

Ident.-No. MK11437 • 08/14 • Errors and omissions excepted • Printed in Germany • © Webasto Thermo & Comfort SE, 2014

The comfortable and cost-effective road to the future

Heating and air-conditioning systems for trucks

For more than 75 years, the Webasto group has continued to set new technological standards – in both the original equipment sector and the aftermarket. As one of the 100 biggest suppliers in the automotive industry worldwide, we develop and produce roof, convertible as well as heating, cooling and ventilation systems. Our products help provide a better atmosphere on the road, more comfort and security, as well as increased efficiency for cars, commercial and special vehicles, motor homes and boats. An outstanding network of production facilities and dealers guarantees high-quality products, installation standards and services worldwide.



Best brand

Webasto is Number 1 for air conditioning and heating*. For the tenth time in a row, experts in the commercial vehicles industry have chosen Webasto as the best brand in the air-conditioning/heating category.

* Survey of the German trade magazines *lastauto omnibus* (truck and bus), *transaktuell* and *Fernfahrer* (long-haul driver), 2014



When a good working climate also lowers costs. That's Feel the Drive.



Trucks are mobile workplaces, in which comfort has a direct impact on safety. Not just the driver, but your balance sheet will feel the positive effects of our heating and air-conditioning systems. You save fuel thanks to less engine idling time and a more focused driving style.

Our comprehensive climate expertise helps you reduce costly engine idling times. As it is, many countries have already prohibited these during rest stops. That's why the Webasto non-idling solutions generate and maintain a pleasant temperature in the driver's cab – totally independent of the engine. Thereby fuel consumption drops and – as a positive side effect – so do the emission of pollutants.

Deftly putting the brakes on costs

This way, your driving is not only cost-efficient, but conscientious. On average, an idling truck engine consumes three liters of fuel.

And that figure is hourly. What's more, there's also increased wear and tear that affects both the engine and the auxiliary equipment. These are costs that Webasto helps you save.

Breaks that relax – driving that is focused

Sit back, relax and enjoy the drive. Just like your drivers. Following a break with pleasant temperatures and without annoying engine noise, they are especially rejuvenated as they get back on the road. The driver can concentrate and drives with more control and awareness.

On the road with knowhow

At Webasto, our focal point is our customers and their individual requirements. And we've been doing that for over 110 years. To accomplish this, we seek innovative solutions in all areas – both in original equipment and for retrofitting. Aside from our specific knowledge of the market, what helps us do this is the knowhow that we have acquired as one of the 100 leading suppliers to the automotive and commercial vehicle industries. As a family-owned company with over 50 locations worldwide, we aspire to exceed expectations by always offering a bit more. That's what drives us. That is our motivation. And that's Feel the Drive.

When customized air-conditioning solutions set standards.

Heating and cooling solutions from one source. That's our strong point. And as the market leader, we have been applying it for our customers for decades. Thus, we provide you with the entire system to completely meet your requirements – with tried and tested products or customized solutions.

The requirements of an air-conditioning system can vary greatly. We offer a solution for every conceivable application, allowing you to draw on proven products or request completely individualized concepts. Does your system require a specific interface, or do you have special requirements for the installation space? We will develop and create a fully integrated solution just for you. We also have the knowhow for exceptional challenges in terms of assembly or planned operating temperature. In everything we do, our one goal is: To support you as the perfect systems and development partner.

Our promise

We are there for you from the initial concept. And we support you through all stages from design, development and validation all the way to after-sales. That is our promise. One that we can give you as a global systems supplier. That is a promise you can rely on.



When restorative breaks make driving more efficient.

Fuel consumption is one of the greatest cost drivers in the transportation business. Fuel-efficient engines alone cannot possible compensate for the huge spikes in fuel prices. However, a focused driver and a parking heater equipped with engine-off technology can make a significant contribution to cost reduction.

Concentration saves fuel

It is a well-known fact that fatigue at the wheel frequently leads to accidents. Mercedes-Benz wanted to determine whether there was a correlation between the driver's ability to concentrate and fuel consumption. Do well-rested drivers drive more economically? The conclusion of the study: Yes. Using real-life conditions, the study explored the influence of a short nap on driving performance. For example, the tests compared how often fatigued and well-rested drivers used the service brake or

the adaptive cruise control. The results: The braking behavior differs significantly – to the advantage of the rested truck drivers. Their trucks consume less fuel. In a comparison, that can amount to one liter of fuel per 100 km.* The reason: only those who can fully concentrate are capable of driving their vehicles with the necessary control and awareness required to avoid unnecessary braking and acceleration.

*Source: Mercedes-Benz TopFit trucker study, 2010



Engine off and relax

Our engine-off technology ensures revitalizing breaks and downtime without engine noise – and without fuel consumption. It heats by using the residual heat of the powered down engine. So even on long breaks, thanks to the parking heater, the temperature

of the engine and the cabin remain constant. Webasto parking coolers also ensure pleasant temperatures without the engine running.



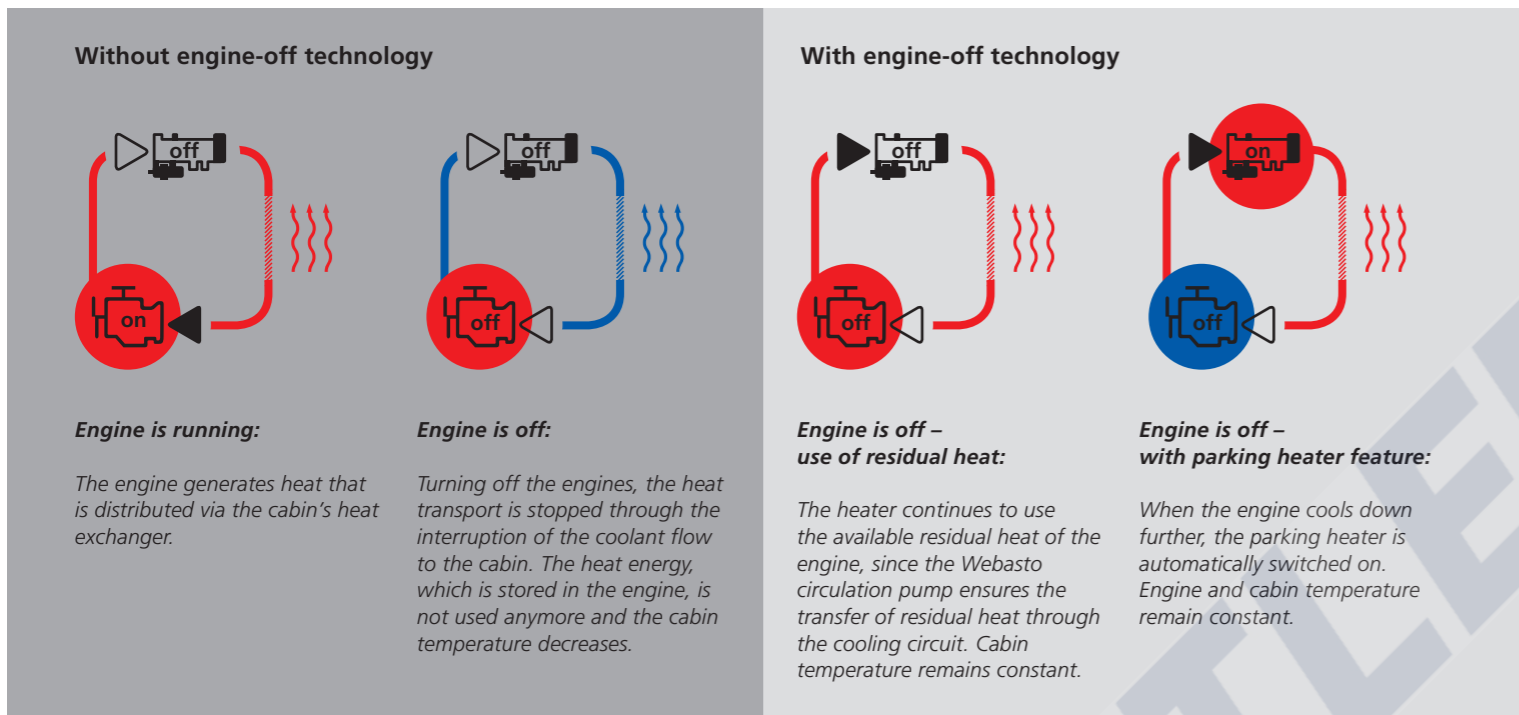
How great is the potential for savings in your vehicle? Our calculator on the Webasto website figures it out for you.

When the engine is off and the cabin has the right temperature.

Ideal for short downtimes as well as long breaks: With the Webasto engine-off technology your cabin always maintains the perfect temperature – and that with the motor switched off. Thus, right after your drive, the Webasto solution utilizes the residual heat of the engine to heat the cabin. Later the parking heater is automatically activated.

- Your benefits:**
- No unnecessary engine idling
 - The perfect cabin temperature at all times, without the engine running
 - Reduction of fuel costs
 - Efficient utilization of engine's residual heat

This is how the engine-off technology works:

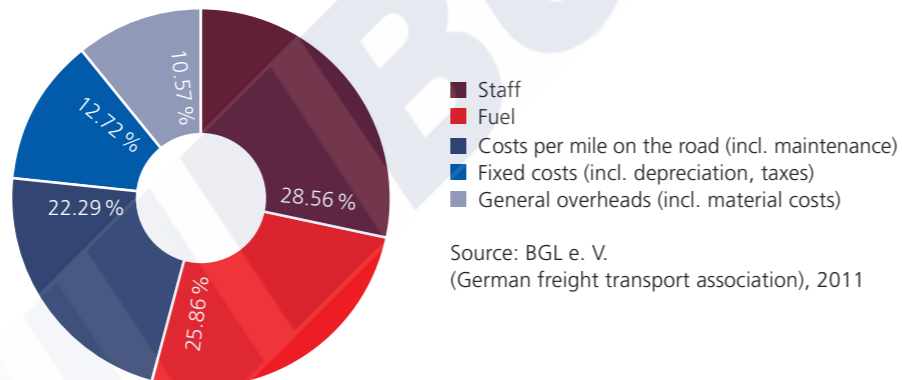


Engine
 Water heater
 Pump on
 Pump off
 Cabin interior heat exchange system

Fuel is the key cost driver

The largest cost pools

Expenditures for fuel constitute the second largest cost factor in the industry. A fact that is unlikely to change in the future. Therefore, savings in this area really add up.



Source: BGL e. V. (German freight transport association), 2011

The nearby chart illustrates the cost breakdown, using Germany as an example.



When the parking heater does its job and keeps out the cold.

With us you have a choice of air or water heaters, with the systems differing both in their functions and performance categories. What they do have in common: They are easy to operate and, depending on the customer's preferences, are available in a variety of models. The burner technology that we have developed also ensures that Webasto heaters operate in a very fuel-efficient manner. Aside from the driver's cab, they also heat the cargo space. On the following pages you will determine precisely what the individual strong points of the air and water heaters are.

Smart at the start

Our ThermoCall App ensures ahead of time that your Webasto parking heater will provide comfort when it's switched on. You can simply set the temperature and service time with the Smartphone App. Heating and ventilation at the touch of a button – and what's more, it all happens no matter where the user is located.



ThermoCall App

Webasto air and water heating systems are

- Efficient: They save resources and costs
- Compact: Space-saving installation in any vehicle
- Flexible: Option for interior and exterior installation



When the engine is turned off and the air heater turns on.

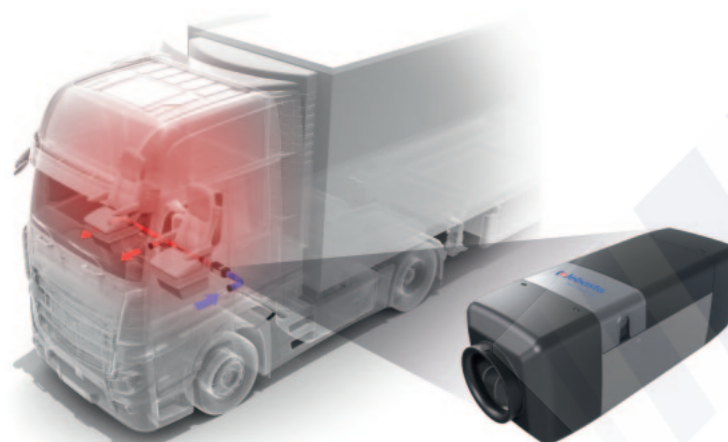
Quickly, efficiently and evenly, is how Air Top air heaters warm up your vehicle, even when it's still parked. The motto is: Get inside and feel good. And that also goes for rest periods. Thanks to air heating, you can enjoy these entirely without engine noise. The positive side-effects: Because the engine is turned off, fuel consumption and operating costs go down.

By offering heating output from 2.0 kW to 5.5 kW, we can provide you with just the right system for your requirements. The integrated altitude sensor guarantees that even at low air pressure in high-altitude locations – and the resulting low oxygen concentration – the heaters always deliver optimum heating performance.

Your benefits:

- Particularly even heat-up process with progressive performance regulation
- Low-noise operation
- Stable constant temperature
- Low power consumption
- Automatic altitude mode for Air Top Evo devices

	Air Top 2000 ST	Air Top Evo 40	Air Top Evo 55
Heating capacity, control range/boost (kW)	0.9 – 2.0	1.5 – 3.5/4.0	1.5 – 5.0/5.5
Nominal voltage (V)	12/24	12/24	12/24



Air heating: Example of integration and air distribution

When not only fuel costs but emissions are reduced.

Twice as economical. That's how to describe the Webasto Thermo water heaters. For they heat not only the driver's cab, but the entirety of the vehicle's own coolant circuit. The engine is already preheated when the trip begins, so you can avoid cold starts. Moreover, fuel consumption and pollutant emissions are reduced.

And the interior is already heated to a comfortable temperature before the drive begins. The cabin is preheated to a feel-good temperature level using a heat exchanger and fan. Here too, the integrated altitude sensor ensures optimum heating performance – even at high altitudes when the air pressure and oxygen concentration quickly decline. So you're always on the road both cost-effectively and comfortably.

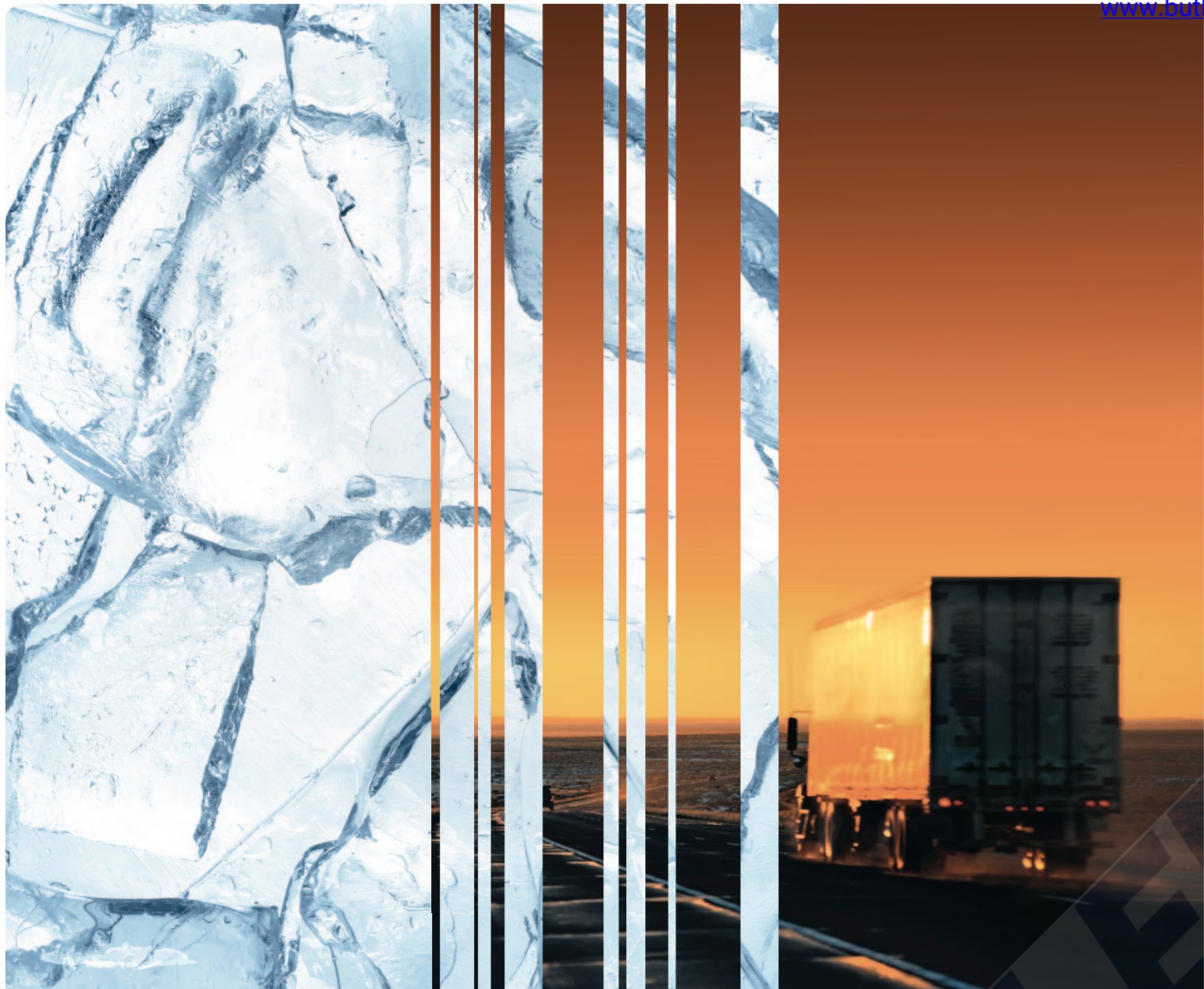
Your benefits:

- The engine is already at operating temperature before the drive begins
- Consistent, individually adjustable temperature
- Efficient use of residual heat
- Automatic altitude mode

	Thermo Pro 50 Eco	Thermo Pro 90
Heating capacity, part load/full load/boost (kW)	2.5/5	1.8/7.6/9.1
Nominal voltage (V)	24	12/24



Water heating: Example of integration



Cool Top Vario

Air-conditioning technology must function reliably. That's why, with the Cool Top Vario we also focus on premium components and durable technology.

High performance at low consumption

Featuring 1,000 Watts, our Cool Top Vario parking cooler delivers a reliable high cooling output. And it does that, depending on battery capacity, exterior temperature and solar radiation, for up to ten hours at a time. In this way the driver can also enjoy longer rest periods at the optimum temperature. The low-voltage protection ensures that the battery remains operational. And thanks to the ECO mode, power consumption remains exceptionally low.

Comfort from a nozzle

The air conditioning is operated via a three-way ventilation system. Thanks to patented comfort ventilation, air is evenly distributed in the driver's cab, without annoying drafts. And the clear, easy to read display contributes to the comfort, making the system very easy to monitor and operate.

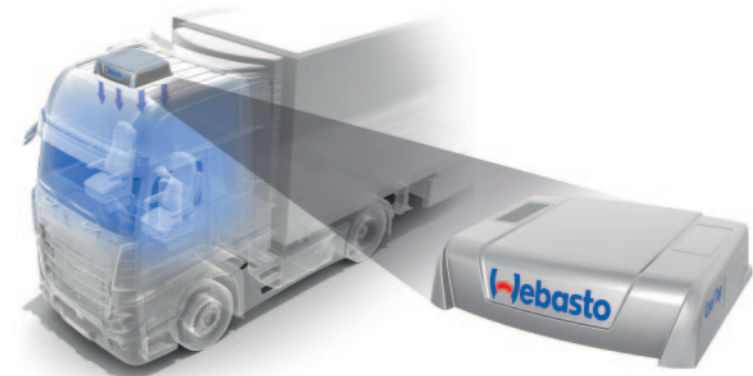
Quality in installation

The installation is designed to be just as comfortable and convenient. Thus, thanks to vehicle-specific installation kits, the Cool Top Vario can be quickly and cost-effectively retrofitted in all common truck models.

Your benefits:

- High-quality and powerful parking cooler system with high energy efficiency
- Reliable operation with long service life
- Air conditioning without fuel consumption, due to electrically operated system
- Patented comfort airflow

	Cool Top Vario 10 E
Nominal cooling capacity (kW)	1
Nominal voltage (V)	24



Example of integration of a parking cooler

When our air-conditioning technology makes your work easier. That's Feel the Drive.

Sitting in an air-conditioned driver's cab when it's hot outside – that not only feels good, it ensures that you keep a cool head. And on long-distance routes that's essential. Webasto parking cooler solutions provide the right temperatures in the cabin – while stationary, without the engine running.

Our solutions have proved their worth

You are fully aware of your requirements for optimum air conditioning. And we already have the solution available. We offer you top-notch products with high-grade

components that for over a decade now have already proved their merit in automotive serial production.

There's a system to our quality

Whether it's original equipment or a system for retrofitting, a proven standard product or an individually assembled customized solution: What you get from Webasto is always the highest quality. And that is based on experience. With the Cool Top Vario our program now also includes a parking cooler for retrofitting.

» Workplace on the road



He's on the road every day with 440 hp: Uwe Rengier is a professional driver at the Betz Trucking Company in Reutlingen. He covers about 120,000 km/75,000 miles per year with his 40-ton truck. The combination of the Webasto parking heater and parking cooler ensures that he enjoys extra safety and comfort in his "workplace on the road".

How do the parking heater and parking cooler complement one another in your daily life as a professional truck driver?

Today, tours of duty over several days without a parking heater would be unthinkable. The regulations governing legally prescribed rest periods force us to take regular breaks that must be adhered to at any time of day and night. In cold regions and in winter the parking heater keeps the driver's cab warm without the use of the vehicle's engine, therefore also without consuming additional fuel and without producing CO₂ emissions. The perfect complement to this is the parking cooler that operates independently of the engine. Energy is supplied via

the vehicle battery and thus can keep cooling for up to ten hours. This allows rejuvenating rest periods in the truck without running the engine, even at high temperatures.

Do you also use the parking cooler during daytime activity?

Yes. In the summer, primarily during waiting periods as well as while loading and unloading. To operate the various devices, for example, the pumps, we need engine power. If the engine is running, the driver's cab heats up even more – on hot days that can reach 50 °C / 122 °F. In such instances cooling is a welcome relief!

What is especially distinctive about the Webasto Cool Top Vario parking cooler?

Uncomplicated operation and a high level of climate comfort. The system not only cools, it also regulates the humidity. A good workplace climate, literally, in my truck, ensures optimum working conditions for us as drivers and thus also more safety on the road.



When Feel the Drive means always seeking to do things just a bit better.

For 110 years, we have had only one subject in mind: You. What drives us is to be capable of offering you precisely the solution that you need. Does this involve a system perfectly custom-tailored to your requirements? Or do you need a retrofit solution that can be easily integrated into your vehicle? We deliver both.

Individually developed

Are you looking for the perfect air-conditioning solution for your application? We would be pleased to take on your project. From the analysis of requirements to development and validation all the way to production, we guide you step by step as you get closer to exactly the product you want. Of course, our on-site experts work with you in close cooperation in every stage.

Easily installed

And when it comes to retrofitting, you're in the right company. Ensuring comfort doesn't begin when you use our products. It already starts during installation. Everything from the molded hose to the mounting brackets is synchronized and fits easily. The installation instructions describe the retrofitting specifically for your vehicle type.

From our home in Gilching – at home worldwide

As a regionally rooted family enterprise, being close to our customers is particularly important to us. Our specialists on the ground in 43 countries see to that by providing competent consulting, direct project coordination, without detours, and reliable spare parts management. Because we don't just want to meet your expectations, we want to exceed them.

The Webasto quality factor

All our products are subjected to extensive testing, with subsequent production adhering to the specifications of automotive standards. We also provide expert support with the integration of your application solution. Thus, we build specific applications components as needed and perform a prototype installation. As you can see, we do all it takes to deliver exactly the products that you need. With the quality that you expect.

Step by Step to your customized solution.



Phase 1: Definition of customer requirements.

In a first step we define your specific requirements and work together with you to determine what solution is right for you.



Phase 3: Design

Once the solution has been established, we develop both the mechanical and the thermodynamic design.



Phase 5: Documentation

Critical documents such as user manuals or installation instructions are created.



Phase 7: in actual use

Now it's time for the Webasto solution to really kick off. Even after completion of the project, we continue to look after you with personalized service.



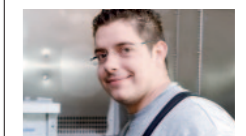
Phase 2: Concept development and simulation

Various simulations help us in our development. Thus, for example, we simulate the design of air ducts or the temperature distribution within the vehicle.



Phase 4: Analyses and tests

From the analysis to EMC tests as far as vibration tests: We put the system to the acid test. And our products have to repeatedly prove their merit in the Webasto climate chamber.



Phase 6: Production/ installation

After all instructions have been drawn up, the fully developed system can be used in actual practice. You get the support of our experts during installation as well as commissioning.

When the business utility of all types of commercial vehicles can be enhanced thanks to innovative climate systems, that's Feel the Drive.

Vehicles change the world. And Webasto is changing vehicles and their world. Our solutions help trucks reach their destinations more economically. Buses and trains are more comfortable. Special and commercial vehicles are more efficient. Whether they are original parts or parts for retrofitting, our products provide sustainable solutions – that benefit the environment as well as companies.

Our dedicated people support you all around the world. Wherever commercial vehicles are planned, produced, redesigned or repaired, we are there for you. Professional, committed and helpful, we see to it that you, our customers, reach your destinations comfortably and efficiently. This is what drives us as a company and inspires our work.

And that is what we call Feel the Drive.



Webasto has developed innovative heating and air-conditioning solutions for the following markets.



Trucks
Efficient heating and compact air-conditioning systems maintain exactly the right temperature in the cabin interior, the engine compartment and the cargo area.



Light-duty vehicles
We provide heating and air-conditioning systems to match your individual requirements.



Buses
Our air-conditioning systems make driving more pleasant and safer.



Rail
Air-conditioning systems for passenger compartments and drivers' cabins, boosting efficiency and comfort the moment the vehicle enters operation.



Off-highway
We supply sturdy and efficient heating and air-conditioning systems for a pleasant working environment, whatever the weather.



Defense
We provide special heating and air-conditioning systems to ensure vehicles are always ready for action.



Special vehicles
Our solutions make your job more comfortable, safer and more profitable.