



## Till Oberwörder (Daimler Buses): 'The eCitaro arrived at the right time'

*At Mercedes-Benz, the transition to alternative drives has been going on for a number of years. Fuel cell drive, hybrid buses and 'Mild Hybrids' have passed by. Till Oberwörder, head of Daimler Buses, has been in the electric business since last year with his eCitaro, from which Mercedes-Benz has high expectations, according to the Busworld Daily Times.*

Simultaneously with the developments in powertrains, much is happening in other areas as well. Daimler is already manufacturing parts through 3D printing, involving more than 230 parts: metal and plastic. Oberwörder regards this as a solution for 'after sales' and the supply of spare parts in particular. "If you have the opportunity to extract parts into data and then send these to a printer near the location where the part is needed, this makes a huge difference to the logistical and packaging costs, but especially to transport. At the same time, it offers enormous environmental benefits. We are just at the beginning stage of this technology, but we believe that it will be possible in the medium term." Examples can be seen on the Mercedes-Benz stand for this Busworld edition.

### eMobility System

This Busworld is all about the powertrains: electric drive in city buses. The competition is increasing, there are more

bus manufacturers - look at the number of suppliers in this Busworld - and the well-known suppliers are also expanding their portfolio. Oberwörder: "The degree of competition is comparable to that of conventional drives. There are more companies offering e-buses, but I don't see the market changing that quickly. Good competition only makes us stronger. Nowadays there is much more to it than just the 'bus'. We call it the 'eMobility System'. It's about charging infrastructure, the management of the charging process, everything that's needed to drive the route optimally. The more we understand the needs of the customer for his operation to run smoothly, the better we can respond to his wishes: for example, should he have six, ten or twelve battery modules in his bus, and what charging equipment is required? What is the best configuration for the bus in conjunction, interaction, with the entire 'setup' required for its transport system?"

### Euro 6

In 2022 Mercedes-Benz will launch a 'fuelcell range extender'. Oberwörder: "By combining techniques, we will be able to offer various systems in the short term that will enable our customers to continue working in the same way as they do today with a conventional drive system." As far as diesel or gas propulsion is concerned, Oberwörder emphasises that it remains present. "Euro 6 diesel engines

make a significant contribution to reducing harmful emissions; Euro 6 is relatively clean. We continue investing to increase the efficiency of diesel and further reduce emissions. But let's also look at those parts of the world where Euro 6 can make a difference in terms of emissions. It makes a big difference whether you drive with a Euro 1 or with a Euro 5 or 6." As an example he mentions India where Bahrat 6, comparable to Euro 6, will be introduced next year. And so, according to him, there are more countries adapting their legislation.

### FC range extender

In the recent past, Mercedes-Benz has, through various European projects, unleashed almost a hundred fuel cell buses on the streets. This experience is one of the reasons why the eCitaro can be delivered with a 'fuel cell range extender' in two years. Why does a range extender offer a range of 400 or 500 kilometres if a battery can also offer a range of 400 or 500 kilometres? Oberwörder: "You have to look at the economic aspects, costs and benefits of the systems. We use the fuel cell, 40 kW, as a continuous charger for the battery. The advantage of a smaller fuel cell is its price. Today, a full fuel cell bus is simply too expensive." He doesn't expect the price of fuel cell technology to drop quickly. "This will only happen when the volume really increases substantially. With this range extender, we



as Mercedes-Benz are on the right track to be able to offer different technologies."

### Production

For a long time it seemed that Mercedes-Benz was going to miss the 'electric boat'. Oberwörder refutes this and claims that Daimler's strategy has proved to be correct. "The eCitaro is built on the same production line in Mannheim as the diesel or gas-powered Citaro. We wanted to make sure that we could continue to meet every demand from our customers. By adapting the production line and the logistics in the factory to this, this is possible and we are now building the various

buses interchangeably. Our staff also had to be trained for this, which takes time. The advantage is that the eCitaro has remained the Citaro but with another drive. Looking at where we are currently standing with the Citaro, I think we have introduced the eCitaro at the right time and can roll out our strategy and vision.



## FBAA Brussels by night

*On Saturday evening, all members of the Belgian Federation of Bus and Coach Entrepreneurs gathered in Hall 10 to celebrate Brussels by night in the margins of Busworld. The turnout was numerous and it was a very enjoyable evening.*

In his welcome speech, chairman Dirk Hellemans emphasized that the sector

faces major challenges: the rapid evolution of the driving modes and the chaotic regulations devised by the cities, the evolution of consumer behaviour with regard to mobility and how to respond to this, and the importance of staying strong united. He briefly explained how the Nacht van het Salon (in Kortrijk) has now been replaced by Brussels by Night and wished those present a pleasant evening.



During the aperitif, a band with a singer provided the musical setting. Once the guests had taken their seats, the tasty courses were alternated with a whirling show of singing and rhythmic dance with live orchestra. After the dessert, which was dominated by Belgian chocolate, the participants were allowed on the dance floor, while a DJ played the music until late.

This first edition of Brussels by Night was a very successful evening: the ambiance was great and the food was delicious. For the many entrepreneurs present, it was a nice meeting with colleagues, retired eminences from the sector who appeared once again and Belgian representatives of the manufacturers. Many thanks to the organizers!

## Golden Dragon signs the ACT Declaration

Golden Dragon signed the United Nations Action towards Climate friendly Transport - declaration yesterday and becomes the 11th OEM at Busworld to confirm its goal to cooperate in the realisation of the mobility part in the Sustainable development goals. Congrats to all. Note that the signing of the ACT declaration is open until the end of Busworld Europe, in the VIP lounge. You can stop by any moment.... Or contact academy@busworld.org



## “More bacteria on a steering wheel than on a toilet seat”

At Busworld, the manufacturer of steering systems, Pailton Engineering, offers a potential solution for poor hygiene in the cabin. The company is investigating the potential of a removable bus steering wheel - a concept designed to prevent infection and reduce work-related illness among bus and coach drivers.

Pailton's reason for initiating this investigation is the alarming figures concerning the poor hygiene conditions which, according to the company, many bus drivers are encountering on a daily basis. The company notes that there are 629 'colony-forming' units of bacteria on an average steering wheel, compared to only 172 on a toilet seat. Among the most com-

mon bacteria found are Staphylococcus and Propionibacterium, which can cause food poisoning. This is particularly a risk in public transport, where drivers almost always drive a different bus. As a result, many bus drivers work in unhygienic conditions, with an increased risk of illness.

While many drivers rely on antibacterial wipes and disinfectants to reduce the risk of disease, Pailton Engineering believes that more can be done. "Busworld is an opportunity for entrepreneurs to discuss the detachable steering wheel concept with Pailton Engineering. If the solution turns out to be viable, Busworld participants could become the first OEMs to offer this option to bus and coach customers," says Roger Brereton, Head of Sales at Pailton Engineering.

Pailton Engineering also tackles the ergonomics of the driver's workplace by developing a fully adjustable electric steering column offering a wide range of positions for the driver, improving comfort and significantly reducing the risk of injury, especially in the back, neck and shoulders. (Hall 3, stand 319)



## Akasol with new batteries for buses and coaches

Akasol AG, supplier of lithium-ion batteries, presents three innovations for all-electric, hybrid city and regional buses and coaches at Busworld 2019 in Brussels. A battery system for fuel cell vehicles will also be shown. Akasol has three premieres at Busworld: high-energy solution AKASystem AKM CYC, fuel cell solution AKASystem OEM PRC and the 48V solution AKARack for hybrid and all-electric applications.

The company's future showpiece is the high-energy AKASystem AKM CYC bat-

tery, which will be produced from 2021 in the new headquarters in Darmstadt, Germany, and from 2022 in the new headquarters in Detroit, USA. The AKAM module CYC lithium-ion battery used in this third generation system achieves an energy density of approximately 221 Wh/kg through liquid-cooled, scalable battery modules. It is a high-energy solution for long-distance applications with batteries between 600 and 1000 kWh, twice the storage capacity of the current battery generation. AKM CYC can also be charged quickly at a rate of up to 1C, which is

suitable for use in a fast charging infrastructure with a maximum power of up to 500 kW.

### Second generation

At Busworld, Akasol also presents the second generation of the OEM PRC AKASystem. Compared to the first generation, this system delivers 33% more energy and can store approximately 400 kWh of energy at charging speeds of up to 2C. It will enter production for two major bus manufacturers in mid-2020. The system is also suitable for fuel cell applications and will be tested in 50 vehicles by 2020. As a result, there are plans to expand cooperation with an Asian commercial vehicle manufacturer.

The 48V AKARack solution is a small 19-inch battery system designed for a variety of applications and capable of achieving a maximum charge rate of 2C with a storage capacity of 6.5 kWh per rack. It also features a powerful liquid-cooled thermal management system in a dedicated housing. The AKARack is ideal for 48V-based 'mild-hybrid' applications, as well as for power supply on board all types of commercial vehicles. (Hall 5, stand 530)



## New BussiPro spare part concept

BussiPro offers brand-independent spare parts management and technical maintenance services for buses and coaches. The company introduces a new way of improving the management of bus fleets: BusCare. The approach maximises the 'up-time' of a vehicle. The new solution not only ensures that high-quality spare parts are available on time, but also helps predict future replacements, thus avoid-

ing unpleasant surprises. BussiPro states that this solution delivers significant savings. Traditionally, when it comes to spare parts, only price and delivery reliability are considered. The BussiPro model is designed to discover beforehand which parts are best suited to the specific needs of the customer. Not by simply ordering the same parts every time, but by fol-

lowing developments in the industry and considering new available options. The concept includes three aspects to enable optimization of the use and management of the bus fleet.

To put it simply, the optimisation focuses on: increasing the number of kilometres between service interruptions; reducing the ratio of costs to distance travelled; increasing the profitability of the vehicle fleet. It consists of three steps: analysing the fleet deployment and current operational models; reporting on the analysis,

## Karsan at BMW



At Busworld, Karsan presents an Atak Electric bus specially designed for the Western European market, the biggest surprise being BMW's electric powertrain. This bus also measures only eight metres with a capacity of 52 passengers. With this bus, Karsan is aiming for city centres in medium-sized and smaller cities.

Karsan has been present in Eastern and Southern Europe for a while. With the Atak Electric they are now aiming for new markets in Northern and Western Europe. Karsan recently acquired 50% of the French Hervouet Corporate Industry in order to quickly establish a branch/importer in Western Europe. The order book is open and serial production has started. Karsan has been active in the automotive sector for more than half a century. First as an assembly under licence for the world's largest manufacturers, but meanwhile with a wide range of vehicles developed in-house for passenger transport.

### A pleasant appearance

The Karsan Atak Electric impresses with its contemporary design. The front wheels are mounted independently, which in combination with the electro-hydraulic



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power steering offers the driver a pleasant and precise steering. The driver is also pampered with an ISRI driver's seat with 8 possible settings and exterior mirrors with a blind spot on both sides. It also has a separately adjustable air conditioning and heating system. The dashboard consists of a 12.3" digital cluster plus a 10.1" touch screen for operating the lights, air conditioning, radio, etc. Its performance is astonishing, both when accelerating and during regenerative braking. With a turning circle between walls of only 7.28 m and a width of 2.40 m, small roundabouts and narrow streets are no problem for the Atak Electric.

### Trusted BMW technology

The five Li-ion BMW i-battery packs come from the BMW i3 and can be charged at night at the location of choice in one gentle charge of 10 hours (AC 22 kW charger), 5 hours (AC 44 kW charger) or in only 3 hours by using a quick charger (DC 80 kW combo 2). The stored capacity of 220 kWh easily covers 300 km. The engine, also developed by BMW, delivers a peak power of 230 kW and a maximum torque of 2,400 Nm. By regenerative braking, approx. 25% of the daily required energy is recovered and stored again in the batteries. The entire powertrain is covered by a 4-year warranty and its performance is guaranteed for 200,000 km.

The Karsan Atak Electric has a spacious interior despite its compact exterior dimensions. The Atak Electric also comes standard with USB contacts for travelers, a WiFi router can be ordered as one of the few options.

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