

TECHNIK SERVICE NEWS Issue 02/2020

ÖPNV-Kurier



Title Story

UV Purifier:

Health shield against viruses

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UV purifier: Health shield against viruses

Valeo has developed a new, highly effective technology for air sterilisation in public service buses and touring coaches. With the aid of UV-C radiation it eliminates over 95% of all viruses – including the Corona virus – at the push of a button in a single air injection circuit.

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From the second quarter of 2021 Valeo will once again be presenting classroom training at its Neubrandenburg plant.

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Stadtwerke Münster has initiated a comprehensive hygiene concept for significantly improving the quality of the air in the vehicle interior.

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From March 2021 onwards the TM series of Valeo compressors can be purchased directly through Valeo Thermal Commercial Vehicles (TCV).

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Dear Readers,

After a challenging 2020 we now look optimistically to the coming year 2021, in which the comprehensive supply of spare parts to our customers all over Europe will continue to be a priority. We will be strengthening the intensive cooperation with our distribution partners and focusing on the extension of our Fast-Way warehouse. As an additional building block in our portfolio, from March 2021 we will also be offering the Valeo TM series of compressors for use in buses (*More on page 14*).

The servicing of electric buses with high voltage systems is a further topic that will accompany us in the year ahead. As a system manufacturer we will be paying close attention, not only to the supply of spare parts for these systems, but also to ensuring the reliability and effectiveness of maintenance via our European distribution partners. From experience, we know that competent servicing of these systems calls for special personnel training and well-equipped workshops.

It goes without saying that we will not neglect the product side: our UV purifier, in particular, will be playing an important role in the improvement of air quality in buses (*More on page 4*). Besides this, we will be continuing to work on our product portfolio for electric air conditioning systems and overall thermal management in buses with alternative drives.

We are already looking forward to seeing you at the various bus trade fairs such as the VDV Electrobus Conference, ElekBu trade fair and Bus2Bus in Berlin and busworld in Brussels – whether it is online or in person.

In the meantime, we wish you a peaceful conclusion to the turbulent year and a good start in 2021.

We hope you enjoy reading this issue of Technik-Service-News!

A handwritten signature in black ink, appearing to read 'Christian Schilder'. The signature is fluid and cursive.

Christian Schilder

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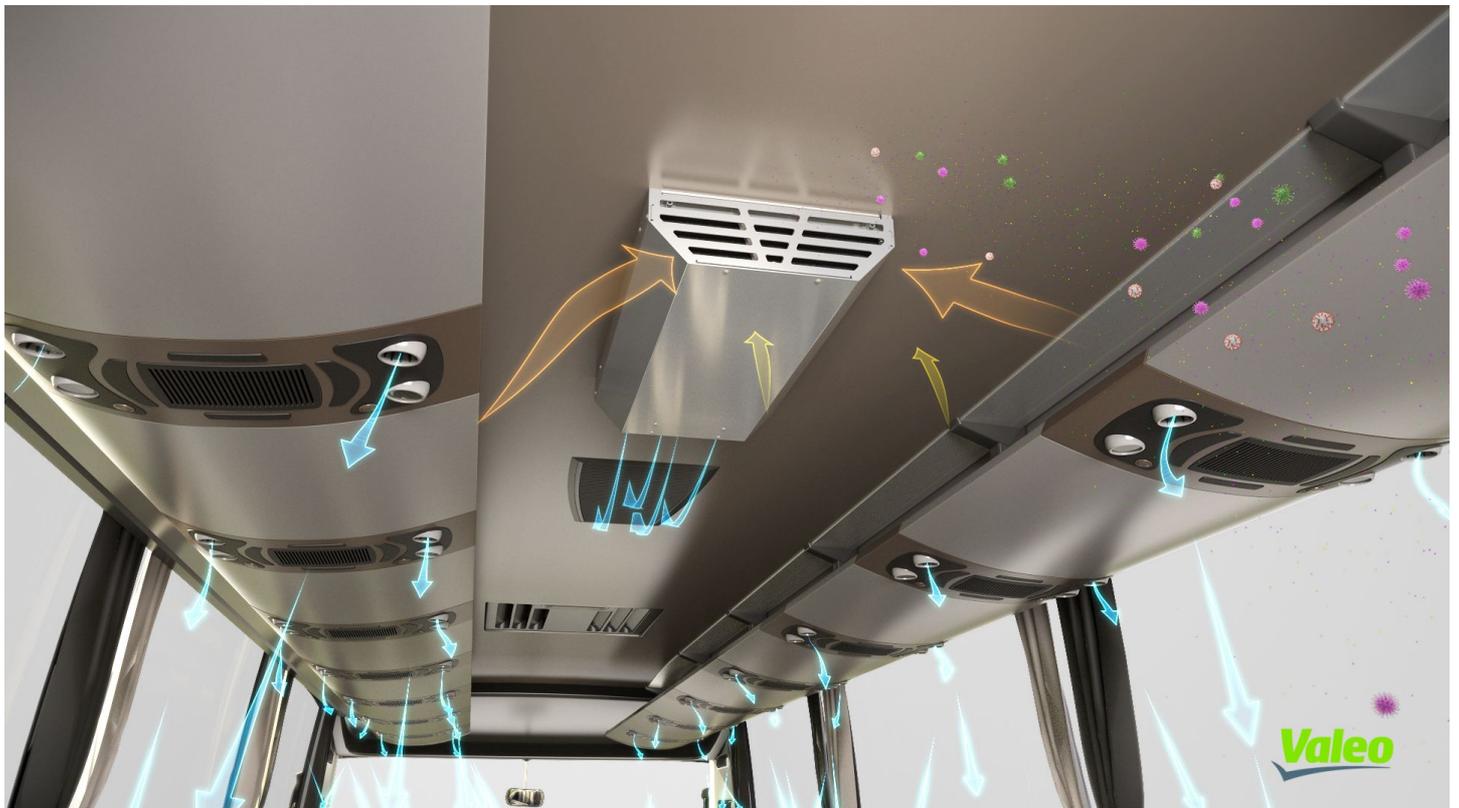
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Title Story – UV Purifier: Health shield against viruses

UV Purifier: Health shield against viruses

Valeo has developed a new highly effective technology for air sterilisation in public service buses and touring coaches. With the aid of UV-C radiation it eliminates over 95% of all viruses – including the Corona virus – at the press of a button, in a single air injection circuit. Furthermore, all types of mould, bacteria and even odours circulating in the air of the passenger compartment are rendered harmless by this efficient air purifier. The modules thus ensure effective protection of passengers over the entire journey.



Clean, virtually virus-free air is blown out. The UV purifier eliminates over 95% of all viruses.

UV-C radiation cracks COVID-19 pathogen

The core elements of the UV purifier are powerful UV lamps, enclosed in a radiation-impermeable metal housing. Exposure to short-wave ultraviolet light (UV-C light 254nm) is a proven method of disinfection by inactivating microorganisms and various viruses, including SARS-CoV-2.

With adequate exposure time and intensity, the DNA of the virus is cracked and destroyed, so that it can no longer reproduce itself. The Valeo UV purifier uses this technology to offer transit or city bus passengers maximum protection and security against the active viruses that hover in the air in the form of aerosols. In this way, it reduces the concentration of viruses in the air just as effectively as a fresh air supply.

Title Story – UV Purifier: Health shield against viruses

Viruses inactivated in less than a second

The UV purifier is activated when the vehicle starts. It permanently circulates the air sucked in through the box, disinfects it in seconds and releases it into the bus, practically as clinically clean air, free of germs and viruses. The clean air is continuously replenished during the entire journey and circulates in the passenger compartment, ensuring that the virus concentration in the bus is kept at a low level, even if infected persons are on board who are constantly breathing out viruses. For Valeo, the virus concentration in the bus interior equates to the threshold for a hospital operating theatre at the start of an operation.

UV purifier – Sits, fits and cleans the air

The UV purifier can be used in all kinds of buses worldwide – as a retrofit solution or for installation in a new vehicle. The module can be mounted completely autonomously in the passenger compartment on the bus ceiling, under the seats or in the luggage rack.

As a simple plug-and-play module, following installation it can be put into immediate service and guarantees an operational life of up to three years.

Only one UV purifier unit is required for a vehicle of 8 metres or smaller; two units are required for a 9- to 12-metre vehicle and three units for an 18-metre vehicle.

The UV purifier incorporates low-noise axial ventilators. The unit will not detract from the efficiency of an existing air conditioning system, nor from the feeling of comfort.

In the event of stoppage or malfunction, or for early detection of a defective lamp, the UV purifier has a blink code fault diagnosis. The box is completely maintenance-free, i.e. filter changing or similar becomes unnecessary.



Short-wave ultraviolet light radiation inactivates microorganisms and viruses

Title Story – UV Purifier: Health shield against viruses



The self-contained module can be mounted on the ceiling of the passenger compartment.

Scientific proof

The effectiveness of UV-C lamps has been proven by tests in connection with the SARS-CoV-2 virus. Scientific evidence of the effectiveness of these lamps has been provided by the Institute for Medical Virology of the University Clinic Frankfurt. The risk of SARS-CoV-2 infection is thus reliably and efficiently minimized by disinfecting the ambient air by means of UV-C radiation.

Safety

In addition, the UV purifier has undergone multiple safety tests such as a shock resistance test. Thick quartz glass and a special glass coating make the lamp shatter-proof and prevent glass splinters or liquids from entering the bus interior, e.g. in the event of an accident. The high-quality glass blocks all forms of ozone. The housing, specially designed to the highest safety standards, reliably prevents radiation from entering the cabin.

Training Academy – Learning from the experts



Air conditioning training sessions are to be held at the Valeo Neubrandenburg plant, starting in the second quarter of 2021

Even the best products cannot achieve their full potential if the customer does not know how to handle them properly. It is therefore a matter of particular concern to us that we pass on our expertise to all customers, service operations and workshops that work with our products on a daily basis, and keep them regularly informed about innovations.

This is the only way in which we can guarantee the proper functioning of our products and in turn the availability of vehicles on the road. In addition to the standard training sessions stated below, we can also gear tutorials to your needs and provide them for a limited number of employees at your location.

Note: Insofar as the current Corona regulations permit, from the second quarter of 2021 we are planning classroom training at the Neubrandenburg plant. (Dates for A/C training see page 9)

Basic training for heaters

- Introduction to the functions of Valeo diesel heaters
- Description of components
- Troubleshooting / diagnosis
- Repair and maintenance work

Participants:

Workshop personnel without practical experience with Valeo diesel heaters

Goal:

Participants will be well acquainted with the mode of functioning of Valeo diesel heaters, and know which components are required for proper operation or how to correct a malfunction.

Advanced training for heaters

- Differences between Valeo diesel heaters in function and components
- Diagnosis and adjustment tasks
- Application and installation
- Application components

Participants:

Workshop and service personnel with practical experience with Valeo diesel heaters who wish to brush up their knowledge or who will be working with a new heater generation in new vehicles.

Goal:

Participants will know the differences between the different heater types, their mode of functioning, components and corrective action in the event of malfunctioning.

Company News



Thermo burner head



Thermo E+ short and long version

Basic training for electric high-voltage heaters

- Introduction to the assembly of Thermo AC / Thermo DC / Thermo H high-voltage heaters
- Alternative heater types
- Function of the heaters
- Electrical integration

Participants:

Workshop and service personnel familiar with the maintenance and repair of high-voltage heaters.

Minimum requirements: Electrical specialist according to DGUV I-200-005.

Goal:

Participants will learn the basic functioning and electrical integration of Valeo high-voltage heaters, and be sensitized to the risks involved with high voltage systems.

The training sessions include a theoretical part, in which the assembly of components, mode of functioning and specific properties are demonstrated in presentations and graphics. A training room of adequate size with projector is required for the purpose.

In the practical part the modules will be discussed, together with their individual parts and interfaces to the vehicle. The system will be operated in a live session and connected as appropriate to a diagnostic system.

Company News



REVO rooftop air conditioning unit



REVO-E electric rooftop air conditioning unit

Basic training: air conditioners

- Refrigerant circuit, physical processes (pressure, temperature)
- Components in the refrigerant circuit
- Components in the air conditioning system
- Different air conditioning concepts
- Maintenance of Valeo a/c units

Participants:

Workshop personnel without practical experience with bus air conditioning systems

Goal:

Participants will be familiar with the basic functions and sequences in a refrigerant circuit and well acquainted with the various air conditioning system concepts.

Dates: **New!**

12.04. - 13.04.2021

03.05. - 04.05.2021

1st day: 12:00 pm - 06:00 pm

2nd day: 08:00 am - 12:00 pm

Where: The training session will be held at the Valeo Neubrandenburg plant and includes a guided tour of the facility.

Registration: ths.tbs-training.mailbox@valeo.com

Advanced training: air conditioners

- Error indications in a refrigerant circuit
- Evacuation and filling of a refrigerant circuit
- Repair and service work

Participants:

Workshop personnel with experience with air conditioners, who wish to be trained in new air conditioning systems.

Goal:

Participants should be able to identify malfunctions in an air conditioning system, and carry out the necessary repairs, maintenance and servicing.

Dates: **New!**

14.04. - 15.04.2021

05.05. - 06.05.2021

1st day: 12:00 pm - 06:00 pm

2nd day: 08:00 am - 12:00 pm

Where: The training session will be held at the Valeo Neubrandenburg plant and includes a guided tour of the facility.

Registration: ths.tbs-training.mailbox@valeo.com

Valeo at the International Bus Expo (IBE) 2020

The International Bus Expo (IBE) took place in Rimini from 14 to 16 October. The international bus fair, which is held every other year, is attended by vehicle manufacturers, importers and body builders, as well as suppliers of components and spare parts.



Valeo at IBE 2020

This year, the worldwide pandemic caused the cancellation of virtually all European bus events and trade fairs. Nevertheless, amid restrictions and hygiene concepts, southern Europe's biggest bus fair was able to open its doors with approx. 60 exhibitors.

Among the major attractions were more than 18 conferences and workshops in which current topics were discussed in a group of experts. Valeo was able to showcase its innovations for city buses and touring coaches, together with its long-standing distribution partner F.lli Amadio S.p.a. Besides the topic of electrification, the main focus was on methods of fighting viruses in public transport vehicles. Valeo's new UV purifier, a highly effective technology for sterilizing air in public service vehicles and touring coaches, was presented live to a wider audience.

With the aid of UV rays, the air purification system eliminates over 95% of all viruses and bacteria – including the Corona virus – in a single air injection circuit. In these difficult times, customers were impressed by this measure for making public transport safer and more attractive for drivers and passengers. In addition, electric heating concepts such as the Thermo HV, a diesel-electric combi heater, and the all-electric Thermo DC with its three performance levels, attracted considerable interest by the broad trade audience.



Electric heating systems for buses with alternative drives



Heater components

Stadtwerke Münster initiates a comprehensive hygiene concept in times of the global pandemic

The current pandemic has subjected the bus industry to new challenges in terms of infection control in the passenger compartment. As a public transport undertaking, Stadtwerke Münster has recorded a radical decrease in the number of passengers since the start of the pandemic. With the aim of improving the quality of air in buses, the municipal transport operator has implemented a comprehensive hygiene concept.



Stadtwerke Münster introduced protective measures in its 115 buses at an early stage of the pandemic

Stadtwerke Münster carries 49 million passengers annually with a total of 10 million vehicle kilometres (2019). The fleet comprises 115 of its own and a further 11 vehicles operated by partners on about 30 routes in the city of Münster.

“At the start of the pandemic we experienced an almost 80% decrease in passengers. In the summer ridership then rose to 75% of the previous year’s level. Public transport guarantees mobility for schoolchildren and commuters. Without buses,

traffic in Münster would come to a complete standstill,” says Florian Adler from corporate communications at Stadtwerke Münster.

The first protective measures were implemented by the transport operator at an early stage of the pandemic. Daily cleaning intervals were shortened and the routine intensified; ventilation of the buses while on the road was increased. In addition, Stadtwerke Münster installed protective screens for the driver’s section in consultation with DEKRA.

Besides these basic measures, in a second step the REVO air conditioning system in some buses was retrofitted with a Valeo active carbon filter. This combi filter combines the effects of particle and active carbon filtering. In addition to dust and pollen, odors and gaseous air pollutants such as nitrogen oxide, sulphur dioxide, hydrogen sulphide, ammoniac, solvents and ozone are removed from the incoming air. The effectiveness of the filter was confirmed by Valeo in a functional test in 2017.

Depending on the driving cycle and whether the fresh air flap of the bus air conditioning is open or closed, a 90 to 96% improvement in air quality in the bus interior was achieved. A second field test in 2018 together with the MVG Munich transport undertaking also confirmed a filter service life exceeding six months.

The activated carbon filters can be used for the current REVO, REVO-E and REVO HP R744 generations of air conditioning systems, as listed with all manufacturers. From December onwards a third stage is planned, in which the first vehicles of Stadtwerke Münster will be fitted with the Valeo UV purifier, a new highly efficient technology for air sterilisation in public service buses and touring coaches.



Stadtwerke Münster carries 49 m passengers annually

With the aid of UV rays this eliminates over 95% of all viruses and bacteria – including the Corona virus – in a single air injection circuit. This three-stage hygiene concept ensures that the Stadtwerke is optimally prepared to face the current challenges of the pandemic by effectively protecting passengers on board throughout their journey. *“Bus cleaning, compulsory masks and constant air exchange in the vehicle ensure the safety of passengers. And the filter systems will enable us to further improve the air quality in the bus,”* says Florian Adler.

Thermo DC: Three power classes in one heater

When it is a matter of combining existing solutions and turning a proven product into an even better one, we have indeed succeeded in making the most of a product. In this connection we refer to the Thermo DC electric heater, now available with three power classes combined in one unit.



Thermo DC with three power classes in one unit

The heater, operated on direct current (600 VDC), is 100% emission-free, i.e. no offensive odours due to exhaust and no noise. With an efficiency rate of 98% the heater can be used in hybrid, electric, hydrogen-powered and trolley buses even at outside temperatures as low as -40 °C. Now available with a heat output of 7, 14 or 20 kW, we have succeeded in combining all three power classes in one heater with an intelligent cascade connection. This controllability has the enormous advantage that it preserves the energy storage of the battery in electric vehicles, thus extending the range of the bus.

Product News

For customers that means specifically that they can precondition their vehicles at the depot using a 20 kW socket, while in operation 7 kW is often sufficient to keep the preconditioned temperature constant.

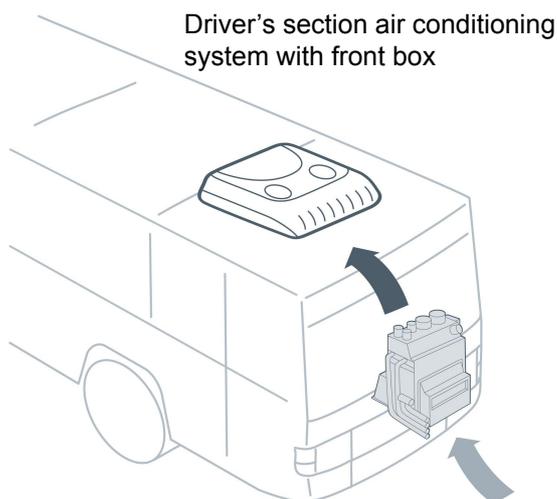
Should the thermal management of the vehicle call for more heat, e.g. due to a greater number of passengers on board, the third heating stage with 14 kW is automatically activated via a switching hysteresis function. This enables the heater to work more efficiently, as it only draws on power as needed.



Thermo DC with Aquavent 6000 SC
in a Temsa MD9 ElectricITY

Keeping a cool head in times of a global pandemic Driver's section-air conditioning system as a retrofit solution

In times of the pandemic many public transport operators are striving to minimize the risk of infection with a protective screen installed between the driver's section and passenger compartment. It is important to condition the air in this space so that the driver feels comfortable and safe. An optimum temperature substantially improves concentration and contributes to safety. Valeo is placing great emphasis on its Easysphere and Citysphere S air conditioning systems as a retrofit solution.



The Easysphere rooftop air conditioner offers a functional solution for air conditioning in the driver's section. Installation, start-up, operation and maintenance of this concept are conceivably simple, making it an operator-friendly and efficient solution. It has compact dimensions and application interfaces, and can be easily integrated into any 24 V wiring system.

The warm air circulating in the vehicle cabin is drawn in by the radial fan and cooled in the evaporator, after which it is dried and re-released into the cab via the air distribution panel.

The Citysphere S is a maintenance- and operator-friendly air conditioning solution for the driver's section, based on our successful Citysphere model. Compact dimensions and existing application interfaces facilitate installation in any vehicle.

The key components such as the motor, compressor and refrigerant condenser are compactly integrated into the unit. The liquid refrigerant is transported to the front box via ducts. The only prerequisite is that the front box must be retrofitted with an evaporator so that the warm air drawn in from the vehicle interior is cooled and the cold air re-enters the vehicle interior through the air vents.

Valeo TM compressors now available directly through Thermal Commercial Vehicles (Valeo TCV)

Since 1985, automotive and commercial vehicle supplier Valeo has been selling a wide range of compressors. From March 2021, in good time for the start of the climate season, these can also be purchased directly through Valeo TCV. The most popular versions will be available from the Neubrandenburg plant and Fast-Way warehouse. Prompt assistance and replacements will thus be assured in the event of an emergency.



Valeo compressor series TM16 to TM65

Increasing demands are being placed on HVAC suppliers when it comes to the availability of spare parts. Stoppages in bus operations incur high follow-up costs, and operators strive for the highest possible level of vehicle availability by streamlining service applications. Against this background, vehicle manufacturers and transport operators prefer to purchase complete HVAC systems and kits from one source.

The functionality of the air conditioning system emanates mainly from its core piece, the compressor, as this generates the energy for the air conditioning system. To date they could not be purchased directly from Valeo TCV, but only through other complex distribution channels. From March 2021, in time for the new climate season, this will all change: a broad selection of Valeo

compressors for series production, retrofitting or repair can then be ordered directly from the Valeo Fast-Way warehouse or the Neubrandenburg plant.

With the TM16 to TM65 series of compressors and a range of electric compressors, the air conditioning specialist caters for a wide range of buses. From the mini- and midibus to the solo or articulated bus and touring coach, Valeo offers the appropriate installation kit for every bus. Beginning with the new climate season, vehicle manufacturers, body builders and bus operators will be able to purchase individual parts or finished kits consisting of rooftop air conditioner, controller and compressor directly from Valeo TCV. Manufacturers and operators will thus profit from increased operational reliability and system performance.



New drop-stop nozzle in the Thermo S diesel heater reduces emissions and fuel consumption

As of recently, Valeo has been offering an optional new drop-stop nozzle for its Thermo S fuel-burning heater. The latter lowers emissions from the bus heater and reduces fuel consumption. In addition to use in diesel buses, this makes it particularly interesting for electric buses.



The new drop-stop nozzle for the Thermo S

As every authorised bus heating specialist knows, after the heating is switched off, due to system characteristics a draining of the space between the solenoid valve and nozzle bore may occur, causing fuel to drip from the nozzle. This may become evident through smoke and the smell of unburned hydrocarbons. In 2016 Valeo launched extensive field trials with the new drop-stop nozzle in the Thermo S 230 diesel heater. The installation of this nozzle reduces dripping after fuel injection and causes substantially less smoke in the stopping and starting phase.

The valve integrated into the fuel nozzle prevents heating fuel from entering the combustion chamber after switching off. Various trials have also shown that the drop-stop nozzle has the effect of substantially reducing the emissions when starting and stopping. The exhaust emission values during these operations were significantly better than with a standard nozzle.

Besides use in diesel buses, this makes it interesting in particular for electric buses. Due to their limited energy resources, at low outside temperatures the latter rely on an additional fuel-burning heater. Furthermore, especially with electric buses, operators and passengers are more sensitive to exhaust smells. The reduction of uncombusted hydrocarbon brings about a significant improvement in perception.

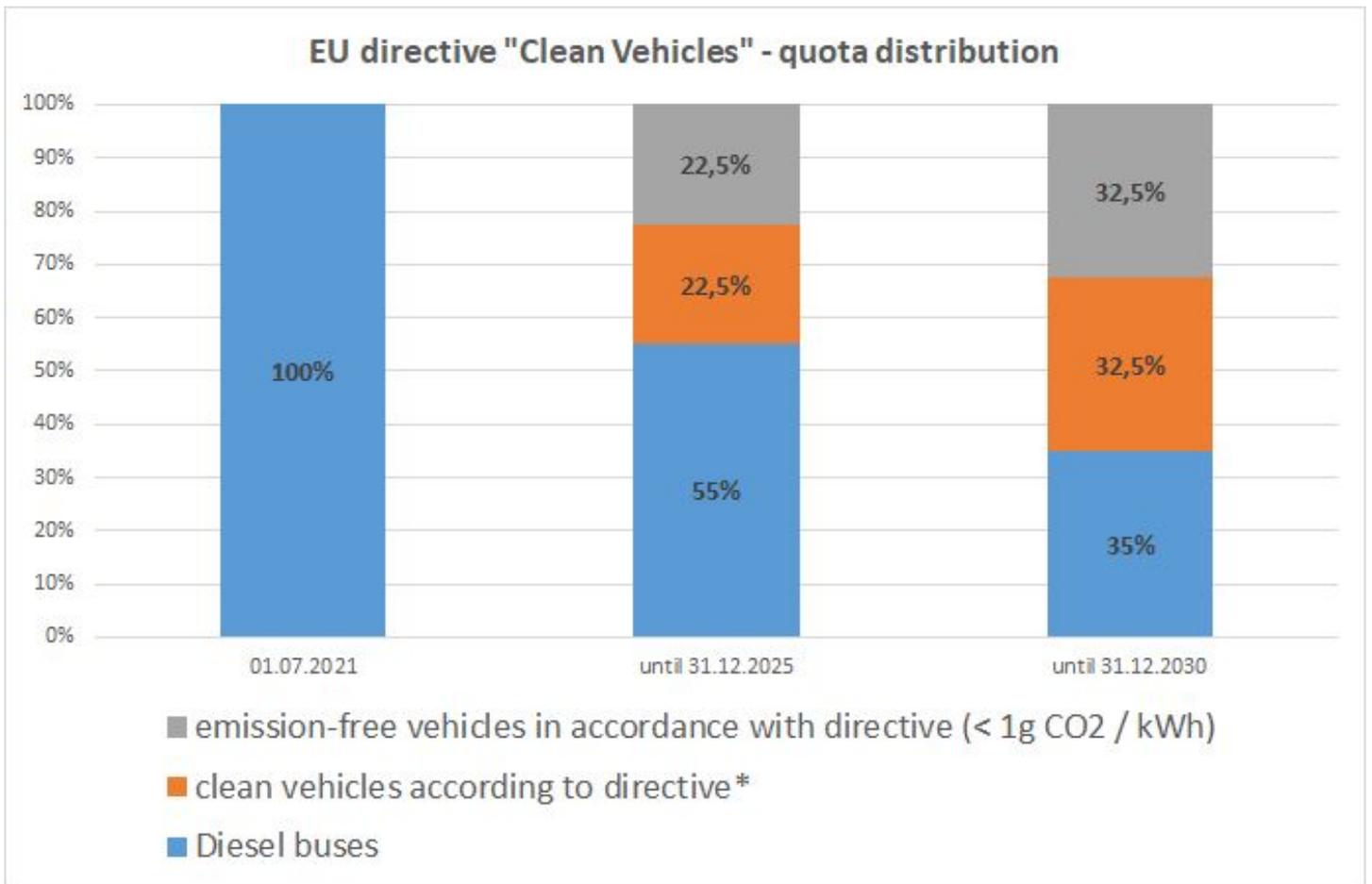
The first practical implementations took place in 2018 for the Thermo S 230. The positive customer feedback resulted in approvals for additional heater classes. From January 2021 onwards the Thermo S 300 and 350 will be available with the new drop-stop nozzle. Approval for the Thermo plus is to follow soon.

Clean Vehicles Directive

On 18 April 2019 the European Parliament issued binding targets for the procurement of low-emission vehicles. Accordingly, by the end of 2025 at least 45% of buses acquired under public service contracts must have alternative drives.

Continued next page





*Electricity, plug-in hybrid, hydrogen, sustainable biofuels, synthetic and paraffinic fuels, natural gas (CNG, LNG, including biomethane), liquefied petroleum gas
 Source: MVG (Märkische Verkehrsgesellschaft) Lüdenscheid/Iserlohn

A procurement quota of 65% must be fulfilled by the end of 2030. This quota is subdivided into "clean" (electricity, plug-in hybrid, hydrogen, sustainable biofuels, synthetic and paraffinic fuels, natural gas, liquid gas) and "emission-free" (1g CO2/kWh) vehicles of classes M1, M2, M3 (passenger conveyance). In the first period, the quotas must be transposed into national law by 08/2021. In the second period from 01/2026 the focus will be on zero-emission vehicles. Because until recently it was unclear how the quotas should be implemented at a national level, it was decided that this quota system should be applicable to all companies throughout Germany. Since there have hitherto been substantial differences in the procurement and expansion of electromobility with municipal and private public transport operators, against the background of infrastructure and potential uses, larger public transport undertakings

will be called upon to take the lead in fulfilling the quotas. With the aim of efficient use of the limited electric energy in vehicles with alternative drives, Valeo is supporting vehicle manufacturers with its latest air conditioning system with heat pump technology, climate-friendly or -neutral refrigerants and reduced amounts of fuel. The latest heater version can also be operated with alternative synthetic fuels.



Diagnostic software update for Valeo heaters

The current DTT (Diagnostic Thermo Test) is a further development of the former STT (Spheros Thermo Test). Existing diagnostic kits can still be used, but the new software Version 1.5, should be installed. This version, as well as future updates, is available for downloading at the following link: https://www.valeo-thermalbus.com/eu_de/Service/Downloads/Heizsysteme/Diagnose-Vorwahlen-Filter software

Installation is also possible under Windows 10.

The error message “File FTD2XX.DLL missing” is a frequent occurrence during installation of the diagnostic software. This error message means that a software driver has not been installed.

1. Please check to ensure that you have the full administration rights for the PC in question
2. Delete all old diagnostic files (earlier versions and failed attempts)
3. Close all programs and applications, including the virus scanner
4. Insert the diagnostic adapter into the PC
5. Install the software



Package includes diagnostic adapter, software CD, 2x test plug for Thermo S and Thermo plus (component test), adapter wiring harness and USB connecting cable to PC.

The Thermo, Thermo S, GBW, Thermo G and Thermo plus series of heaters have diagnostic capabilities. On the Thermo E series a failed attempt can only be localized by the flashing signal on the switch-on indicator. This option also exists for other series and is described in the appropriate workshop manual.

A vehicle-specific adapter wiring harness must be used for the Thermo and GBW heaters. In the other series the connector for diagnosis is in the heater harness, in the Thermo Plus on the controller. The diagnostic connector is sealed with a watertight dummy plug.

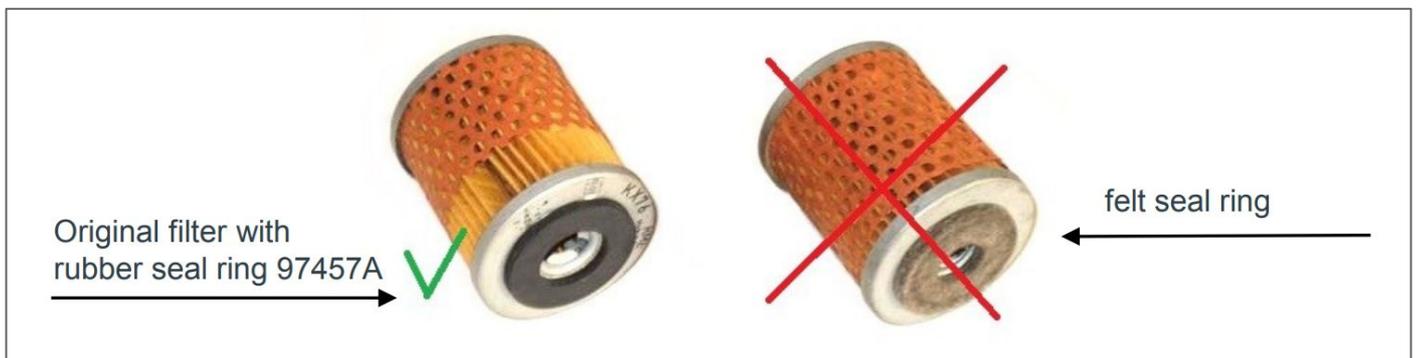
For Thermo S and Thermo plus the package contents include a test plug. Following removal of the temperature sensor and insertion of the test plug on the control unit, the component test can be activated (Thermo S old plug-in connection for the temperature sensor is on the outside of the heat exchanger: 11111723_; Thermo S new – cable with a grommet to the control unit: 11117924_; Thermo plus 11120611_).

Caution! The Webasto diagnostic adapter is very similar in appearance to the Valeo adapter. Due to ongoing development, however, this adapter is not compatible with Valeo heaters. Meaningless error messages may occur if the Webasto diagnostics are used .

! Important information: heater maintenance !

We are often approached by our customers, operators and workshops on the subject of sluggish or non-starting heaters. One of the most common causes is a non-original fuel filter insert that does not conform to Valeo standards. The main difference is the sealing between the filter insert and its housing.

A seal made of a type of felt material is not suitable for the insert with Valeo heaters. Due to the accumulation of fluff, the fine filter (sieve) in the fuel pump intake is soon blocked and a flame cutout will occur. The heater will shut down as a result.



Further information can be found on the Valeo homepage:

https://www.valeo-thermalbus.com/eu_en/Service/Technical-Updates-TI/Heating-systems



Valeo



Our engineers
know how to
stay cool ...

Heating and climate control systems for busses.
Worldwide.
For more than 60 years.