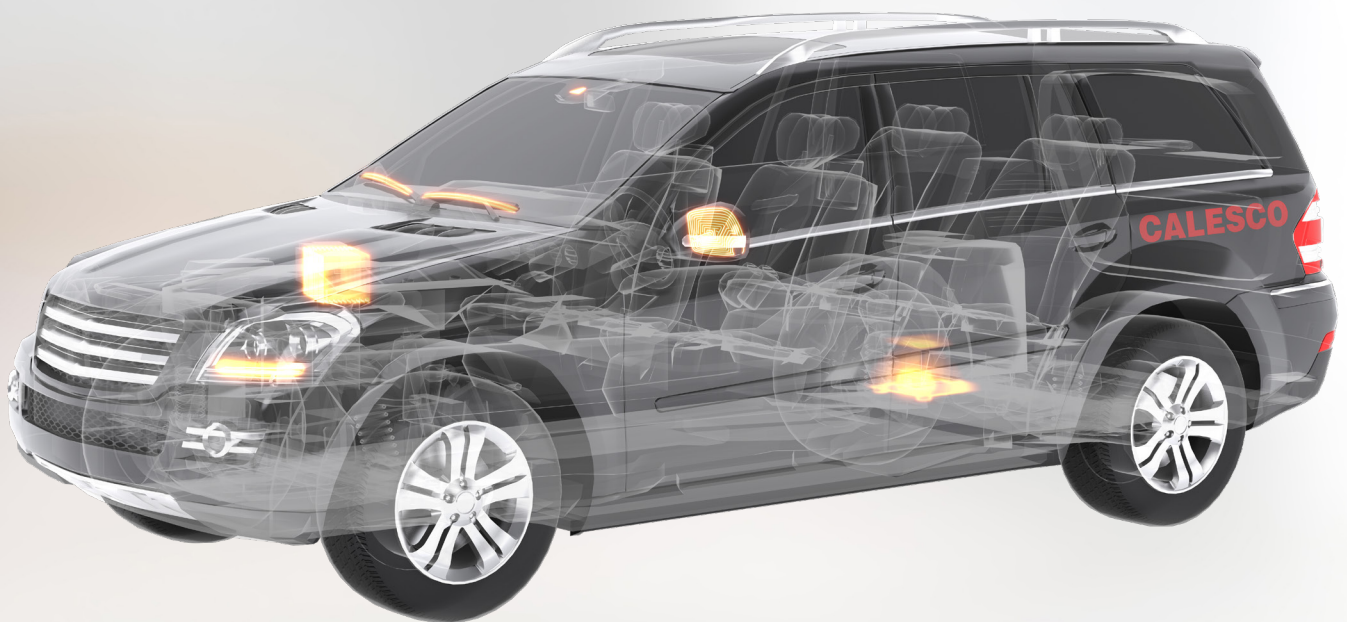




BACKER
CALESCO



AUTOMOTIVE SOLUTIONS

RELIABILITY · SUSTAINABILITY · COMFORT

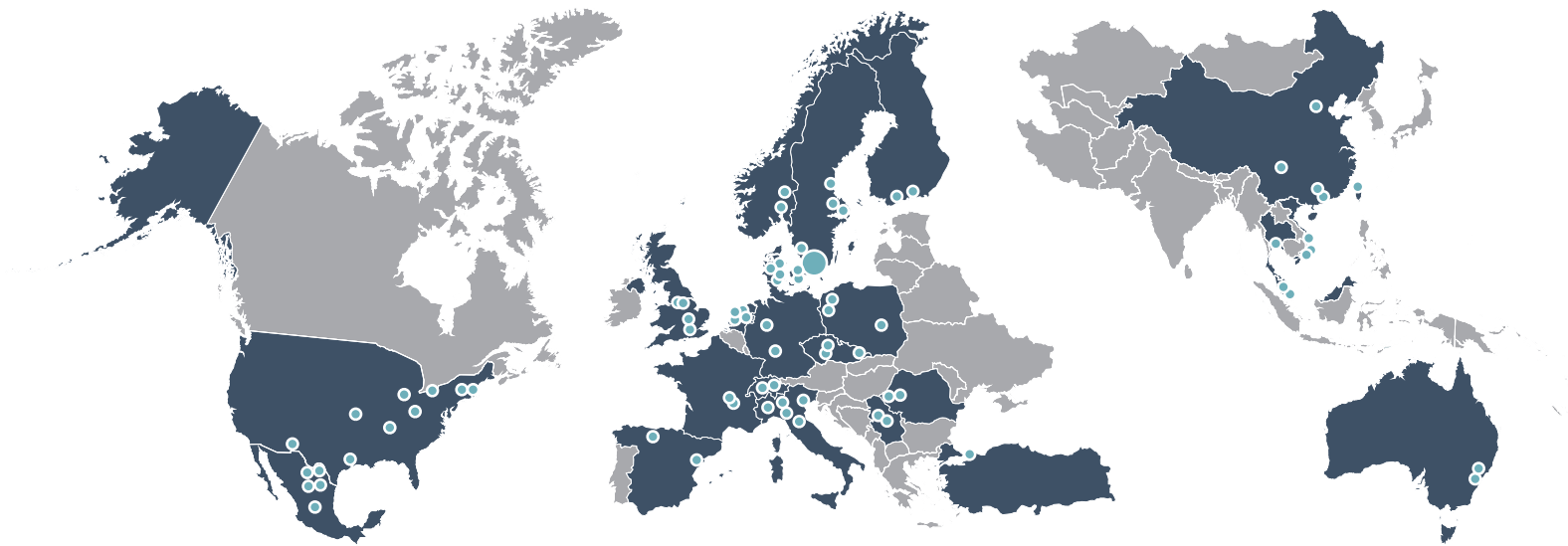
BACKER CALESCO

EVERYDAY · EVERYWHERE

Our heating products together with our measurement and control devices offer our customers complete solutions.

Our engineers will not only suggest solutions, they can also take part in and contribute to your product development by using our advanced technical tools and lab facilities. Our extensive experience and competence as well as our reliable quality and service guarantee your success. Our ambition is to not only be a supplier, but your preferred partner.

Together we can make it happen!



NORTH AMERICA

EUROPE

ASIA/OCEANIA

MEMBER OF BACKER-GROUP

Backer develops, produces and sells customised 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.

PRODUCTION LOCATIONS

- Backer Calesco main office and production in Sweden
- Production facilities in China, Poland & Vietnam
- Sales office/warehouse in the US



Customised solutions

INDUSTRY SECTORS



AUTOMOTIVE



LIFE SCIENCE



RAILWAY



BATTERY



COMFORT



COMMERCIAL
EQUIPMENT

AUTOMOTIVE HEATING SOLUTIONS

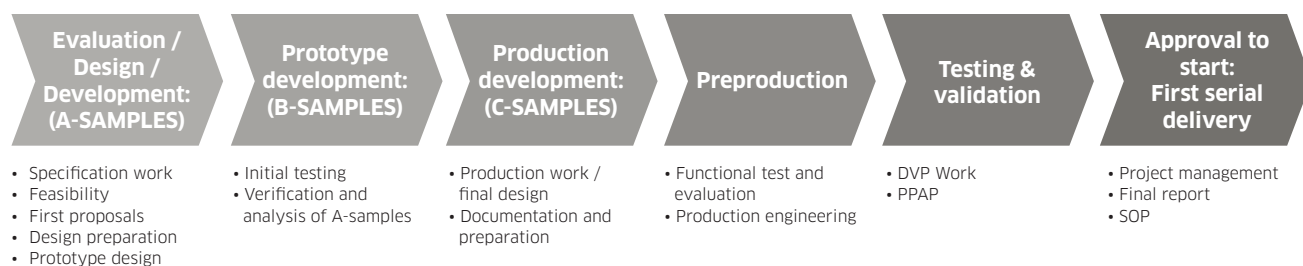
RELIABILITY · SUSTAINABILITY · COMFORT

Backer Calesco has more than 30 years of experience in the automotive industry, and as one of the largest suppliers of rear-view mirror heating concepts, we have vast knowledge of the demands of the transportation business. We keep your thumbs warm when operating a snowmobile or keep tanks from freezing on trains. We heat the handlebars for ATVs and the floors in trams. With a product range from lens and sensor heaters to heating batteries, the possibilities are endless.

| Typical applications | ADAS systems | Drivetrain & Propulsion | Safety & Sensors |
|----------------------|---------------------|-------------------------|------------------|
| Emissions reduction | - Radar | - Battery | - Alco locks |
| - SCR | - Camera | - Dump resistors | - Sensors |
| - Water injection | - Lidar | | |
| - Filter heaters | - Windshield wipers | | |
| | - Rear-view mirrors | | |

PRODUCT DEVELOPMENT

We work together in a gate model to make sure we reach target in cost and production SOP



DVP PERFORMANCE TESTING

- To validate the design, we perform the test needed to fulfil the specification
- Temperature profile (sensor and image)
- Resistance to climate and environment
- Electrical durability and resistance
- Specific customer requirements

QUALITY

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

CERTIFICATIONS

Backer Calesco is certified:

ISO 9001 · ISO 14001 · IATF 16949

Our facilities in China, Poland & Vietnam are certified:

ISO 9001 · ISO 14001 · IATF 16949



Innovations for the future

A partnership with Backer Calesco 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.

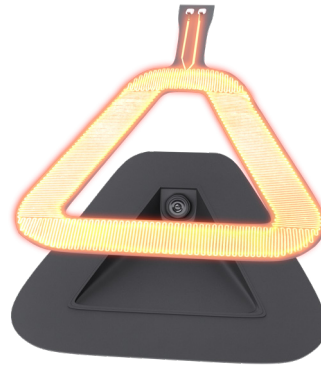
ADAS HEATING SOLUTIONS



Front view camera heater / Closed triangle

Closed triangle mounted on the backside of the straylight cover using convection to heat up the camera field of view.

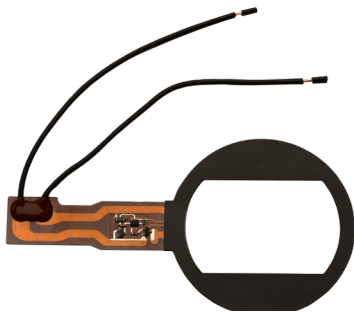
- Easy assembly
- Quick deicing/defogging
- Riveted pins, soldered wires or flextail connection



Front view camera heater / Open triangle

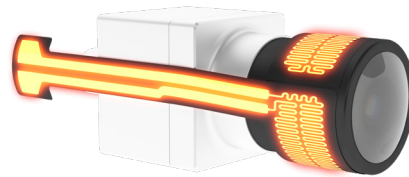
Open triangle mounted on the windshield, using heat transfer in the glass to clear camera field of view.

- Cost efficient
- Riveted pins, soldered wires or flextail connection



Night vision / Lens Heater

Front facing IR camera for detection and alert about pedestrians or wild-life in darkness/low visibility. Can also be delivered with integrated temperature control mounted directly on the heater.



Wrap around heater / Side view / Lens heater

Commonly used for blind spot monitoring or cross traffic alert. Mounted inside the camera housing.

VISION SYSTEM HEATERS

Vision systems need to have free field of view in any weather condition, and a heater from Backer Calesco can achieve this. Mist, condensation or ice reduces the functionality and all systems need heat to ensure a safe drive.

Lens heaters

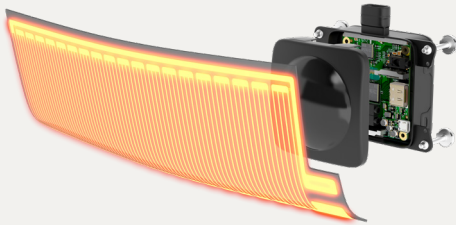
Can be mounted either as a wrap around on the lens barrel, or in the very front around the lens. We want to have the heater as close to the lens as possible in order to achieve good performance and fast deicing of the lens to clear camera field of view.

Front view heaters

Commonly used for lane assist, collision warning, keeping distance to other vehicles etc.

RADAR HEATERS

RADAR heaters are needed in wet & snowy conditions. Defogging and deicing of the radar field of view minimises incorrect readings, and avoids malfunction. Backer Calesco has, in close cooperation with Lund university, developed a robust constant wattage heater with minimal signal losses and great heating performance for a wide range of frequencies.



Advantages

- Avoids signal interference
- Minimises incorrect readings
- Great heating performance for a wide range of frequencies



Rear-view mirror heaters

Heaters for every specific rear-view mirror, either in Constant Wattage or PTC. We meet most of the car manufacturers specifications, through high and low power, depending on the allowed maximum temperature on the glass.

Constant wattage heaters

- Robust design controlled by onboard computer

PTC heaters

- Easy to use
- Self regulated heater



Headlight heaters

LEDs in headlights have no power loss, which leads to poor light exchange/visibility. This is solved by having a heater mounted on the base of the headlight, using heat convection for demisting.

- PTC heaters do not require additional temperature control
- Easy to mount
- Cost efficient solution



WIPER BLADE HEATER

A number of flexible foils assembled directly in the wiper and in the stand-by position for efficiency against icing and freezing of the wiper and the washer fluid nozzles, which makes it a safety application.

- Heaters against icing and freezing
- Safety application
- Free field of view

FLUID SYSTEM HEATING

Future automotive trends and environmental expectations are shifting new technologies

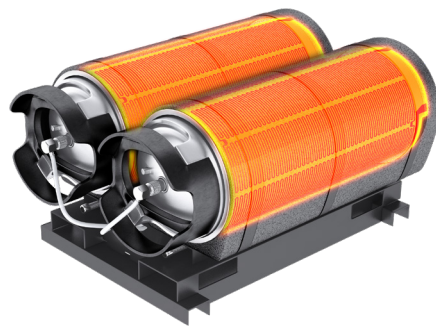
Transformation of the propulsion systems in passenger cars, light and heavy commercial vehicles, from Petrol or Diesel to more environmental friendly solutions is a challenge for the storage and dosing systems. Backer Calesco provides heating solutions for various tank system technologies.

Different propulsion systems:

CNG / LNG / H₂ / LH₂ Fuel, Hybrid, SCR, ASDS



Filter heaters

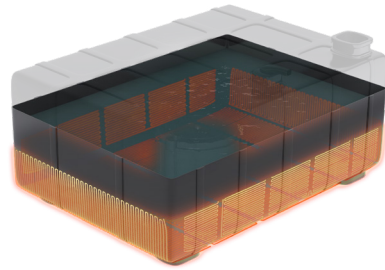


Dry surface heater "wrap"

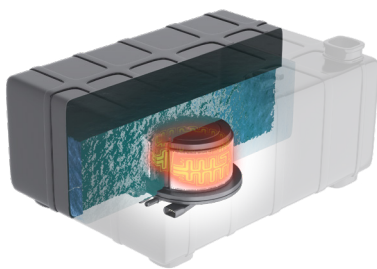




**Submerged surface heater
“outside pump housing”**



Insulated dry surface heater “wrap”



**SEMI DRY surface heater
“inside pump housing”**



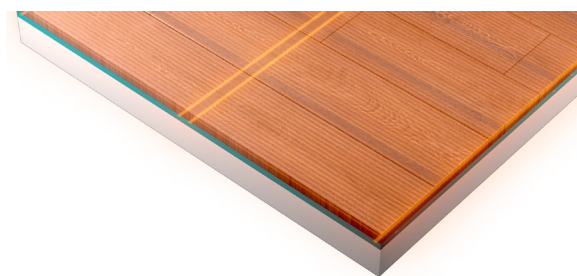
**Submerged surface heater
“free-floating”**



HEATING COMPONENTS

Flexible, lightweight and space-saving

Flexible elements, or foil elements, offer many advantages, beside the fact that the material is flexible. Examples include the ability to have multiple circuits or multiple voltages in the same element, or the ease of locating a sensor. Foil elements provide excellent thermal transfer where you need it most. They are used in thermal control design to protect components under cold-case environmental conditions or to make up for heat that is not dissipated. Foil elements are a space-saving, efficient alternative to applications where precise heat and maintaining exact temperature are important. They are supplied in various materials such as Polyimide, Polyester, Silicon, PTC and Mica.

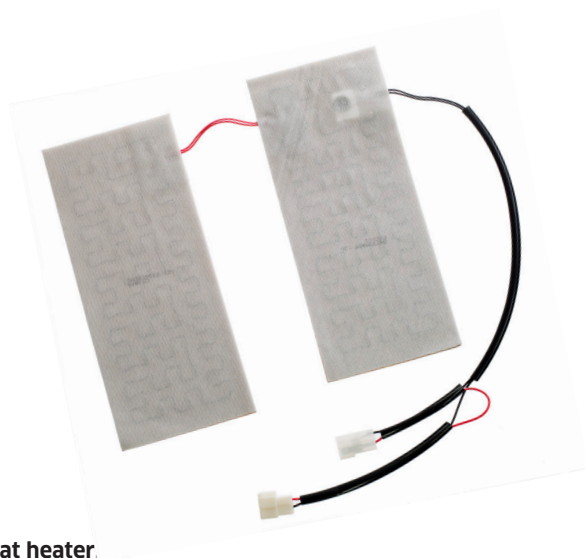


Floor heater

With our electric heated floor solutions, you can save space and weight by installing foil as floor heating.

Applications

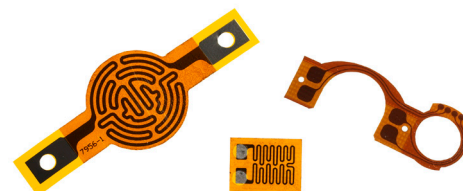
- Trains
- Trams
- Buses
- Trucks



Seat heater

We have a wide range of seat heater productions (12V, 24V, 48V, truck, agricultural and industrial vehicles, new cars, motor bikes, golf carts).

- We can supply to any customer design in 12V, 24V or 48V
- On-off or multi-position switches to control temperature



Heaters for Alcolocks

Our heaters allow exact humidity control. With flexible foil, we can customise heaters in different shapes and very small sizes to fit your application perfectly.



Flexible foil circuits (FFC)

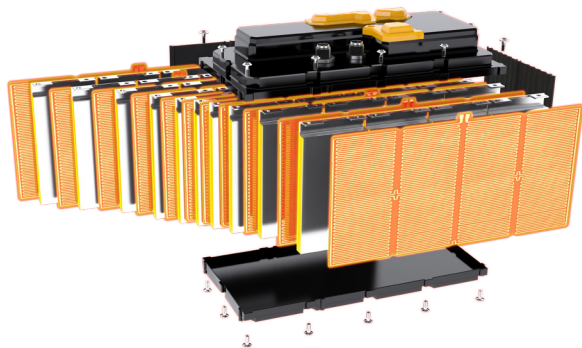
Flex circuits are often used as connectors in applications where flexibility, space savings & minimal weight is required.

BATTERY HEATING

Both lifetime and efficiency will increase

Backer Calesco produces flexible foil heaters for different battery applications. The need for environmentally-friendly vehicles creates a demand for more efficient batteries both for Hybrid and Electric cars. When batteries are exposed to cold weather the temperature of the battery drops and the chemical reactions occur more slowly, so the battery cannot produce the same amount of current that it can at room temperature.

When decreasing below -20°C in some situations, the chemical reactions will happen so slowly and generate so little power that the battery will appear to be dead when, in fact, if it is warmed up, will return to normal output. The batteries charging rate is affected by temperature and by adding heating to the batteries, both lifetime and efficiency will increase.



Advantages

- Increased lifetime
- Increased capacity
- Faster charging time
- Reliability

Typical applications

- Electric vehicles
- Electric forklifts
- Battery grids
- Emergency equipment

Environmentally-friendly vehicles create demand for efficient batteries



TEMPERATURE MANAGEMENT

ELECTRONIC CONTROL SYSTEMS

Control and energy balance

Flexible foil heaters provide excellent thermal transfer where you need it most. Heaters are used in thermal control design to protect components under cold-case environmental conditions or to make up for heat that is not dissipated. It is usually necessary to arrange some form of control to ensure that the desired temperature is maintained; accurate temperature control is therefore needed. This can be achieved with electromechanical thermostats of bimetallic type when temperatures and surface ratings are low, while electronic thermostats are preferred when temperatures and surface loads are high. We can fit thermostats, temperature fuses and sensors of thermo element type, thermistors and resistance sensors directly to elements in accordance with customer specifications. This helps to ensure reliable control.

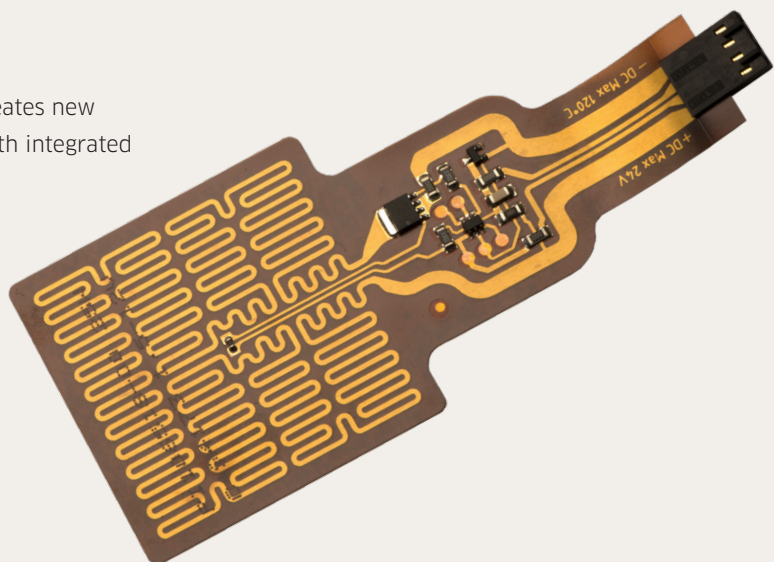
SMART HEATER!

Heater concept with integrated control

The demand for smart simple solutions creates new applications and we can offer solutions with integrated thermal controllers and sensors.

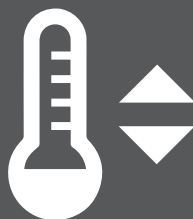
Typical components

- Thermostat
- Resistance controlled
- NTC
- PTC
- PT100/PT1000
- Thermocouple
- Overheat protection



HEATER

+



MEASUREMENT
& CONTROL

=



COMPLETE
SOLUTION



Customised solutions

Customers often come to us with an idea about a new project/solution, a need for our expertise or because they want to enter a partnership with us. We are more than happy to share our facilities, vast experience and expertise at this initial stage. The earlier we are involved in a project, the more we can control the optimisation of core issues, such as the choice of materials, components and technology, temperature control, energy consumption and sustainability, cost efficiency and compliance with all applicable norms, regulations and standards.



FOIL HEATING SOLUTIONS

Advantages

- Thin, flexible & lightweight
- Customised shapes
- Multiple temperature zones
- Simple assembly
- Quick heating
- Efficient heat transmission
- Low energy consumption
- High quality
- Wide material selection

Technical specifications

We offer standard products as well as customised solutions
Voltage: Up to 1000V
Power density: From 0 to 5W/cm²
Max. temperature: 600°C



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EVERYDAY · EVERYWHERE



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