Air conditioning competence for buses

COOLING - HEATING - VENTILATION

BEST BUS CLIMATE

BEST-BUS-CLIMATE.COM

Valeo

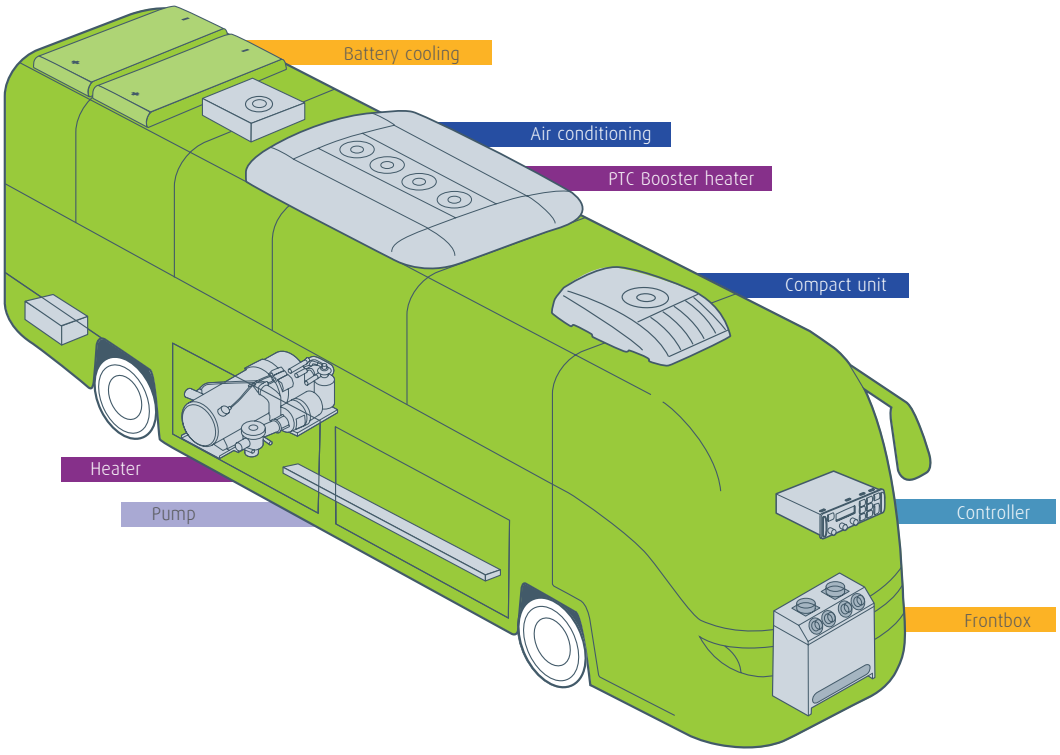
FEW DEVOTE SO MUCH EFFORT TO WHAT AMOUNTS TO NO MORE THAN AIR.

COOLING – HEATING – VENTILATION, WE MANAGE IT ALL!

Buses are conquering the world. They cross deserts, battle the adverse conditions in arctic regions and toil on scheduled routes through megacities on all continents. Nowhere are the demands on ventilation and air conditioning more exacting than in the bus. This is where the technical and market knowledge that flows into all our products – from intelligent controls to glass roof hatches – comes into play. And the Valeo Thermal Bus reliably offers this at all its locations all over the world. We focus our commitment in the field of air conditioning and ventilation systems exclusively on the bus business.

Rather than limiting ourselves to the development of individual components, we place emphasis on the integration and interplay of innovative air conditioning components, including newly developed control software, including for the strongly growing market for electronic drives. We call it “Entelligence”, currently the best solution for modern eBus climate.

Cooling, heating and ventilation: we’ve been managing it all for you, for many years.



Aluminium comprises 98% of metals used in the cooling circuit.

THE HIGH-TECH CROWN: TOP EFFICIENCY IN EVERY SECTOR

To anyone who knows anything about cooling, it's not just a matter of generating cold, but creating a feeling of well-being and safety as well. In an enclosed mobile space as large as a bus, an extremely wide range of temperature conditions can be felt at different seats. Even more diverse are the exterior contours of a bus.

That's why we develop almost individually tailored cooling concepts. Whether powerful and robust large aggregates for extreme conditions, stringent technical requirements or functionally-oriented units for growing markets outside Europe, we have the right solution. To us, cooling means not only generating cold.
A correctly temperature-controlled bus is, after all, the crowning finish for driver and passengers.

REVO family: the right product for every requirement – worldwide.

REVO-E Global HeatPump

THE BIG ONES

They deliver strong performance as the weight decreases: our top models of the REVO family. Radically reduced and intelligently assembled components achieve hitherto unrivalled low LCC in this class. Rigid plastic is precisely crafted for the consistent lightweight design concept and about 98% of all refrigerant-carrying components are nowadays made of the extremely lightweight material aluminium.
The modular REVO system is also available in a global version, geared to worldwide needs. With the REVO-E and REVO-E Global our completely new roof-mounted concept for hybrid, electro and trolley buses comprises a broad range of all-electric rooftop units. Within the REVO-E Global we even offer our customers a hot-country version for outside temperatures of up to 57°C.

Production and development close to the local market: e.g. at the plant in Neubrandenburg.

In both REVO-E families added comfort is provided by a heat pump version or optional battery cooling. Due to their hermetically sealed refrigerant circuit, they are virtually maintenance-free.

THE COMPACT ONES

Our compact A/C units such as the ultra-light and easily retrofitted Minisphere or the Citysphere with the windchill effect ensure comfort in city, mini or midi buses. In both cases the service and maintenance costs are extremely low, resulting in significantly reduced life cycle costs.

THE SPECIAL ONES

We also provide special air conditioning concepts for special requirements. With our water circuit heated and cooled Aquasphere, for example, we can create a cosy atmosphere for ultimate relaxation. Its design harmonises with the bus contours, its weight can be individually distributed and it can be operated with fresh, mixed and re-circulated air. Designed as a split type unit, it is already filled with refrigerant and achieves cooling capacities from 17 to 54 kW. These split units are always customised solutions which can only be realised in close cooperation with the manufacturers.

Citysphere: compact performance with intelligent air distribution.

Thermo plus: innovative heating technology, because the future should be clean.

THE THERMO SERIES - BEST PERFORMANCE IN EVERY CLASS

Our roots lie in the manufacture of bus heating systems – that is quite evident. The Thermo series of heaters has been developed, tested and produced at Gilching and Neubrandenburg for the past 60 years. Hard to believe that there's still something new to discover! But the standards of well-being and environmental compatibility are constantly increasing, and thus the quality of our heaters.

We are proud to present the new generations of powerful and eco-friendly Thermo series which caters for the needs of a wide variety of markets and customers. Or the Thermo G heater, specially developed for gas-powered buses, which makes us the only manufacturer worldwide so far to satisfy this requirement profile.

Thermo E: State-of-the-art-system.

Thermo G: heating with gas.

THE MODERN ONES

The innovative heating technology in the Thermo S is our response to future demands in the bus. Our development work was focused on environmental compatibility, low LC costs and increased efficiency, coupled with top service and maintenance friendliness. The Thermo S is capable of fast data retrieval via the Thermo test diagnosis and is also compatible with OE diagnostic tools. With five power stages from 16 to 40 kW and long service life, the Thermo S is rightly our top model and is also suitable for operation with alternative fuels.

THE SPECIAL ONES

Growing demands for preserving the environment are boosting the trend towards electric and gas-powered buses. As the world's only manufacturer of gas heaters for buses, we have succeeded in convincing our customers with the development of the Thermo G.

For thermal management in hybrid, electro, hydrogen and trolley buses Valeo has introduced the all-electric Thermo AC/DC heater. This heater – powered either by direct (600 VDC) or alternating current (400 VAC) – is our answer to the drives of the future.

In the Thermo H hybrid heater the advantages of both forms of energy (electricity and diesel) are even combined in one unit. Prior to setting off, the vehicle can be preheated without emissions and the booster heating switched on at low outside temperatures while on the road, to avoid unnecessary strain on the storage capacity of the traction battery. The key component here is the heat exchanger: an E-control head or burner head is mounted on each side of the latter.

THE ROBUST ONES

The Thermo E was developed primarily for markets in which there is an emphasis on power, robustness and economy. It was the product of many years of experience with predecessor models. The 20 and 32 kW versions cater for the energy requirements of all applications and their optimized heat transmission achieves improved efficiency with low fuel consumption. Extremely simple maintenance by blink code diagnosis makes the Thermo E a reliable partner.

Modern heating technology: decades of experience at the Neubrandenburg plant.
Shown here: assembly of a Thermo AC/DC.

The electric SPump circulation pump: not only for bus heating.

STRONG HEART FOR GOOD CIRCULATION

In the development of innovative heating technology for buses, many years ago we decided to manufacture the necessary pumps in our own factory. Optimum performance, compact design and the highest level of reliability are the core requirements placed on modern circulation pumps. We thus embarked on the development of a whole family of modern pumps for worldwide requirements.

The new SPump pump generation is even shorter, lighter and quieter. This is the first Valeo pump with a watertight EC motor (IP6K9K tested) – brushless and magnetically coupled. New versions with PWM and CAN feature variable speed control. The integral control unit is used for additional functions, opening up completely new mounting locations and applications, e.g. for cooling hybrid components.

Aquavent 6000C / 6000SC: Magnetically coupled and electrically powered.

Aquavent Scholastic for school buses.

Modular and flexible: the aluminium frontbox ensures safety and comfort in the driver's section.

PARTS MAKE UP THE BIG PICTURE

Valeo Thermal Bus places special emphasis on the development of components – whether in-house or externally. Only then can Valeo's high quality standard be maintained. Heat exchangers, fans and certain compressors are developed exclusively for Valeo and assembled by its own experts to create customised solutions. One example is the new aluminium frontbox for air conditioning of the driver's section. It provides considerably more flexibility due to its modular design, variable connections and diverse applications, and can be installed either vertically or horizontally. Another is the rear-mounted powerpack for hot countries where maximum demands are made on the cooling capacity to supplement the rooftop A/C unit. Up to 50 kW are thus available, e.g. in double-decker buses in extreme climatic conditions.

Sidewall heater: rapid heat-up with hot air.

Powerpack integrated at the rear end delivers a cooling capacity of up to 50 kW.

Eleon: safety and comfort in new dimensions.

FRESH AIR FOR GOOD BUS CLIMATE

The safety aspect is of paramount importance when it comes to roof hatches. As emergency exits they can save lives in the bus. We, the market leader in roof hatches, are well aware of the important supporting functions fulfilled by hatches in the “bus climate system” and the role they play in the well-being of the passengers and driver. With optimum air circulation and variable positions when the vehicle is at a standstill or on the road, hatches quickly and effectively provide fresh air, far away from the dust on the road. They create real synergies, e.g. with our intelligent controls in combination with climate systems.

Roof hatches are simple, durable and virtually maintenance-free elements of the bus climate which can, among other things, simply eject the stale air by means of integrated fans when the bus is at a standstill. They effectively provide for the well-being of passengers, ensure that the driver is fatigue-free and make a significant contribution to safety in bus travel.

Premium roof hatch: highest level of safety and comfort.

Modus: the right product for every requirement from the modular system.

ELEON ROOF HATCH

The completely new generation of "Eleon" roof hatches will satisfy all future requirements placed on modern ventilation and emergency escape systems in conformance with ECE R107 R06. The hatch family incorporates a high degree of modularity, i.e. the hatches will be available with flexible outside dimensions, in glass or plastic, with either manual or electric operation as well as an intelligent control concept and other comfort features.

MODUS ROOF HATCH

Those seeking simple, reliable and economic solutions for roof hatches will find them in our Modus series with a frame and cover made of glass or plastic. Whether City, Coach, Comfort or the new, simple-to-install Cool with its integral fan (200 m^3/h): the Modus series easily provides an instant source of fresh air. Modus likewise complies with all the requirements of ECE R107 R06.

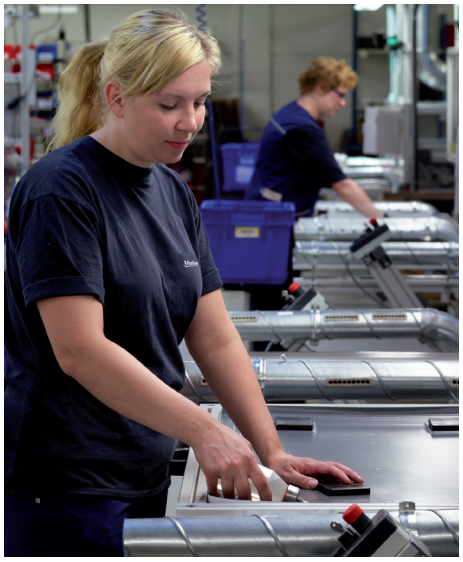
SMART ROOF HATCH

The SMART hatch is the optimum emergency exit and ventilation solution for touring, transit and school buses. The product is SMART in all respects: lightweight, with excellent ventilation capacity, simple to install, with the best and most reliable emergency exit mechanism, it satisfies all requirements of the North American market.

PREMIUM ROOF HATCH

The "Premium" bus top was designed mainly for the central European market with its high demands on quality and long life. It is electrically driven by integral electronics, has a particularly large aperture and is almost maintenance-free. Rain and theft sensors are optionally available.

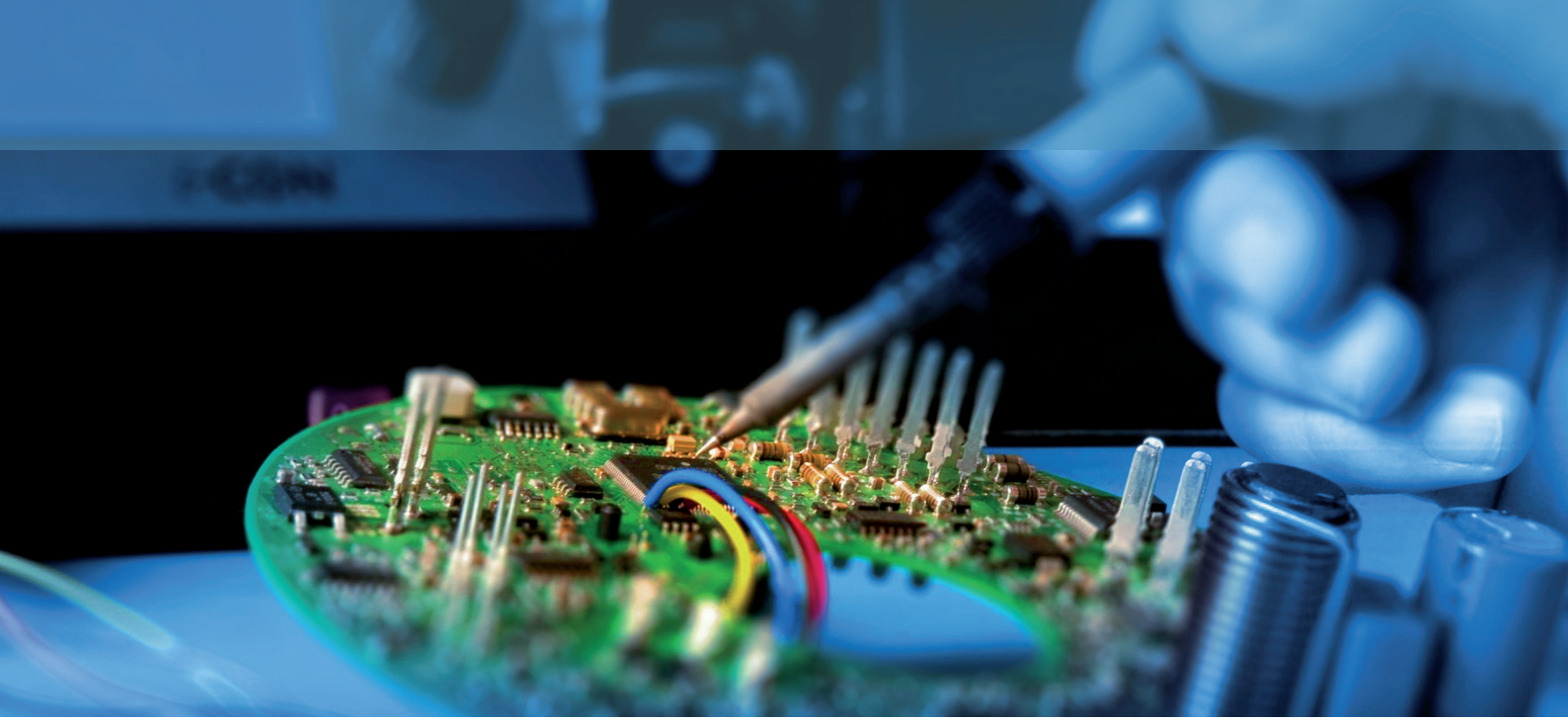
The SMART hatch with a smart fit.



Quality from Finland: roof hatch production for safety and reliability.

VENTILATORS AND INTEGRAL FANS

The simplest solution is frequently the most obvious. Whether with built-in rooftop ventilators or fans integrated into the hatches: simple ventilation via the roof creates a noticeable moderation of temperature prior to the start of a journey, supports the air conditioning effect and protects the engine and the environment by less idling time and faster cooling of the interior.



Sophisticated thermal management for modern bus air conditioning.

WE MANAGE IT

When it's a matter of regulating all components for an optimum bus climate, we are the right partner. The efficient and error-free management of component hardware is directly attributable to the intelligence of the software. A multitude of highly complex components are incorporated in a climate control of the future, by which the operating status of the vehicle is read out and evaluated. This sophisticated form of thermal management is the most important task of modern bus air conditioning for our customers and ourselves – today and in the future.

Individual climate control: an indulgence for the passenger.

SC 1000: climate control for exacting demands.

Valeo Controller: SC 400 (above) und SC 600.

CLIMATE CONTROL

The challenge of tomorrow lies in the intelligent networking of HVAC components in the bus. We recognised this at an early stage and consciously invested in the development of electronics.
A broad portfolio has emerged over the past few years – developed by our own electronics specialists in the form of hardware, software and mechanical design, and adapted to the diverse market and vehicle requirements. Examples are the SC 1000 climate control which satisfies the highest demands and ensures the best climate in the driver's section and passenger compartment, and the SC 400 and SC 600 control units for regulating the cooling and/or heating in the passenger compartment. Optimally dovetailed with the Valeo Bus air conditioning components, they are particularly cost-efficient. Further examples of efficient climate management in the bus are the LIN-bus based hatch control and CAN-based diagnosis for the Thermo S heater.

Valeo Body Interface with separate display solution.

BODY INTERFACE

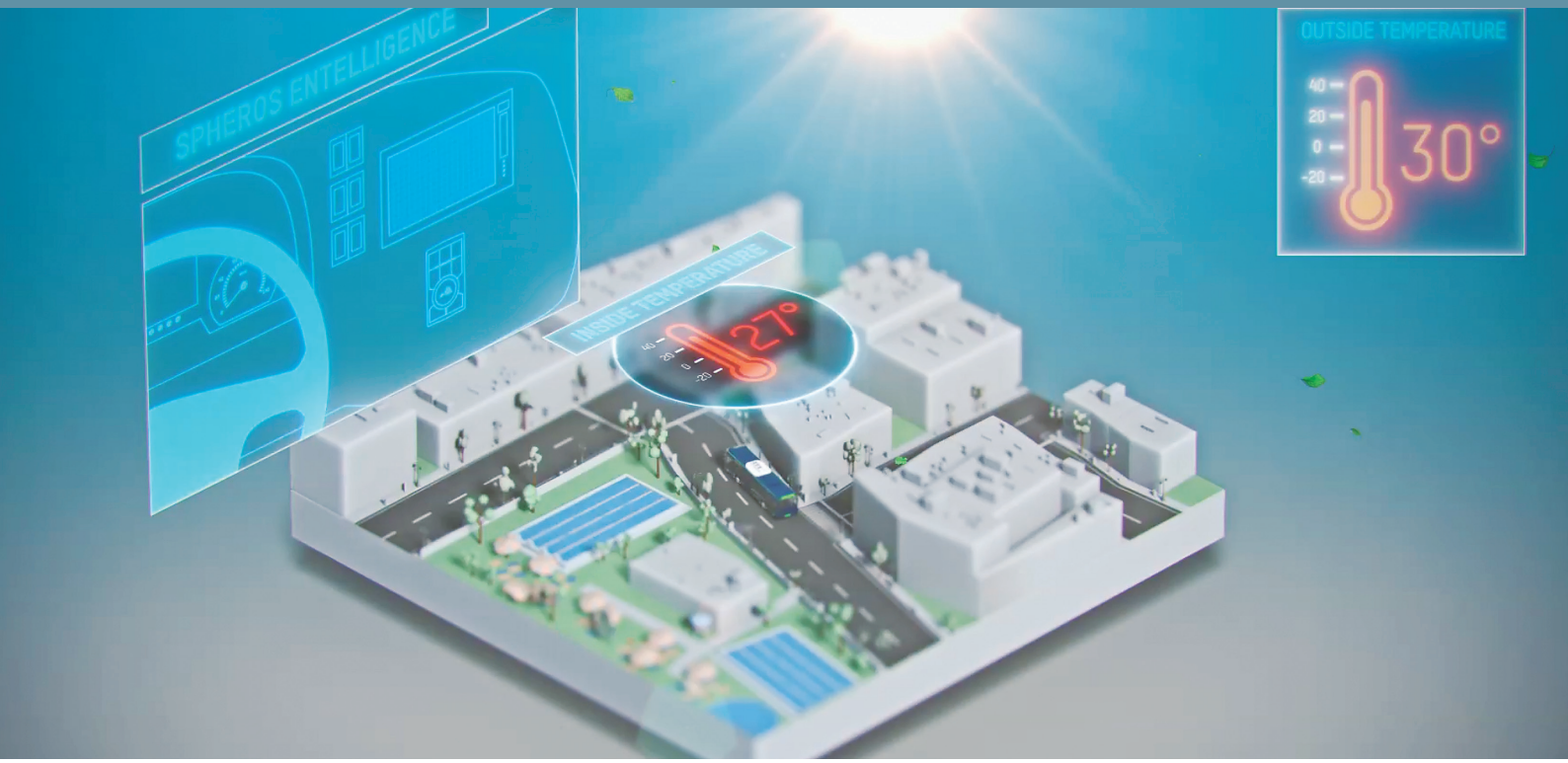
The constantly growing number of control elements in a vehicle cannot be catered for by simply increasing the number of control switches. The only solution is central and intuitive control of heating, air conditioning, ambient air, lighting and more.

The core element in the modular Body Interface Concept is an intelligent control sub-unit. Display elements are already existing displays in the bus or the Valeo Touch Display. Technology for your bus, as we know it from luxury cars!

BODY ELECTRONIC COMPONENTS

With the Body Electronic Components division we are ideally equipped for the global challenge with electronic and control components. Our portfolio encompasses components drawn from the fields of safety devices, infotainment and passenger information systems.

Valeo Touch Display



"*E*ntelligence" - the world's best solution for modern eBus climate.

"*E*NTELLIGENCE" MAKES THE DISTANCE

Valeo presents "*E*ntelligence", the world's best solution for modern eBus climate. It is based on innovative air conditioning components, a newly developed control software which intelligently activates the component with the highest level of efficiency, and the "Valeo Touch Display", the first interface for analytical values and system feedback.

REVO-E

Citysphere

AIR CONDITIONING EXPERTISE IN THE ELECTROBUS

INCREASED RANGE

Due to the low energy density of today's traction batteries and the limited amount of useable exhaust heat in hybrid and electrobuses, the energy supply for vehicle air conditioning still constitutes a key challenge. There is a demand for innovative air conditioning and heating solutions which make best use of the limited energy resources, thus extending the range of the bus.

BEST USE OF ENERGY RESOURCES

Newly developed control software enables diverse Valeo Bus components to be interlinked and controlled. Depending on the environmental conditions (primarily temperature), battery status and geographical position, the control system always selects the component with the maximum efficiency.

Battery cooling: E-Cooler

Energy requirements are estimated in advance by the system. The communication is mapped via a touch display. For the first time this offers an interface for analytical values and feedback to the user.

Thermo H

Intelligent control sub-unit with touch display.

Technology centre at the Gilching facility in Germany.

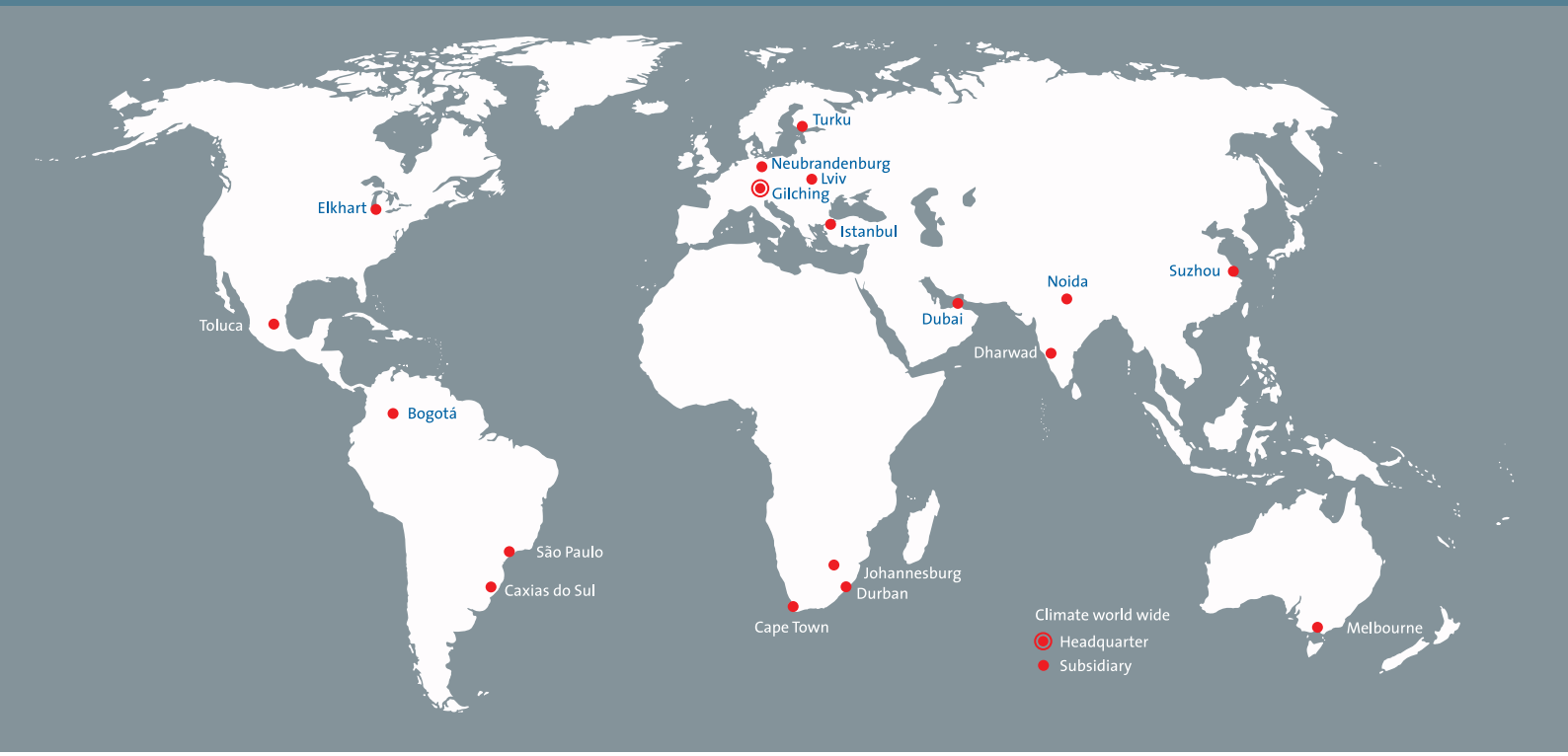
ROOTS IN GERMANY
COLLEAGUES ALL OVER THE WORLD

Historically and geographically we cannot deny our origins. On the contrary: the competence, quality and flexibility from over 60 years of experience is mirrored today in the design, development and production of heating, ventilation and air conditioning systems for buses. We know where we came from, and we know where we are heading.

As the Thermal Bus Team we have been part of the Valeo Group since April 2016. Rapid growth within the market, ongoing development of the existing product lines and reorientation in new product groups and fields of technology make increasing demands on the Gilching facility. Our new 4,600 m^2 office, laboratory and test building offers space not only for further growth in our workforce; its technical facilities also create the prerequisites for catering for the growing demands on the market and new development and customer projects.

A mobile bus climate testing laboratory for (double-decker) buses up to 20 metres long was put into operation in early 2017. Parallel to climate tests, a second lane will enable test vehicles to be equipped and retrofitted or, e.g. prepared for field trials.

BUS CLIMATE WORLDWIDE



Valeo Thermal Bus – more than 1,000 colleagues, this is our world.

EVERYWHERE OUR CUSTOMERS NEED US – WORLDWIDE

A successful blend of global and local presence enables us to guarantee proximity and excellent service to each of our customers. We can develop and manufacture each individual product at the best-suited location. Our customers thus receive individually tailored, reliable and nevertheless cost-effective solutions – European technology at local prices – and always with the customary high quality and reliability.
At any given time we are always engaged in these endeavours, somewhere in the world.

Assembling air conditioning units in Turkey.

ENVIRONMENT AND FUTURE

OUR CONTRIBUTION TO A SHARED FUTURE

As a leading developer and manufacturer of bus air conditioning systems, Valeo Thermal Bus has always taken its responsibility towards society and the environment very seriously. In particular, in the development and introduction of technologically advanced product concepts, we always place great emphasis on the aspect of sustainability.

With commitment we are working on new, resource-conserving and efficient concepts, enabling us to become even better and make a valuable contribution to a secure and worthwhile future.

See: www.best-bus-climate.com
www.valeo.com/en/sustainability/

VALEO THERMAL BUS PROVIDES
SOLUTIONS FOR BUS AIR CONDITIONING.

VALEO, ABOVE ALL WE ARE PEOPLE
WITH IDEAS, KNOWLEDGE
AND COMMITMENT FOR THE FUTURE
– WORLDWIDE.

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