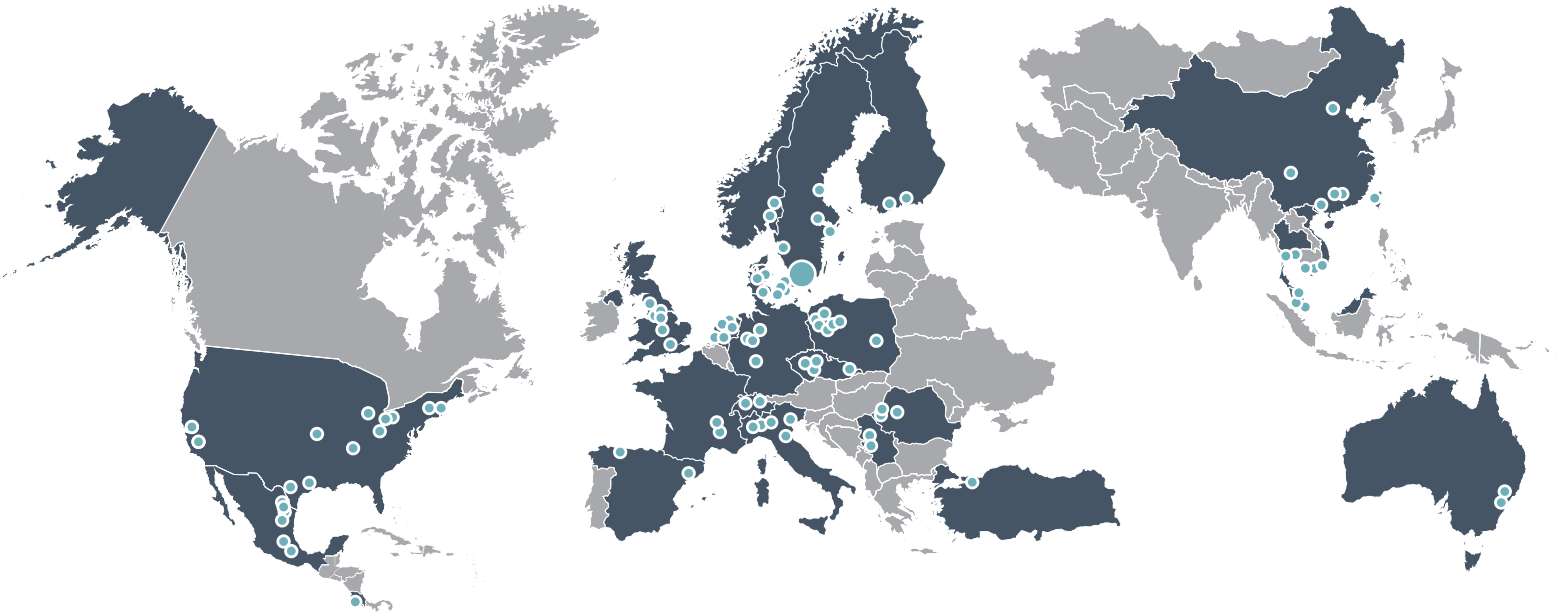
BACKER

DOMESTIC HEATING SOLUTIONS

SAFETY · ENERGY EFFICIENCY · COMFORT

BACKER

EVERYDAY · EVERYWHERE



BACKER GROUP

Backer develops, produces and sells customized solutions and components for electric heating, measurement and control. The original technology was stainless steel tubular elements. However, the constant growth of the Group, both organically and through acquisitions, has enabled the integration of several new technologies. Today the group offers a far wider product range, with a vast number of technologies for several industry sectors and a large variety of applications.

TECHNOLOGIES WE MASTER

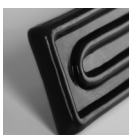

Tubular Heating Elements


Printed Elements


Supported wire Elements


Measurement & Control

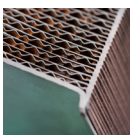

PTC Elements


IR & Halogen Elements


Heating Cables


Suspended Wire Elements


Heat Pump Technology


Special

- 10 000 employees in some 40 production units on 4 continents
- 70 years of accumulated competence and experience in the industry
- International organization with local presence
- Many specialized R&D departments to bring new innovative solutions to the market
- Customized solutions fulfilling special requirements
- Strong focus on components and systems for sustainable energy solutions
- Volume and industry production in different parts of the world

INDUSTRIES WE SERVE


Industrial & Process


Energy & Environment


Advanced Technology


Commercial Equipment


Home Appliance


Transportation


HVAC

BACKER DOMESTIC HEATING SOLUTIONS

SAFETY · ENERGY EFFICIENCY · COMFORT

Backer Domestic Heating Solutions wants to make it easy for customers and partners to get high quality solutions for a wide spectrum of heating related domestic applications. The solutions cover both heating components, complete intelligent systems and control devices. Backer Domestic Heating Solutions is your single point of contact and inspiration in the heating related Domestic Heating Industry.

PRODUCT DEVELOPMENT

Pre-study
- Backer presents design proposal

Define product and specification
- Design scrutiny process
- Clause by clause

Sample production
- Performance testing of samples
- FMEA
- LCC

Validation
- Third party testing
- Validation of critical parameters
- Interior testing

First serial delivery
- Produce parts for FAI
- Release production for first delivery

Serial delivery
- Normal production according to customer needs

PERFORMANCE TESTING

- Temperature and measurement
- Interior testing
- Thermal imaging
- Cooling room -25ºC
- Noise testing
- Humidity chamber
- Life cycle testing
- Wind tunnel tests
- Resistor power testing
- Long term corrosion tests
- Electrial tests up to 24kV AC
- External resources for other types of tests such as shock and vibration and intermittent pulses.

MASTERING THE DESIGN

- Pro/ Engineer 3d-CAD
- X-ray equipment
- PDM-link/ Product data management etc.
- FLO EFD
  - Thermal/ flow simulations PTC MECHANICA
  - Thermal and stress analysis

QUALITY

We strive to deliver the highest quality products combined with a flexible way of working. This permeates the whole process from sales, product development, manufacturing, customer service and logistics. Backer delivers products that meet all relevant standards and tests, certifying products according to customer specifications. We also have possibilities to carry out tests in modern labs, constantly improving our product performance and energy efficiency.

DID YOU KNOW?

ALL COMPANIES IN THE BACKER GROUP ARE ISO-CERTIFIED.

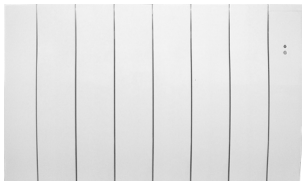
ISO 9001 · ISO 14001

BACKER

Innovations for the future

A partnership with Backer gives you a dedicated team of designers, project engineers and technical experts in the fields of electric heating, measurement and control, ready to provide you with the optimal solutions for your needs.

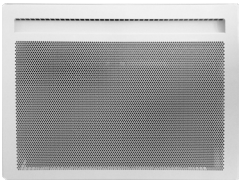
ELECTRIC HEATING APPLICATIONS



Radiators p. 5, 6, 7, 8

Convectors p. 5, 6

Accumulating radiators p. 5



Radiant Panels p. 6

Heating fans p. 5

Mirror Heaters p. 9, 11

Towel Rails p. 6, 7, 9

Floor Heating p. 9, 11

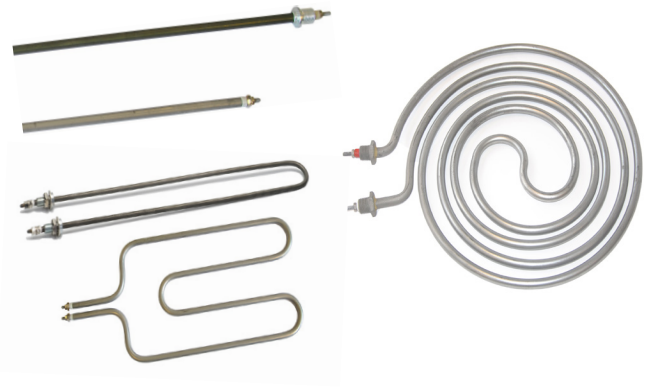
The choice of heat source for domestic heating will depend on several factors. Independently, Backer produces heating elements for numerous electric heating applications as well as for equipment using electric heating elements as complementary heat source or for functions where electric heating is needed.

Elements for domestic heating applications such as electric radiators, convectors and towel dryers, have been produced since the very start of Backer and are still one of the largest product areas in the Backer group. During the last few years, the demand of new heating elements has been intensified and Backer is continuousely testing complementary technologies in the development of elements for electric heating applications.

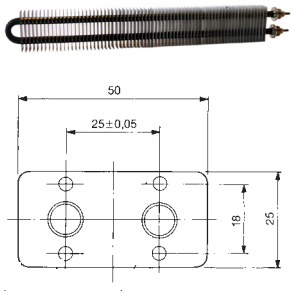
Thinking Green

The importance of sustainable energy solutions is well recognized today and Backer brings Eco-friendly thinking to all products and into all the steps of the product development process. In applications for electric domestic heating, the reduction of element power, control of element heating temperatures and actual element heating time, contribute to limiting the energy consumption and thus some of the effects on our environment. Elements can also be designed to combine or integrate alternative heat sources like water based systems with heat pumps, solar heating, pellet burners etc.

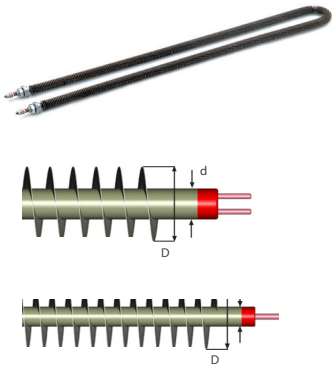
TUBULAR ELEMENTS



Tubular elements
Heating elements
Ø: 6.4, 8.5, 10, 12, 14, 16, 18 mm
Accessories: nipples, fixing plates, M4, wiring etc.



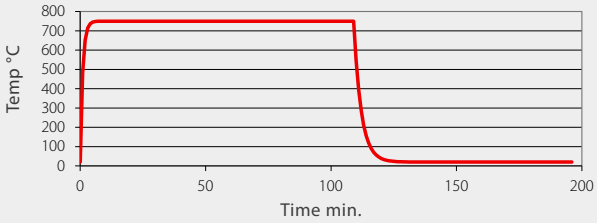
Square finned elements
Surface enlarged element
Ø (dim): 8 (50x25),
8.5 (50x25), 10 (70x40),
or 14 (80x40) mm
Fin material: Alu zink or
stainless steel
Accessories: nipples,
fixing plates



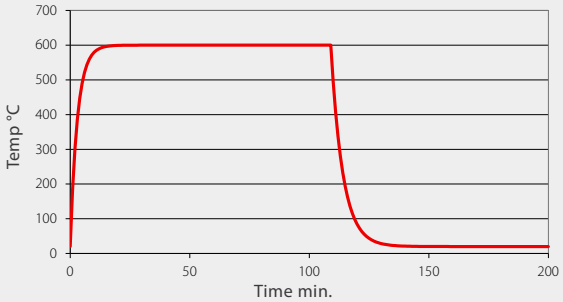
Finned elements
Surface enlarged element
Ø (d/D): 6.4/18, 8/18 8/24,
8.5/22 8.5/28, 10/20 10/26,
12/22 12/28, 14/34 16/32,
18/34 mm Fin material:
SS1160, EN 1.4301
Accessories: nipples,
fixing plates

Tube materials
Mild steel - Grade D; Stainless steel - EN 1.4301
EN 1.4404 · UNS S31254 · UNS N08904 · EN 1.4541
EN 1.4828 · Incoloy 800 · Incoloy 825 · Ferritic stainless steel materials - 1.4510 · 1.4512 · 1.4521; Copper - C12200
Connections One or two end connection:
M4, cables flat pin or acc. to customer spec.

Heating and cooling times
tubular Ø 8.5mm



Heating and cooling times
finned elements

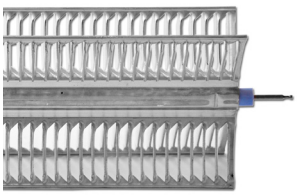


High temperatures increasing versatility
Backer's extensive experience in the production of tubular elements has facilitated the development of new products with new materials especially when there's a need to stretch the performance of the production to reach improved product features. One advantage with the basic tubular element is the range of temperature levels that can be attained, from lower standard temperatures to high performance materials reaching more than 900°C. Backer offers a wide range of materials of which several for high temperature applications.

High temperatures / low cost
The various material properties that exist for tubular elements not only contribute to multiple choices of element temperatures but is also a very cost efficient way to create element heating from electric power. It can be used either as single source or in combination with other materials thus increasing the scope of heating performances of the basic element.

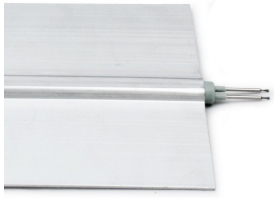
Applications:
Accumulating Radiators
Fan Heaters
Radiators
IR Elements

ALUMINIUM ELEMENTS

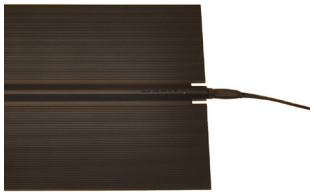


Finned X-profile
Aluminium profile 61x71, 65x84 or 67x89 mm (widthxdepth)
Length: 215-1570 mm
W/length cm: 20-30 W
Max temp: 350°C

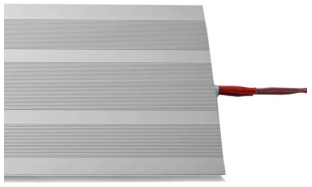
Finned I-profile
Aluminium profile
Width: 80 or 100 mm
Length: 215-1510 mm
W/length cm: 12-15 W
Max temp: 350°C



I-profile
Aluminium profile
Width: 80 or 100 mm
Length: 215-1510 mm
W/length cm: 15 W
Max temp: 350°C



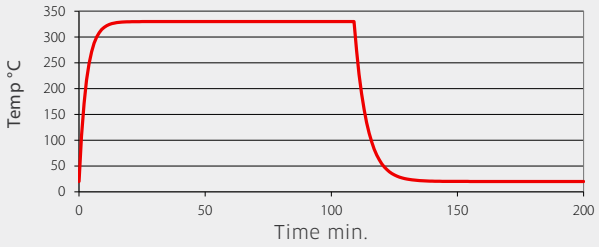
Anodized or painted profiles max 285°C



Ceiling heating profile
Aluminium profile
Width: 180 mm
Length: 350-1270 mm.
W/length cm: 15-20 W
Max temp: 285°C

Materials Aluminium AA6060, AA6063
Accessories Flat pins, wiring, fixing devices
Connections Wiring or tab terminals, 1.5, 2.5 pins

Heating and cooling times
alu elements (painted on one side)



Improving convection and interior climate
The aluminium element has the advantages of silent running and with its lower working temperature, not “burning” the dust in the air. This prevents any burned smell and blackened wall paper above the convector.

Optimizing radiation
The excellent heat conductive properties of the aluminium material will assure a fast and reactive heating of the element. With different kinds of surface treatments and surface designs the element radiation surface can be increased to optimize element size. By using a painted or anodized surface, thus increasing the element emissivity, radiation will be optimized.

Applications:
Radiators
Ceiling heating
Convectors
Towel heaters
IR Elements
Heat Curtains
Heating Fans

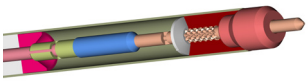
TUBULAR ELEMENTS FOR LIQUID RADIATOR APPLICATIONS

Insulation Class I
14 or 16 mm tubular element.
Lengths 215-1510 mm
Power range: 300-2000 W

Insulation Class I
6.4 mm tubular element in lengths 80-1900 mm
Power range: 300-2000 W

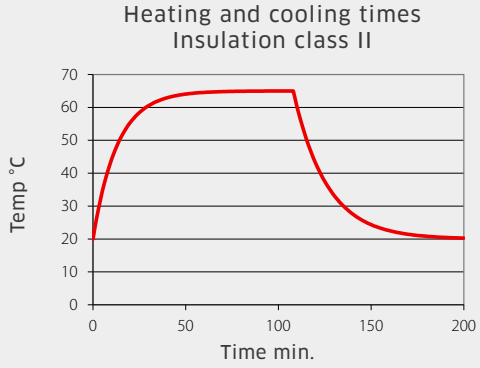
Insulation Class II
14 or 16 mm tubular element insulation class II
Lengths 215-1510 mm.
Power range: 300-2000 W

Connection examples



We can supply integrated thermostat and temperature control (NTC). Also availiable in a protective tube.

Tube materials EN 1.4551; Ø14 mm: EN 1.4541, Steel DIN 2394; Ø16 mm: EN 1.4301, Steel DIN 2394
Accessories Control units - digital or manual (see separate section in this broshure), built-in thermostat 70-150°C, meltfuse, built-in- thermistor (NTC), pocket tube for thermostat, PTC; Then max 230V
Connection Different types of connections



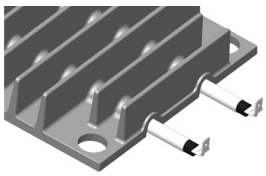
For better air quality
One way to reduce element and air temperature variations has been to use liquid in the radiators and convectors and thus using the inertia as a balance. Also limiting the radiator / convector temperatures and hence, lowering the speed in which the room air is heated, the air humidity is better preserved. Low temperature radiation is generally less apparent.

Applications:
Radiators
Ceiling heating
Convectors
Towel heaters
IR Elements
Heat Curtains
Heating Fans

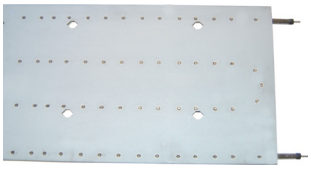
ELEMENTS FOR DRY RADIATOR APPLICATIONS

Soap stone
Insert element with customized dimensions. Heating element in wire/mica with insulation class II

Ceramic
Insert element with customized dimensions. Heating element in wire, insulation class I



Cast-iron
Mounted element with customized dimensions. Heating element from tubular element, insulation class I (class II obtained with fixations).



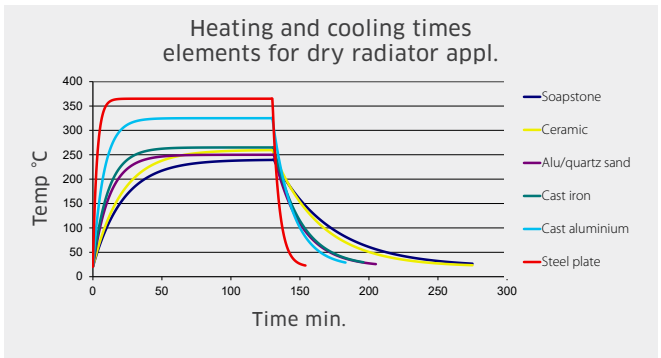
Steel Element
Mounted element with customized dimensions. Heating element from tubular element, insulation class I (class II obtained with fixations).

Cast-aluminium
Mounted element with customized dimensions. Heating element from tubular element, insulation (class II obtained with fixations).

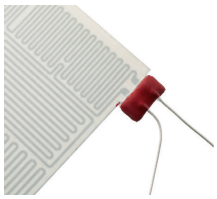
Interchangeable insert elements or customized fixing
The best way of eliminating liquid leakage is to eliminate the liquid. Backer offers several options of heating elements to choose from, all of which can be mounted into a radiator body with either interior square standard openings or with bracket fixations. Using a class I element, adapted fixations might be needed to assure necessary insulation. The inserted heating element both transfers heat to the aluminium body, creating natural air convection, and acts as a radiation element at the same time. The various element types are designed to meet different demands of for ex. heat accumulation, reactivity, temperatures, insulation class, price, etc.

Stabilizing temperature levels
When searching to minimize the on-time of the radiator and thus reducing the energy consumption, the element properties have an important roll to play in combination with the radiator control equipment. Whether using element inertia or fine tuned control equipment to regulate the element temperatures and heat-up times, the choice of specific element materials is important to meet the specific requirements.

Applications:
Electric radiators



FLEXIBLE HEATING ELEMENTS

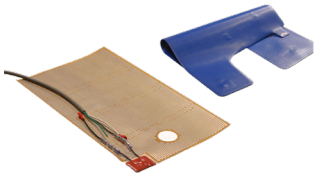


FRTP

Fibre reinforced thermoplastic
Max width: 800 mm
Power density: 0.1 W/cm²
(up to 0.7 immersed)
Voltage: Up to
690V AC/DC 1~or 3 ~

Features

· Stiff, extremely durable
· Superior impact resistance
· Water resistant
· Possible to laminate to pictures or metal parts

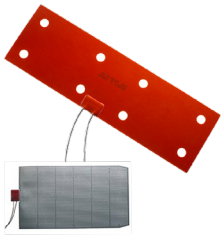


Etched Foil, Polyester, PVC

Max width: 600-800 mm
Power density:
· Polyester: 3 W/cm²
· PVC: 0.1 W/cm²
Voltage: Up to 230V AC/DC
1~or 3 ~

Features

· Uniform heat output
· Long life product
· Even heat transmission
· Water proof
· Very flexible



PEN, Silicone

Max width: 600-800 mm
Power density:
· PEN: 4 W/cm²
· Silicone: 1.3 W/cm²
Voltage: Up to 230V AC/DC
1~or 3 ~

Features

· Uniform heat output
· Long life product
· Even heat transmission
· Water proof
· Very flexible

MICA

Max width: 600 mm
Power density: 15W/cm²
Voltage: Up to
690V AC/DC 1~or 3 ~

Features

· Sandwiched between layers of mica
· Can be used assembled in open air, typically for radiators or heating panels

Aluminium Foil

Dimensions according to customer specification
Power: 50-250W
Voltage: 110-240V

Features

· Low weight
· Self adhesivie
· Suitable for ceiling heaters

Heating Cables

For more info. about our heating cables see separate catalogues.

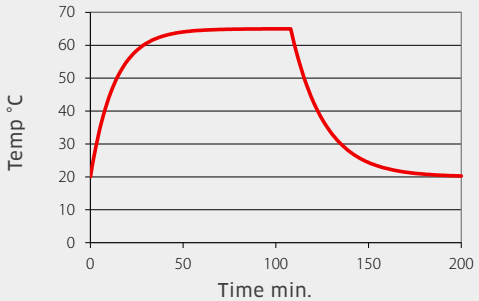
Wide range of applications

Flexible heating elements offer many advantages such as even heat distribution, fast heat-up, compact design, low weight and power density. This makes the field of application broad and diversified. The foil heater can be designed in almost any shape and the large choice of insulation materials makes it possible to use flexible heaters in almost any application. The even heat distribution also makes the foil heater energy efficient.

Improving radiator performance

Heating element inertia improves the heat accumulation and provides a longer cooling time. On the other hand, it also means longer time is needed to heat up the element. Various foil heating elements mounted on or closed to the front panel can here offer a perfect combination, providing instant heat radiation evenly distributed on the front panel, until the main heat source has reached the set temperature.

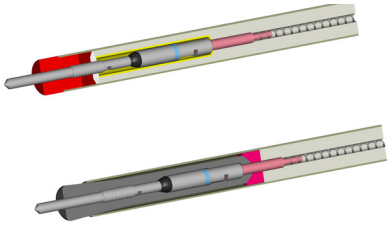
Heating and cooling times Insulation class II



Applications:

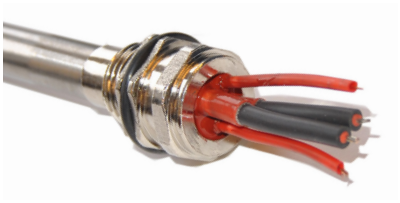
Radiators
Bathroom mirror heaters
Heating panels
Under floor heating
Towel dryers
Ceiling heaters

TEMPERATURE CONTROLS & SAFETY



Replacable thermal fuse

Elements in Ø 8.5, 14 or 16 mm can be equipped with a thermal fuse, which can be replaceble and easily pulled out from the element and replaced with a new unit.



NTC Sensor

An NTC sensor placed inside the heating element (Ø 14 or 16 mm) provides a quicker, more precise control of the temperature, that can be used to save energy and increase the radiator and towel dryer performances. Avaliable for 300-2000 W.

Thermostats

Backer supply different external thermostats as well as built-in thermostats.

Examples of controls

Temperature auto-regulation by PTC

Controling element temperature

The Backer heating elements can be designed to fit with various temperature control units. For towel-dryer appliances, Backer can provide complete sets of control unit with heating element with different functions. To simplify the towel-dryer function, Backer can also provide self-regulating PTC heating elements (no control unit needed).

More than just safety

The design of the Backer heating elements is always done to ensure that safety and valid regulations are met. In some elements, thermostats and thermal fuses (cut-offs) can be integrated. For others, PTC chips can be built into the element. When integration of element temperature control is not possible or convenient for the specific application, it can be placed outside of the element, connected to a thermostat tube or directly to the element.

To save energy and money, high precision on the temperature control is an advantage. To quickly level the temperature of the element and to get a more precise temperature setting, Backer offers both class I and class II elements with NTC sensor.

Customized design - maintained functionality

Backer offers different temperature control boxes for towel dryers to control both the element and the bathroom air temperature. In addition to the standard control boxes, individually designed boxes can also be obtained to match the design of the towel dryer and the local market demand. The choice of the temperature control box can thus be done based on the need of both technical features, level of requested temperature control, type of heating element, norms and regulations, aesthetics, etc.

Towel dryer
Aluminium profile towel dryer, complete with fixing device and connection cable with hidden on-off switch.

Bathroom mirror heating
Steam free mirrors Complete installation kit with foil in different shapes and sizes and connection cables for 230V.

Under floor heating
For wooden and laminate floors Complete installation kit for under floor heating, incl. cables, temperature control unit and heating foil for 230V.

FRTP radiator
Fibre Reinforced Thermoplastic Heater with superior impact and abrasion resistance properties.Up to 690 V AC/DC single or 3-phase.The unique manufacturing technique enables a large freedom in design.

Backer AB
282 71 Sösdala, Sweden
Tel: +46 451 - 661 00
info@backer.se
www.backer.eu

BACKER

EVERYDAY · EVERYWHERE

amtryck.se EN-001