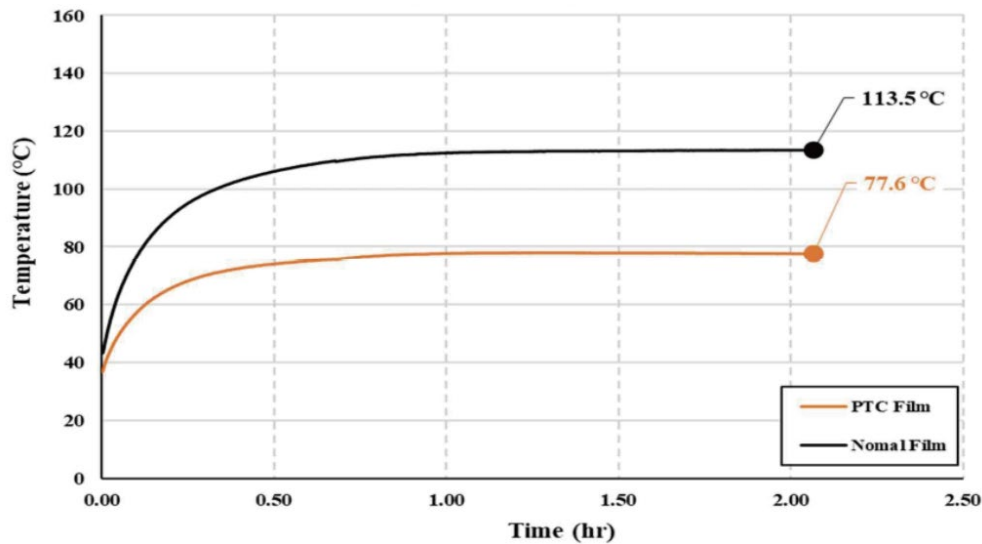
Width (mm)	Thickness (mm)	Voltage	Power Consumption (per m)	Power Consumption (per m <sup>2</sup> )	Package (M/Box)	Weight (kg)	Carbon type PTC	Remark (margin of error)
500_250	0.338mm	220	125	250	100	25.4	Always in stock	±20%
500_300		220 or 230	150	300	100	25.4	Production upon order	±20%
500_400		220 or 230	200	400	100	25.4		±20%
500_500		220 or 230	250	500	100	25.4		±20%

- Standard Spec is 250Watt/m<sup>2</sup>. Watt can be changed upon customer request.
- BLACK DIAMOND™ Heating Film enhances safety by increasing PTC efficiency.

PTC stands for Positive Temperature Coefficient and refers to the characteristic of a heating element adjusting its own temperature. When our premium PTC heating film BLACK DIAMOND reaches a high temperature, it automatically regulates the temperature to prevent overheating, providing a safer operating environment for users.

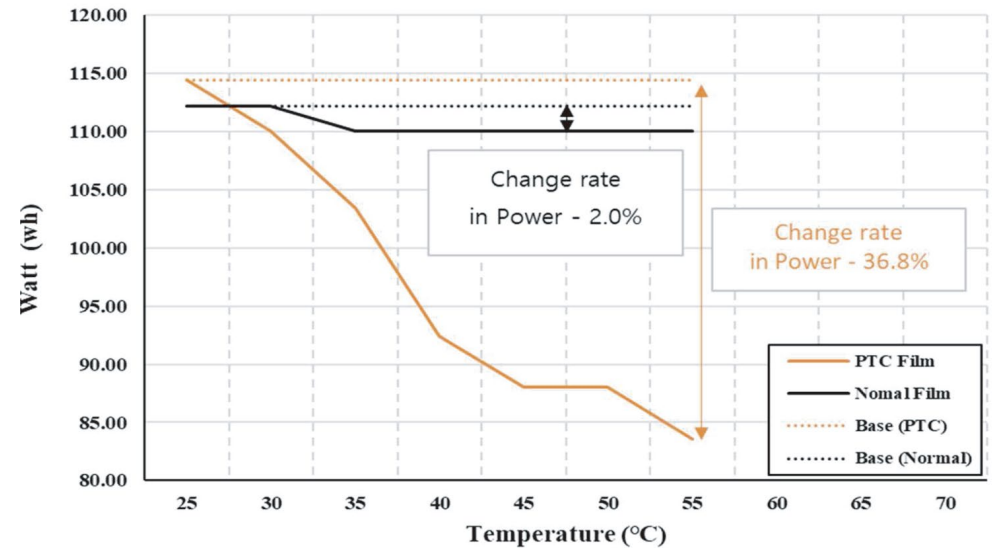
In addition, as the temperature goes up, power consumption decreases in inverse proportion, making it a futuristic type of heating that also satisfies energy efficiency.

### Maximum temperature change over time



This is a graph showing the temperature change of the heating film over operating time. Compared to normal heating film, FELIX's premium PTC heating film maintains a stable temperature below 80°C even during long-term operation, providing a safer usage environment.

### Power Reduction Ratio over temperature



This graph shows the power reduction ratio of the heating films over temperature. Compared to normal heating film, FELIX's premium PTC heating film has a significant increase in power reduction as the temperature rises, making it a satisfactory product in terms of energy efficiency as well.

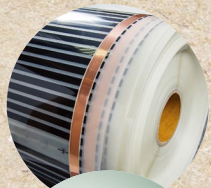
# FELIX KOREA SETS THE STANDARDS IN CARBON HEATING FILM

PROVIDING THE FINEST IN DESIGN PRODUCTION AND OEM

FELIX KOREA OFFERS CUSTOMIZED SOLUTIONS

VARIOUS APPLICATIONS OVER A WIDE RANGE OF INDUSTRIES

ALWAYS ON THE CUTTING EDGE OF ELECTRICAL HEATING



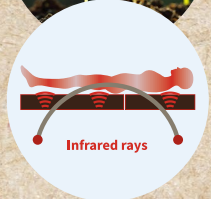
VARIETY OF CHOICES; INCLUDING DC FILM



USE FOR TEMP STABILIZATION IN BATTERIES



AGRICULTURE



MEDICAL

AIR PURIFIERS



GREENHOUSES



ELECTRONIC COMPONENT STABILITY



# OKONDOL™ HEATING FILM

OKONDOL™ HEATING FILM

STRONGER  
SAFER  
LUXURIOUS

**OKONDOL™**  
HEATING FILM



Stronger with a multi-insulated structure and protects against sparks by buffering the Copper foil with Silver Bus Bar.

OK ONDOL's pride is its unique design considering the carbon heating element's adhesive strength, precision printing technology, and additional PET laminating for insulation reinforcement. Planar heating element (Sheet type heating) produced with a thickness of 0.40 to 0.45mm.

Electricity supplied through the copper foil located on both edges generates pleasant heat of carbon and far-infrared rays on the entire surface of the sheet.

OK ONDOL™ is a high-quality heating film that realizes far-infrared heating similar to the traditional 'Ondol rooms' in Korea.

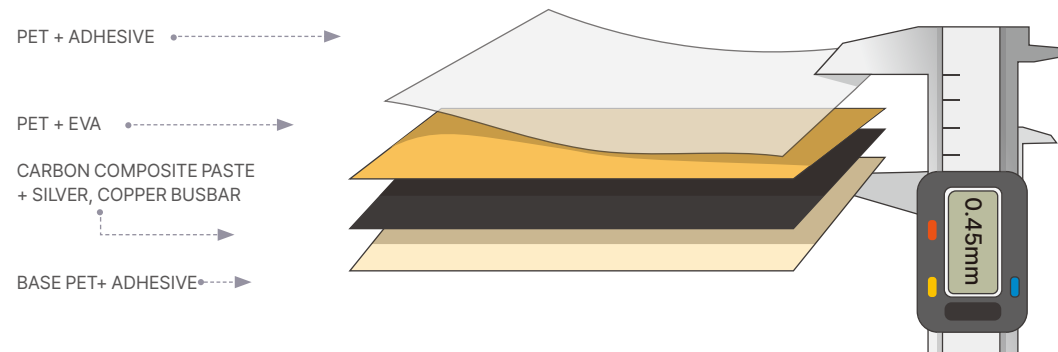
## For customers

DUE TO ELECTRICAL CONSUMPTION  
IN DIFFERENT COUNTRIES, PLEASE  
REFER TO THE REGULATIONS  
REGARDING YOUR LOCATION.



Producers of the finest carbon heating film and heating cable

## OKONDOL™ Heating Film Structure

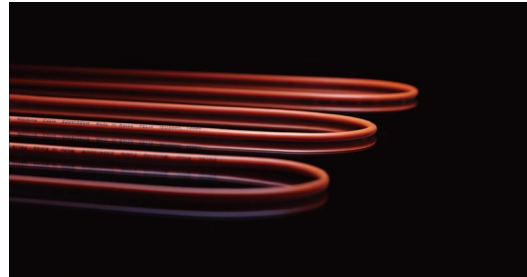


## OKONDOL™ Heating Film Product Specification

Width (mm)	Thickness (mm)	Voltage	Power Consumption (per m)	Power Consumption (per m <sup>2</sup> )	Package (M/Box)	Weight (kg)	Remark
250	0.40 ~ 0.45mm (Changeable upon customer request)	AC 110, 220, 330	55	220Watt/m <sup>2</sup> or Customer's request specification	75	24.2	Always in stock
300			65		75		
400			88		75		
500			110		75		
500		AC 220, 230	200	400	75	24.2	Production upon order * High-Temperature
600		AC 110, 220, 230	132	220Watt/m <sup>2</sup> or Customer's request specification	75	46.2	Production upon order
1000			220		75		Always in stock

- \* Watt is the simple conversion of 220Watt/m<sup>2</sup> to width. Watt can be changed upon customer request.
- \* The weight is based on the 0.45mm product. It may vary depending on the thickness and packaging.
- \* For high-temperature films, a width of 500 mm or less and 400 Watt/m<sup>2</sup> are recommended.

# EXCEL™ NON-MAGNETIC HEATING CABLE



EXCEL Non Magnetic Heating Cable is constructed of the highest grade materials available on the market. Our Dual Core heating elements shielded in Teflon formed from polytetrafluoroethylene, or PTFE, an element that helps keep the electromagnetic waves from saturating the cable.

This is then used covered in a copper braid to assist in the reduction of electromagneticism. This special design is housed in tough, flexible PVC to help maintain the integrity of the heating cable.

## EXCEL Non-Magnetic heating cable Uses

- UNDERFLOOR HEATING
- CONCRETE DRYING
- AGRICULTURE

### PRODUCT SPECIFICATION EXCELNON-MAGNETIC HEATING CABLE PRODUCT MODEL

[Ø6, 20w/m]

### PRODUCT SPECIFICATION EXCELNON-MAGNETIC HEATING CABLE PRODUCT MODEL

\*CAN PRODUCE AC 110V AND OTHER MODELS

MODEL	AREA (m2)	RESISTANCE (ohm)	LENGTH (m)	WATT	OUTPUT (m)	ELECTRIC CURRENT (A)	VOLTAGE (V)	DIAMETER (mm)	WEIGHT (kg)
ENC20-15	1.65	161	15	20	300	1.4	220	5 / 6 / 7	0.9
ENC20-30	3.3	81	30	20	600	2.7	220	5 / 6 / 7	1.65
ENC20-45	4.95	54	45	20	900	4.1	220	5 / 6 / 7	2.5
ENC20-60	6.6	40	60	20	1,200	5.5	220	5 / 6 / 7	3.1
ENC20-90	9.9	27	90	20	1,800	8.2	220	5 / 6 / 7	4.7
ENC20-120	13.2	20	120	20	2,400	10.9	220	5 / 6 / 7	6.4

Power	AC 220V, 50~60hz	Heating wire installation interval	100mm~150mm
Maximum continuous operating temperature	80°C	Power Consumption	180W/m2 ~ 200W/m2
Operating temperature conditions	minus30°C / above110°C	Heating wire thickness	5mm~7mm
Withstand voltage	3000V / 1min		

Producers of the finest carbon heating film and heating cable

## EXCEL Non-Magnetic heating cable Features

### SAFE HEATING WITHOUT ELECTROMAGNETIC WAVES!

Non-Magnetic heating cables are top of the line heating systems based on performance and construction. Easy to install and produced with the finest materials available on the market. Another product made by FELIX that will exceed your expectations.

## EXCEL Non-Magnetic heating cable



### SAVINGS

EXCEL Cables can save you money over conventional methods of heating, especially boiler type heating systems. There are no parts to replace or the use of fossil fuels. Life expectancy for our cables are longer than that of centralized heating systems.



### SIMPLICITY

Installations are made simple. There is no need for heavy equipment. Remove noise and dust that can be created by other conventional heating.



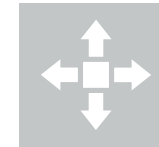
### ENVIRONMENTALLY SAFE

There is no pollution or an environmental footprint left by the use of our cables.



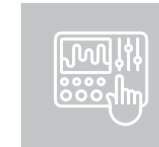
### SAFETY

Double Core Conductors significantly reduce the magnetic field that normally surrounds cables. Reducing exposure to EMF is another way we can help protect our buyers as well as keeping them warm.



### SPACE

Since the cables are under the floor, the space normally reserved for centralized heating systems can be utilized for other uses. You only install where you need it saving you even more.

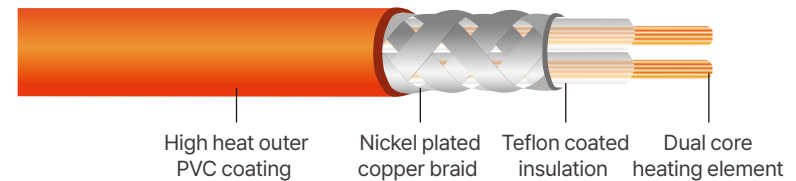


### MISCELLANEOUS

Multiple rooms installed with EXCEL cables can be controlled by a main switch (up to 128 rooms or areas). You can decide where and how much heating to control. Safe and effective with health benefits for the end user.

EXCEL Non-Magnetic Heating Cable, meter by meter, emits zero magnetism. Heat radiates safely and evenly throughout the length of the cable. Coated in tough but pliable Teflon (Teflon/PTFE) to seal in the heating cable, the inner copper and nickel plated copper braiding remove all harmful magnetism.

EXCEL Non-Magnetic heating cable internal structure



# EXCEL™ NON-MAGNETIC MAT HEATING CABLE



Excel non-magnetic heating cables come in the form of mats.  
This makes the installation simpler and perfect for any DIY project.

## EXCEL™ NON-MAGNETIC MAT HEATING CABLE USES

- UNDERFLOOR HEATING
- CONCRETE DRYING
- AGRICULTURE



### EXCEL™ MAT-TYPE NON-MAGNETIC CABLE MODELS

[Ø4, 16w/m] or  
[Ø5, 16w/m]

\*Can produce AC 110V and non-model products

Model	Mat length(m)	Length of heating wire(m)	Area (m2)	Resistance (ohm)	Watt (w/m)	Output (W/R)	Current (A)	Voltage (V)	Diameter (mm)
ENCM16-1	2	10	1	303	16	160	0.7	220	4/5
ENCM16-2	4	20	2	151	16	320	1.5	220	4/5
ENCM16-3	6	30	3	101	16	480	2.2	220	4/5
ENCM16-4	8	40	4	76	16	640	2.9	220	4/5
ENCM16-5	10	50	5	61	16	800	3.6	220	4/5
ENCM16-6	12	60	6	50	16	960	4.4	220	4/5
ENCM16-8	16	80	8	38	16	1,280	5.8	220	4/5
ENCM16-9	18	90	9	34	16	1,440	6.5	220	4/5
ENCM16-10	20	110	10	30	16	1,600	7.3	220	4/5
ENCM16-12	24	120	12	25	16	1,920	8.7	220	4/5
ENCM16-14	28	140	14	22	16	2,240	10.2	220	4/5

### EXCEL™ MAT-TYPE NON-MAGNETIC CABLE SPECIFICATIONS

Power	AC 220V, 50~60hz	Cable Distance	90mm~100mm
Max. Continuous Use Temp	80°C	Consumption Rate	160W/m2
Temp Range	minus30°C / above110°C	Thickness	4mm~5mm
Withstand voltage	3000V / 1min		

Producers of the finest carbon heating film and heating cable

# EXCEL™

## HYBRID HEATING CABLE

### EXCEL HYBRID HEATING CABLE USES

- UNDERFLOOR HEATING
- CONCRETE DRYING
- AGRICULTURE



## EXCEL HYBRID HEATING CABLE PROPERTIES

The EHC hot water pipe system is a cutting-edge heating technology that maximizes energy efficiency by using heating lines directly generating heat inside a sealed X-L pipe, putting special antifreeze thermal fluid into the X-L pipe, and then vacuum sealing it.



### SAFETY

No electro static worries and no freezing during winter months.



### ENVIRONMENTALLY FRIENDLY

Using electricity and leaving no carbon footprints in our environment. Clean and quiet which is perfect for any home or office.



### CONVENIENT

EXCEL Hybrid heating system is a simple solution to your heating needs. Easy to install and even easier to maintain as there is no need for maintenance.



### ECONOMICAL

Economically feasible for households on a budget. No need to worry about warranty issues as the design and materials used to make this heating system is a great long term investment.



### FUNCTIONALITY

Since water is not used, appearance of sludge is not a factor. EXCEL Hybrid heating system is a well-made, trustworthy, operating system. Saves space as it is installed within the floor.

### ENERGY SAVING ECO-FRIENDLY HEATING SYSTEM

No need to worry about freezing of pipes in winter, using a specially formulated special antifreeze thermal fluid to build a safe and efficient heating system without a boiler



# INSULATION SHEET

To experience the full effects of carbon heating film, felix korea brings to you a solution in maintaining a warm environment and to assist economically. Don't lose heat to dissipation. Insulate your area with insulation tailor made to work with heating film.

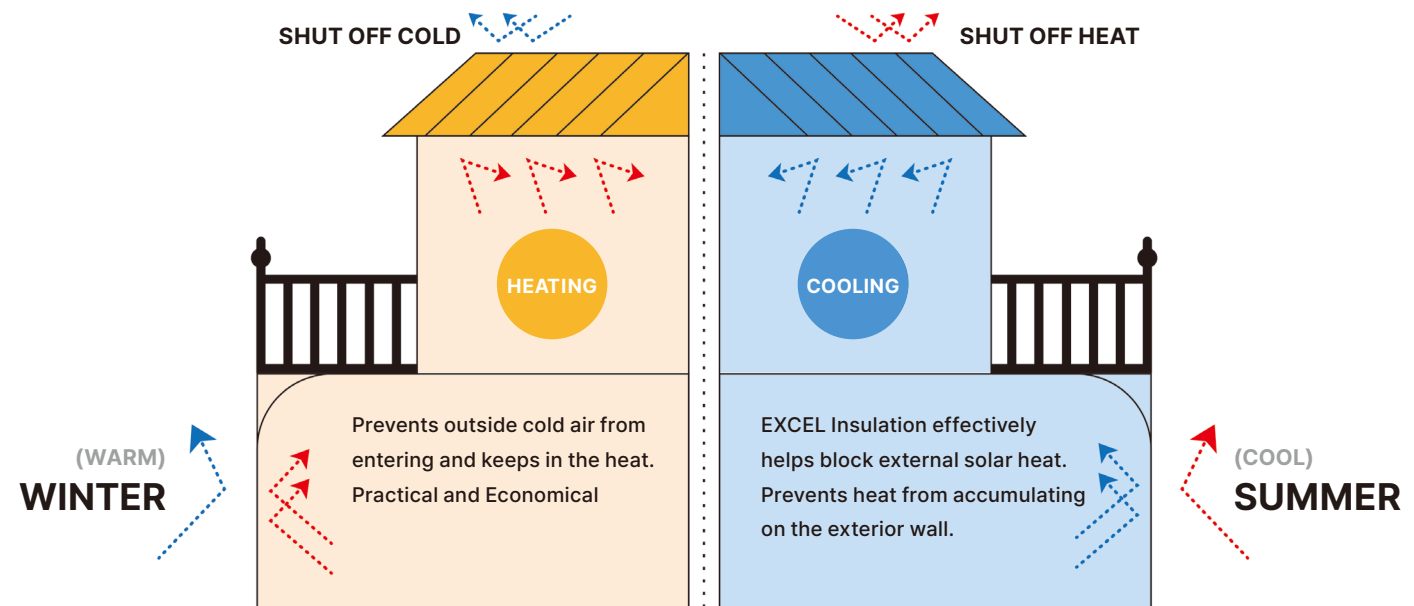
## INSULATION ATTRIBUTES

- PROTECTS AGAINST HEAT DISSIPATION
- ECONOMICAL AND PRACTICAL

## INSULATION USES

- HEATING FILM INSULATION
- HEATING CABLE INSULATION
- LEISURE AND CAMPING

## ECONOMICAL

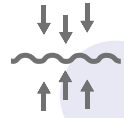


Producers of the finest carbon heating film and heating cable

## INSULATION PROPERTIES



# EFFICIENT



### INSULATION PROPERTIES

Made with closed cell foam and two layers of pet. Excel insulation creates a barrier that repels the cold and heat.



### SOUND BARRIER

Excel insulation is also a great barrier for sound, assisting in creating a functional floor.



### MOISTURE BARRIER

Excel insulation provides protection against moisture build-up.



### LONG LASTING

Excel insulation will last as long as any heating system and will not need maintenance.



### CONSTRUCTABILITY

Easy transport and handling, and convenient installation of product due to low density of foam making it light and flexible

## INSULATION TYPES

### 1. EXCEL Insulation

A popular film heating only insulation material brand



### 2. DISCOVERY Insulation

As Eco-friendly Camping Insulation, we put safety of users first by enhancing flame retardancy.



# ELECTRICAL HEATING MARKETABILITY

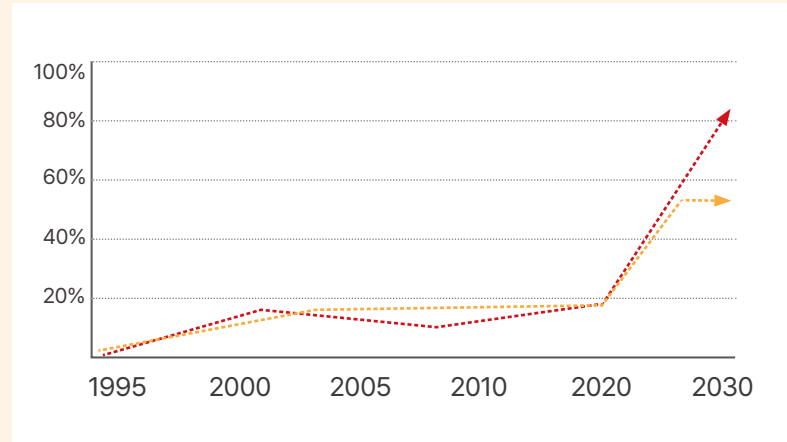
To preserve this green earth and for mankind to live in a cleaner environment, people from all over the world are Participating in the search for solutions.

One answer is to better utilize the clean energy available now.

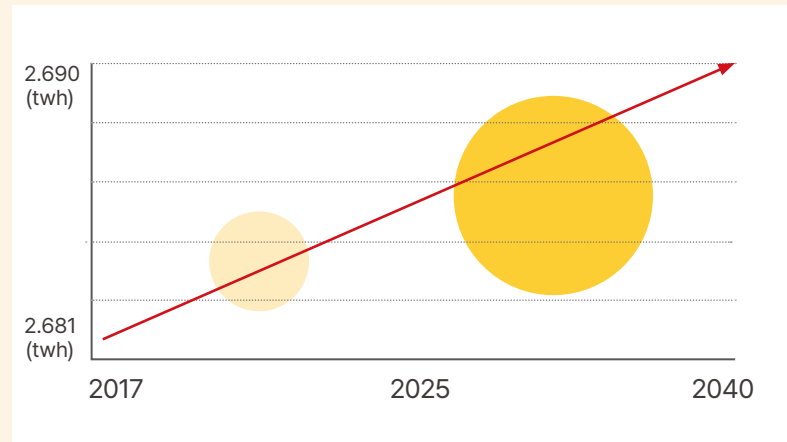
Electrical heating is that answer. The growth of the electric heating industry is limitless.

ELECTRICAL HEATING MARKETABILITY & EXISTING HEATING MARKETABILITY

--- electrical heating systems  
--- existing heating systems



EXTRAPOLATED DATA ON USE FOR THE NEXT 20 YEARS





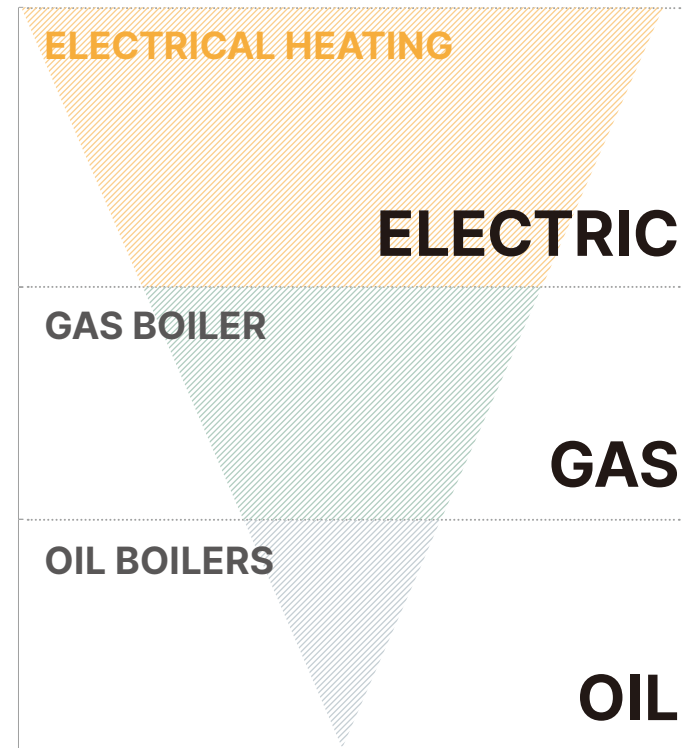
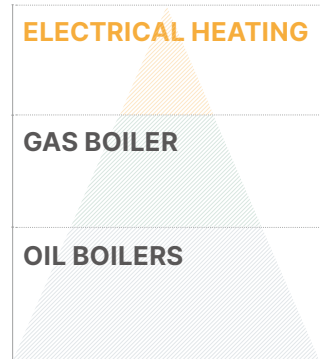
Producers of the finest carbon heating film and heating cable

TRADITIONAL  
UNDERFLOOR HEATING  
WALL HEATING AND  
CEILING HEATING  
EXPANSION HEATING  
TO SPACE HEATING  
COVERING ALL ASPECTS OF  
ELECTRICAL HEATING

The replacement of fossil fuels in the EU has led a revolution in eco-friendly heating; resulting in a new market that will eventually overtake the old.

See how electrical heating can offer your business the opportunity to provide customers a quality, long-lasting, and reliable heating source.

Electrical heating is the solution.



## ELECTRICAL HEATING WORLD MARKET STATUS AND FUTURE PREDICTIONS

EUROPE

48.7%

NORTH AMERICA  
(USA, CANADA)

22.9%

JAPAN

7.2%

LATIN AMERICA

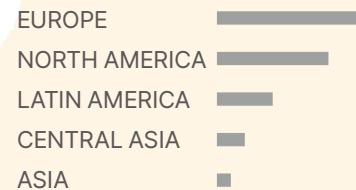
4.1%

AFRICA, ASIA &  
AUSTRALIA

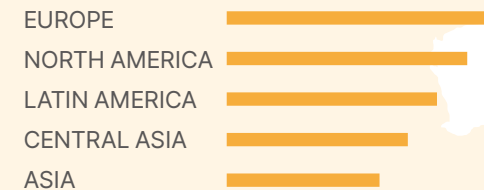
17.1%

## CURRENT ELECTRICAL HEATING MARKETS AND EXTRAPOLATED FUTURE MARKETS

### CURRENT ELECTRICAL HEATING MARKET



### EXPECTED FUTURE MARKET FOR ELECTRICAL HEATING



---

Producers of the finest carbon  
heating film and heating cable

**WE WILL CONTINUE TO STAY AHEAD IN  
THE ELECTRICAL HEATING MARKET SO THAT  
YOU CAN OFFER THE BEST, TO YOUR BUYERS.**





Head Office | 861-4, Samil-ro, Nam-myeon,  
Yangju-si, Gyeonggi-do, Republic of Korea

TEL | 031-866-5688

FAX | 02-6008-8790

E-MAIL | [felixkorea.com@gmail.com](mailto:felixkorea.com@gmail.com)