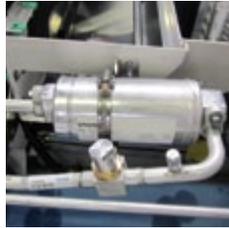




Valeo Closing

Since 1 April Spheros has officially been part of the French Valeo Group.

Page 4



New filter drier

for the REVO rooftop air-conditioning unit

Page 7



Fast-way: The right replacement within 24 hours

Michael Weiprecht talks about the advantages of the new Spheros Fastway warehouse

Page 12

Burner replacement scheme





Dear Readers,

Since 1 April 2016 the Spheros Group has been officially part of the French Valeo Group, supplier of automotive components. We would like to assure you that you can continue to rely on the proven Spheros quality and expertise, together with the expertise of our partners.

Starting on 21 September we will, as usual, be represented at Stand Fo2 in Hall 11 at the IAA Commercial Vehicles in Hanover. As in 2014 we are foregoing a big product show, and this year will be presenting new service concepts and Spheros original parts. We are looking forward to a constructive dialogue with our customers and partners.

In addition, in this issue we want to inform you about innovations in the service sector of our Website. In an article on our Citysphere rooftop air-conditioning unit and other products available on the market, we point out the technical differences.

In the Voices from the Market section we conducted an interview with the Pflieger bus transport operator about the advantages of the new Spheros Fast-Way warehouse.

Finally, we would like to describe in detail the services of our technical helpline and draw your attention to the change in e-mail address.

The Spheros team is already looking forward to your input at IAA Commercial Vehicles and hopes you enjoy reading this issue of Technik Service News!

Carsten Schmidt

CONTENTS

CHAPTER	PAGE
EDITORIAL	2
COMPANY NEWS	
Burner replacement scheme launched	3
Spheros becomes part of the Valeo Group	4
Spheros at IAA 2016	5
Spheros product and technical training in Scandinavia	5
What else is new at www.spheros.de/Service	6
PRODUCT NEWS	
New filter drier for the REVO rooftop air-conditioning unit	7
The new SC Preheater control element goes into series production	8
Air conditioning system retrofits in Hungary	8
Citysphere: unique on the market	9
Biodiesel for heaters	10
VOICES FROM THE MARKET	
Pflieger bus transport operator: the right replacement part within 24 hours	12
NEW TECHNOLOGIES	
Warning: Dubious online vendors	13
Technical Service: Our support for the helpers	13
Combustion chambers for Spheros heaters	14
BEHIND THE SCENES	
SPump production: strong heart for good circulation	16

Burner replacement scheme launched

In September 2016 Spheros will be putting the heater burner replacement scheme for the Thermo series into operation, and in subsequent weeks the scheme will be extended to the Thermo S. Under the replacement concept customers have the opportunity to exchange their old heater burner head for a factory refurbished one, which is covered by a renewed warranty of one year.



Spheros' burner replacement scheme for the Thermo series is due to start in September 2016.

The consistent replacement of all wearing parts such as fuel pump, drive, etc. guaranteed in 100% original part quality. Fast availability enables plannable replacement on the vehicle. In addition, the Spheros type plate with approval marks ensures the general type approval for the vehicle.

Three service or spare part options will thus be available to bus operators:

- **New:** Factory refurbished heater burners in the replacement-deposit-concept and 1-year warranty: available September 2016 (Thermo heaters).
- Repair of the heater burner at cost and warranty on replaced parts by a certified Spheros partner. Immediate availability of service.
- Brand new ET heater burners with a 2-year warranty. Immediate availability of spare part option.

How does the replacement scheme work in practice?

The bus operator orders a replacement burner of his choice through the normal Spheros dealer and pays for it including a deposit. The deposit is reimbursed to the operator immediately upon return of the old part to the Spheros dealer. The dealer delivers the original Spheros replacement burner to the bus operator and, upon receipt of the used unit, returns the latter to the factory for refurbishing.



Factory refurbished heater burner in the replacement-deposit-concept and 1-year warranty.

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Spheros becomes part of the Valeo Group Liaison between two technology leaders

Successful completion of acquisition by Valeo: since 1 April 2016 the Spheros Group has officially been a member of the French automotive supply group Valeo.

Since its founding more than 10 years ago the Spheros Group has positioned itself as a global technology leader in the bus air conditioning segment. To ensure that it continues to operate successfully in the market in the next decades, Spheros has joined forces with one of the major players in the automotive industry.

Under the umbrella of the Valeo Group we have created an excellent basis for jointly promoting innovations in bus air conditioning. There is an enormous potential for synergies, in particular in the field of hybrid and electronic solutions. The Valeo Group is specialised in the development, production and sale of components, integrated systems and modules for the automotive and commercial vehicles industry. Its main focus lies on the reduction of CO₂ emissions.

The acquisition of Spheros will enable Valeo to broaden its product range in the area of 'Thermal systems' in the strongly growing market for buses. With its 1,100 employees at 21 sites, Spheros will form the new 'Thermal bus systems' unit. The management will remain under the proven guidance of Helmut Zanker.



Spheros has become part of the Valeo Group: Helmut Zanker (CEO Spheros), Jacques Aschenbroich (CEO Valeo) and Antoine Doutriaux (Business Group President Valeo Thermal Systems) at a get-together in Gilching (from left).

"We are very pleased to welcome the Spheros family to the Valeo team," said Jacques Aschenbroich, CEO of Valeo, at the first get-together in Gilching in April. "The technical know-how of Spheros, combined with the expertise of our Thermal Systems teams, will put the Group in a position to further advance its market leadership in

air conditioning systems and open up completely new markets."

Valeo at a glance

Valeo is a global partner of the automotive and commercial vehicle industry. As a technological enterprise, Valeo develops innovative products and systems for the reduction of CO₂ emissions and

promotion of intuitive driving. In 2015 the Group generated sales of € 14.5 billion and invested 10 % of its OEM income in research and development. With 134 production sites, 52 research and development centres, 15 sales offices and a workforce of 82,800 in 30 countries, Valeo is among the world's leading suppliers to the automotive and commercial vehicles industry. Valeo is listed on the Paris Stock Exchange Euronext and the stock market index CAC 40. Valeo consists of four equal business segments and the retrofit market with Valeo Service.

In Germany a workforce of approx. 5,600 is employed at 16 assembly, production and research sites, as well as four sales offices. The main office and at the same time domicile of the German company is Bietigheim-Bissingen.



The name Spheros stands for market and technological leadership in the bus market. Valeo is a strong brand in the broad automotive environment that will support, supplement and promote Spheros.

Spheros at IAA 2016

What is regarded as the most important trade fair for mobility, transport and logistics in Hanover will be opening its doors once again from 22–29 September.

This year Spheros will not be staging a big product show at the IAA Commercial Vehicles, but instead focusing its trade fair presentation at **Stand F02 in Hall 11** on original parts and service.

The company will be presenting new service concepts and Spheros original parts. In addition it will be introducing the new Fast-Way warehouse for even faster ordering of spare parts, assemblies and rooftop units. Besides the entire range of spare parts, it stocks complete assemblies and rooftop air-conditioning units for immediate delivery. It goes without saying that Spheros will continue to be available to its customers for a constructive dialogue and exchange in all important bus air conditioning topics.



This year the Spheros trade fair presentation will be focused on parts and service.

Spheros product and technical training in Scandinavia

In March Spheros organised a course of product and technical training in Copenhagen in cooperation with Christonik ApS, Scandinavian representative.

Over a period of two days Spheros bus air conditioning systems, heaters and circulation pumps were presented and all diagnostic and service tools demonstrated in practice-oriented case examples in the workshop. With an eye to the steadily growing importance of PC diagnoses, the participants were able to convince themselves of the possible applications and test capabilities. Products such as the Citysphere compact air conditioning unit were demonstrated in the vehicle.

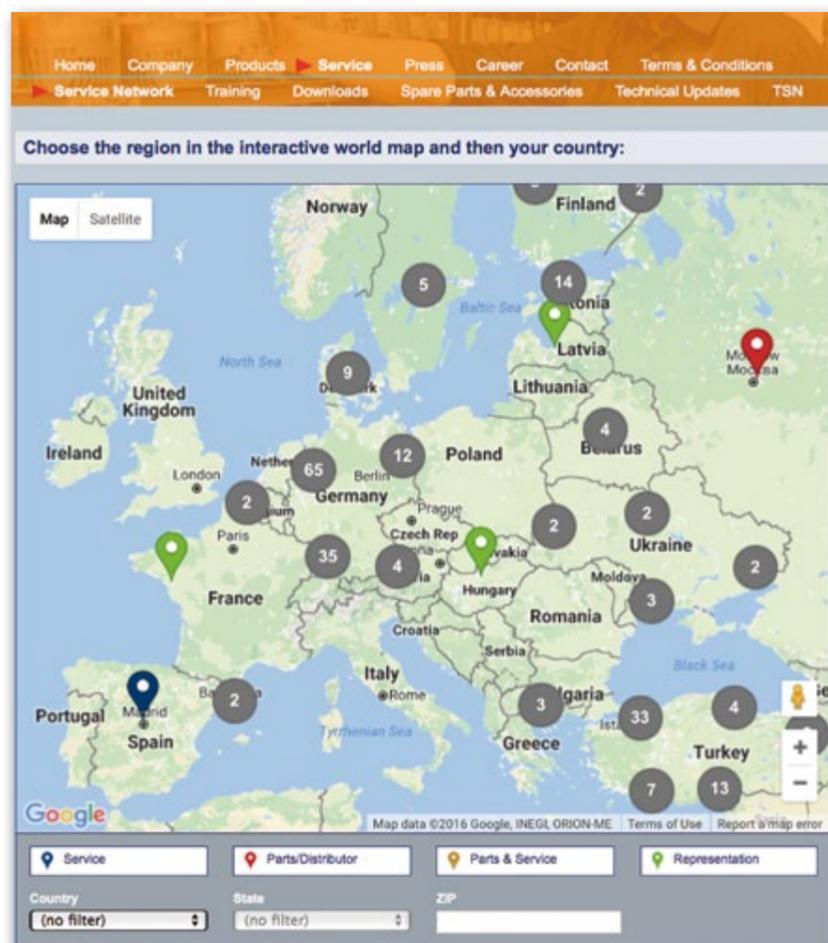
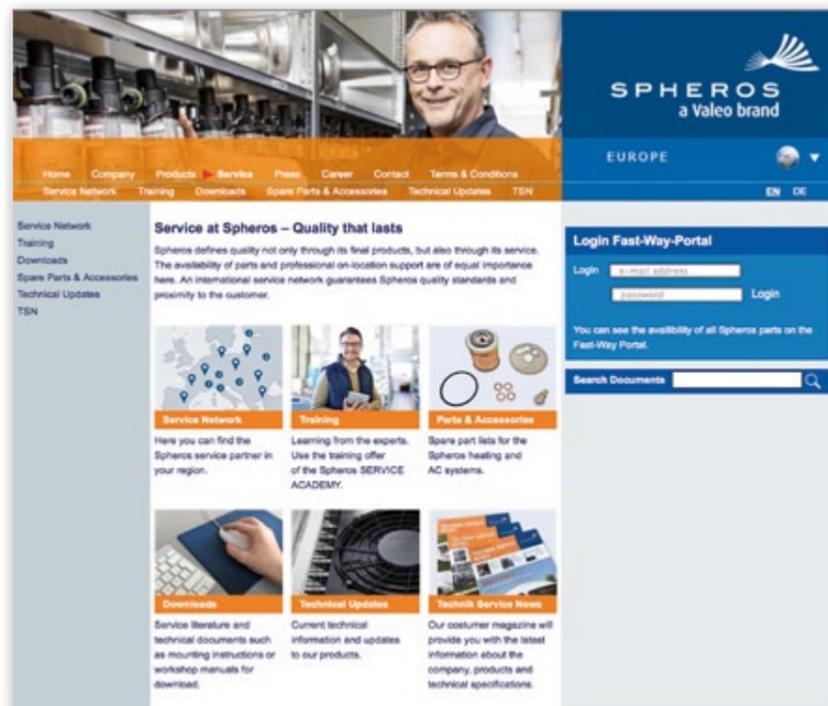
Besides Christonik, numerous other bus operators and service companies from Scandinavia took part in the training. The number of participants from Denmark, Finland, Iceland, Norway and Sweden totalled 24.



In March a product and technical training course took place at Spheros country representative Christonik in Copenhagen.

What's new at www.spheros.de/Service?

The revamped Service area at spheros.de presents itself in a tidier and more clearly arranged form. The visitor can quickly navigate to the desired topic via the six entry pages Service Network, Training, Spare Parts & Accessories, Downloads, Technical Updates and Technik Service News.



Service Network

A new directory of service partners now helps customers to locate a suitable service partner via an area search. A distinction is made between wholesalers, service points and service partners with spare parts supply.

Downloads

All operating and installation instructions can be found by product name in the Downloads area. First select the product group (air conditioning, heating systems, pumps, etc.), then navigate quickly to the respective document via the product name (REVO, Aerosphere, etc.).

Spare Parts & Accessories

Similar to the Download area, spare parts lists and accessories catalogues can be found here via the product name.

Technical Updates

All technical information (TIs) since the year 2008 is listed by subject areas.

Technik Service News

A variety of topics can be found in back copies of the customer magazine Technik Service News (first issue 2010).

What else is new?

We have introduced a document search that permits service documents of all kinds to be retrieved across all sectors. Upon entering one or more search terms the system will find all documents containing the keyword.

Another new feature is the login interface to the online customer portal (www.fast-way.eu), through which the availability of parts can be quickly and easily checked.

New filter drier for REVO rooftop air-conditioning unit

In the course of ongoing product optimisation a new filter drier is being incorporated in all newly manufactured REVO rooftop air-conditioning units.

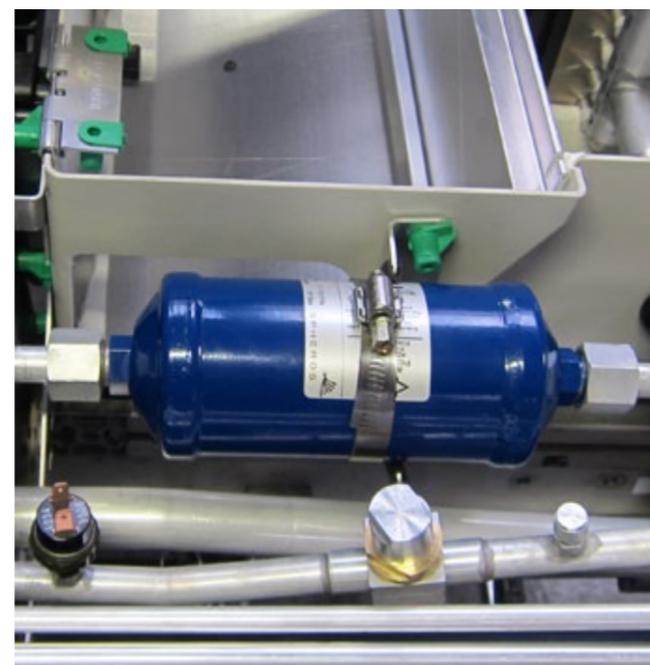
This new filter is a further step towards a simple, reliable mounting system using an O-ring flange connection. The service and necessary retrofit times are significantly shorter. Depending on the vehicle manufacturer, the conversion started in July 2016.

Due to the geometry and mounting system the new filter drier is **not backwards compatible** with the predecessor model.

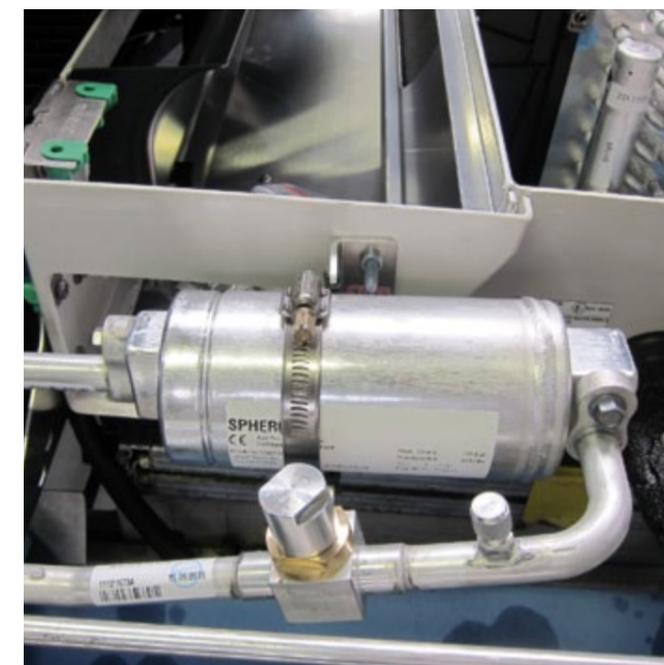
All units equipped with the predecessor model (see photo of blue drier) must be refitted in the course of annual maintenance with filter drier kit **11117544A**. All REVO units with the new filter drier (see

photo of aluminium drier) can be ordered in Spare Parts under ID No. **11123222A**.

A weight saving of 1.4 kg per unit can be achieved by converting to an all-aluminium filter drier. In addition, the dehumidification of the refrigerant and thus water absorption has been improved by 60%



REVO unit with blue predecessor model...



...and with new aluminium filter drier.

The following table gives an overview of the technical data of the predecessor model and new filter drier

Technical Data	Predecessor	New
Ambient temperature	-40°C – 65°C	-40°C – 100°C
Operating pressure	max. 43 bar	max. 28 bar
Water absorption capacity	34.5 g	55.2 g
Filter functionality	Particles > 50µm	Particles > 50µm
Max. pressure loss	0.1 bar with R134a flow rate of 1000kg/h	0.1 bar with R134a 0.2 flow rate of 1000kg/h

New SC Preheater control element goes into series production

With the new SC Preheater pre-selection timer Spheros has developed a successor for the previous models 1531 and 1529. The new control element is due to go into series production in October 2016.

The SC Preheater controls the engine-independent vehicle heating, whereby the starting time can be pre-programmed or the speed-heating function selected. The premise for the development of the new pre-selection timer was a reduction in the range of versions to one model and backwards compatibility in terms of dimensions to the two predecessor models 1529 and 1531. The new pre-selection timer can be fitted in all previous vehicle dashboards and installation slots where the predecessor models were hitherto integrated. With regard to the electrical interface, the new control element has a 12-pole plug, making it 100% backwards compatible to model 1531. The SC Preheater digital pre-selection timer can be employed for



The new SC Preheater pre-selection timer.

both 12V and 24V applications. It is equipped with logical symbols, programmed in English (weekday setting) and can be operated in either 12-hour or 24-hour mode.

A significant product optimisation is the voltage failure bridging of at least 72 hours. In contrast to the predecessor models, in the event of voltage failures in the

bus all settings and programmed times remain intact and do not have to be re-entered. In addition, the new pre-selection timer on the front of the unit has Protection Class IP 54, i.e. the product is protected from water and dust. A further improvement lies in the number of memory spaces for pre-selected times; up to seven pre-selected times can now be programmed. The new SC Preheater control element is compatible with all Spheros heaters.

Air conditioning system retrofits in Hungary

Although the number of vehicles with air conditioning has been steadily increasing for several years, there is still considerable potential for refitting vehicles with air conditioning systems.



REVO on a Citaro, BKV Budapest.

Over many years Webasto Thermo & Comfort Hungária Kft., Spheros representative in Hungary, has acquired a sound expertise in retrofit solutions for air conditioning systems. This includes sophisticated solutions, such as air conditioning retrofits of articulated buses. The company's designers, electricians and body experts suggest ways of installing a rooftop air-conditioning unit on the vehicle frame and supplying it with coolants and electricity. The installation of compressor, compressor bracket and V-belt belong to their daily routine. One of the few variations in the retrofit is the use

of refrigerant hoses in the vehicle instead of copper pipes. This task, involving soldering operations, is too complicated and time-consuming in a complete vehicle.



Tropical 300 on a Van Hool BKV.



To date the Citysphere rooftop air-conditioning unit stands alone in the market.

Citysphere: unique in the market

Initially designed and developed as a rooftop air-conditioning unit for retrofitting non-air conditioned urban buses, today the Citysphere has become firmly established with vehicle manufacturers in series production. However, for some time now products have been available on the market that cannot be compared with the Citysphere in terms of performance and technical perfection.

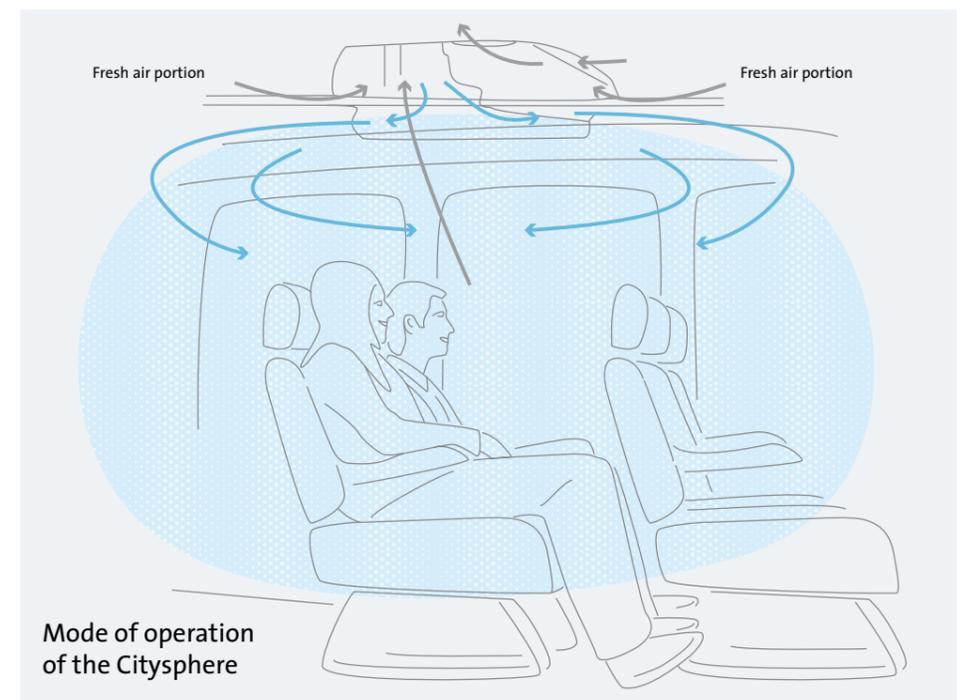
These include the PWM controlled, semi-hermetic scroll compressor with integral motor and infinitely variable power control, and the air manifold with integral radial fan of the Citysphere. Products currently on the market, however, have only a variable step motor control (separate) and compressor.

Due to its integral radial fan in the air manifold, the Citysphere circulates the cooled air very evenly in the bus. Benchmark products introduce the air to the vehicle only at selected points. Where the Citysphere guarantees a combination of cooling and patented, direct air intake along an optimum comfort curve, other products in the market are less flexible and can often only be regulated in three fixed stages.

In addition, there are a number of other standalone features: the Citysphere has PWM-controlled fans, they have a fresh air propor-

tion of 15% and the system is virtually maintenance-free. Furthermore, it satisfies the requirements of VDV 236/1, explicitly

required by many of today's manufacturers, but hitherto not fulfilled by other units on the market.



Mode of operation of the Citysphere

With a combination of slight cooling and even air circulation, the Citysphere ensures pleasant temperatures within the comfort zone.



BioDiesel for Spheros heaters

Since May 2016 the Thermo plus has been fitted with biodiesel-resistant sealing elements.



Guidelines for the use of biodiesel for heaters

Since 2009 European oil companies have been adding up to 7 % biodiesel to conventional mineral diesel fuels (to DIN EN 590). This has no influence on the proper functioning of Spheros heaters. The use of biodiesel according to DIN 14214 is also possible, provided the following points are observed:

Fuels of FAMES (fatty acid methyl ester) are derived from vegetable or animal fats and referred to as biodiesel. In biodiesel a differentiation is made between: RME (rapeseed oil methyl ester), PME (plant methyl ester or palm oil methyl ester) and SME (soya methyl ester).

The alternative fuel is considerably more aggressive and may damage unsuitable materials in the fuel circuit (such as seals, hoses)!

The following Spheros heaters have therefore been fitted with biodiesel-resistant sealing elements:

- Thermo since 02 / 2004
- Thermo S since 02 / 2009
- Thermo E since 05 / 2016
- Thermo plus since 05 / 2016

These specifications also apply to all external mounted parts and components (hoses and filters) marked 'Biodiesel'. A retrofit is possible for all old appliances.

Special aspects of operation with biodiesel

Biodiesel conforming to DIN 14214 has a reduced durability and storage stability compared to conventional diesel. The fuel must be protected against temperatures above 40 degrees Celsius and temperature fluctuations, as well as the entry of light, oxygen and water. Biodiesel must thus be regularly consumed, monitored or replaced.

The use of non-ferrous metals (e.g. copper or brass) in the fuel system should be avoided, as biodiesel – compared to diesel – causes greater corrosion.

Depending on temperature, biodiesel has a higher viscosity than conventional diesel. This has a major impact on the areas of use of this fuel.

For trouble-free combustion up to -10 degrees Celsius

- Biodiesel must conform to DIN EN 14214
- Biodiesel must satisfy climatic requirements (CFPP classes)
- Use of a nozzle assembly preheating is mandatory at temperatures < 0 Grad Celsius
- Use of a filter heating is mandatory at temperatures < 0 Grad Celsius
- Fuel pump must be fitted with FKM (Viton) seals
- Fuel hoses and seals of the fuel filter must be resistant in accordance with DIN EN 14214
 - 'NBR' elastomer/hoses are not permitted
- Replacement of fuel pump, fuel hoses and filter seals every four years
- Operate heater at least every four weeks, even in summer
- Avoid use of old fuel
- Adjustment to the CO₂ value

We also recommend:

- Replacement of the fuel filter when converting from diesel to biodiesel (after 20 operating hours)
- Nozzle change at least 1x per heating period



Spheros Fast-Way warehouse in Neckartailfingen, Germany.

Fast-Way: the right part within 24 hours

Because the right interior temperature is a fundamental need of passengers in the bus, the supply of suitable wearing- and spare parts is a core issue of the Pflieger workshop. Michael Weiprecht is manager of the bus repair workshop. Spheros met Weiprecht in Böblingen and asked him about his experience with the new Fast-Way warehouse.

With its fleet of 72 vehicles the Pflieger bus transport operator is a holding company of Stadtverkehr Böblingen-Sindelfingen. In addition, it operates four long-distance coaches in the tourist industry. Spheros air conditioning systems and auxiliary heaters are installed in all vehicles.

Spheros: Mr Weiprecht, the new Spheros Fast-Way warehouse was opened nine months ago. Has it brought you noticeable improvements?

Michael Weiprecht: Certainly. The availability, even of rarely needed parts, has improved considerably.

We no longer need to wait for any item. If you look into the online portal, you can see that the items are not only in stock, but often in vast quantities.

That's because our Fast-Way ware-house supplies the whole of Europe.

What particularly pleases me is that we are now independent of working hours. Portal access is possible 24 hours a day. I can now satisfy acute needs without having to forego personal service. All orders placed by me are checked again by skilled personnel in the warehouse.

What advantage does that have for you?

Let's take a filter drier as an example. If I order this item, before it is shipped my contact partner asks if I already have the required seals. It's not just automatic processing by computer.

How does the Fast-Way portal differ from other similar vendors?

It is clearly structured. I get the details that are important to me within a small space, without any advertisements. And another thing that has become important: there are often items whose part number has changed. The search function of the Fast-Way portal



Michael Weiprecht, manager of the bus repair workshop of Pflieger Verkehrsbetriebe.

suggests all existing alternatives, including the classification of the vehicle manufacturer. That is certainly a perceptible help. What's more, I can always track the current status of an order, as I have direct access to the Fast-Way inventory management. I can always see the exact state of my supplies.



With 72 vehicles, Pflieger Verkehrsbetriebe is a holding company of Stadtverkehr Böblingen-Sindelfingen.

Warning: dubious online vendors

The various websites and online shops of vendors unknown to us are currently offering Spheros original spare parts at prices that are too good to be true. These parts are of unknown quality and condition from obscure sources.

In accordance with our warranty conditions we remind our customers that proof of purchase must be presented in the event of a request for service or warranty claim. For items from non-authorized vendors, neither we nor our partners will be able to perform the customary Spheros Service and must reject all claims. In addition, please note that parts from foreign countries are often imitations or reconditioned parts that may pose a safety risk.

We recommend always acquiring Spheros original parts from our authorised service and sales partners. The Spheros service network can be found at our Website under the following link:

<http://www.spheros.de/Service/ServiceNetz.html>



Spheros original parts: circulation pump, combustion chamber and control unit.

Technical Service Our support for helpers

By answering over 3,500 queries per year the Spheros helpline team supports sales partners with customer-oriented solutions.

Support is provided to service partner/points, sales partners and customers in all technical matters, first and foremost with advice over the telephone, but also by email. In the case of complex subjects, our local customer advisors may also be called on. Questions concerning prices and delivery times, however, are answered by the sales partners themselves. To enable us to respond to the needs of our customers faster and more efficiently, we recommend having the Spheros product and vehicle data (incl. year of manufacture) at hand before contacting us. These are to be found on every type plate. In addition, it may be useful to have photos ready, so that defects

can be more easily analysed and spare parts identified.

The Helpline team receives mobile reinforcement from the Spheros Servicemobile that helps out with repairs and service work. The joint interplay of Helpline and Servicemobiles enables Spheros to provide customers throughout Europe with advice and assistance in the event of problems.

In addition, at the Spheros Website www.spheros.de the customer can retrieve and download all documents such as operating manuals and spare parts lists under the heading 'Service'.



Important notice

From 16 August 2016 the Spheros Helpline (in future TBS Helpline) can be reached at a new email address.

After this date please use only the new email address:

ths.tbs-service.mailbox@valeo.com

Spheros Helpline: +49 (0) 8105 7721 887
eMail: ths.tbs-service.mailbox@valeo.com

Combustion chambers for Spheros heaters

We provide here an overview of all combustion chambers for Spheros heaters. In future, please order only the spare parts numbers shown for the respective heater.

HG	combustion chamber new	1	2	3	4
Thermo 230	11114186B				No die-cut
Thermo 300 *	11114186B				No die-cut
Thermo 350	2710229B				Die-cut "350"
Thermo S 160	2710227C				Die-cut "160"
Thermo S 230	11114186B				No die-cut
Thermo S 300	11114186B				No die-cut
Thermo S 350	2710229B				Die-cut "350"

HG	combustion chamber new	1	2	3	4
Thermo S 400	1111476B				Stanzung "400"
Thermo E 200	11114188B				Stanzung "200"
Thermo E 320	11114186B				Stanzung keine
Thermo G 300	11119153B				Stanzung "350"
GBW 300	11119153B				Stanzung "350"
Thermo RAIL 300.155 300.190 350.126 350.155 350.190	2710229B				Stanzung "350"

Stand: 06/2016

Today's topic: SPump manufacturer

Air Conditioning

Heating Systems

Pumps

Hatches / Fans

Bus Body Electronics

Service

System Components



Circulation pump final test bench

Strong heart for reliable circulation

In the course of development of innovative heating technology for the bus, years ago Spheros GmbH decided to manufacture the required pumps itself. The pump is the core element of the heating circuit, maintaining coolant circulation in pre-heating mode while ensuring refrigerant flow when the vehicle is in motion.

With the new SPump Spheros has introduced a pump that can be employed not only in the bus heating system. The determining characteristics here are the shorter dimension of 205 mm, reduced weight of 2.3 kg and water-tight, magnetically coupled EC-motor (IP 68 tested) with integral control unit.

The corresponding equipment had to be procured for the manufacture of the new pump, e.g. a friction welding unit and various mounting fixtures. The S-pump is assembled in a number of stages, including the electrical customer interface, assembly of the pump head and motor, as well as the final inspection.

In the first step of the manufacturing process the customised contact pins are crimped onto the connecting line of the circulation pump motor. In order to ensure the required quality upon striking, the pull-off forces are checked. With the aid of various fixtures the permanent magnets are pressed into the impeller or rotor body (external rotor). The correct assembly of the magnets in terms

of positioning and polarity is monitored with the aid of a magnetic testing device. Then the impeller blade and body are welded together by a rotation welding unit.

In the next work stage the impeller and containment can are mounted, and the external rotor is inserted onto the pump motor. The hydraulic unit is made by

welding the pre-assembled containment can and pump head in the rotation welding unit. Finally, the hydraulic unit is mounted on the circulation pump motor – and the S-Pump is ready.

The pump is tested on the final test bench for power consumption, flow and water-tightness (all Spheros pumps are 100% tested).



Press-in device



Assembly of impeller in the containment can



Rotation welding unit