



## Hartmut Schick (Daimler Buses) on electrification of Citaro

# “We are not too late”

Daimler is once again very well-represented at Busworld. In hall 5, the South German multinational presents both of its brands Setra and Mercedes-Benz. Most of the news was already presented earlier this year with the Setra double-decker and the new Mercedes-Benz Tourismo. Still, for Busworld, they had another scoop in store, the Mercedes-Benz Citaro 'mild-hybrid'. A striking step amid the battery-electric overload at Busworld. We asked Hartmut Schick, CEO of Daimler Buses, the obvious question: why?

For a long time already, the Daimler representatives have been announcing that an electric Citaro city bus will be taken in serial production in 2019. That seems quite a little too late, as other players in this market will have a major lead by then. According to Hartmut Schick, it's not that big a deal. "The larger volumes, the tenders, will hit the market around 2020." The electric Citaro will be tested with customers in 2018 so it can go into serial production in 2019. I will be built in Mannheim, where Mercedes-Benz has a capacity for 3,000 buses per year.

### Scale advantage

Daimler Buses managed to keep the costs of this mild-hybrid low by using components from other divisions, such as the hybrid system derived from the Mercedes-Benz S-Class. The same will go for the batteries and other electrical components later. Daimler is currently building a battery factory where batteries

for all models will be produced; quite a scale advantage.

For Schick, it is all about the best-quality battery. "In winter, sixty percent of the consumed energy goes to heating and auxiliary systems. Only forty percent goes straight to the powertrain. This shows you have to look at the complete thermos package."

### Mobility solutions

He confirms that the electric Citaro will be an entirely new platform. He even calls it a completely new ecosystem. "It has nothing to do with a diesel bus anymore. The axles are different, the drive, all auxiliaries are electric and so on. Only the shell remains the same." The same goes for the aftersales, but also for the preparatory phase. Within Daimler Buses, the new department 'Mobility Solutions' was created for that purpose. Road infrastructure, bus lines and charging infrastructure must be analysed to allow optimum deployment and smart charging. We will offer our customers an all-round package."

### On time

Daimler Buses moved away from the philosophy of coming up with new prototypes and improving them on the go. Schick: "We want to offer a complete and good product, ready to be built in large volumes. A few years ago, the battery technology was not that advanced. Keep in mind that the European market for city buses is about 10,000 buses a year. At the moment, 800 electric buses are in operation, commissioned as from



Hartmut Schick in front of the new Mercedes-Benz Citaro mild-hybrid.

2010. So if you ask me if we are too late, I don't think so. You must not forget that operators are only now starting to think of converting their bus fleets to electric ones. Meanwhile, we are so far in the process that the bus has been tested thoroughly both in severe winter and hot summer conditions."

### Financial advantage

Despite this revolution in drive technology, Schick warns us that until 2015,

seventy percent of the total bus volume will still run on diesel engines. By 2030, that will be reversed into seventy percent electric and thirty percent diesel. Both in Europe and the rest of the world. Schick: "If you compare Euro 5 with Euro 6, you will find that an Euro 6 engine consumes fuel thirty percent more efficiently. Diesel engines can still be further improved and that is still necessary. But our new mild-hybrid can be delivered at a relatively small additional cost compared

to a full hybrid. It is up to 8.5 percent more economical than our diesel Citaro. Taken over a whole year, this yields a significant financial advantage in terms of fuel costs."

## Van Hool EX16M for Royer

Yesterday, the major French bus company Royer added another five Van Hool EX 16 M to their previous order of six Van Hool EXs. Royer mainly deploys these coaches for tourism purposes, but also for regional

routes. The French company mainly serves the regions of Alsace and Lorraine. Royer employs 270 people and has a fleet of 220 vehicles. Royer has been a loyal customer of Van Hool since 1982.



## New electric midi bus by BYD

**BYD, Build Your Dreams, from the Chinese Shenzhen, shows quite some new developments at its spacious stand at Busworld. It also features a giant Busworld scoop: an 8.75m midi bus with a fully low floor with full air conditioning which is, according to BYD, full of big bus features.**

Already 21 of these were sold to Transdev to be deployed in the Dutch province of Noord-Holland. A second milestone is the first BYD 12m bus completely built in Europe, assembled in their newly opened factory in the Hungarian Komárom. The midi bus completes the BYD product range that consisted up to now of 10.2m, 10.8m and 12 single-deckers and a 18m articulated version as well as some double-deckers.

The look of the BYDs is now more closely aligned with the European style and culture. It will be the standard - one look - for all future BYD e-buses. Furthermore, Busworld is the place for BYD to show a



BYD presents its new European style midi bus.

number of changes such as another battery placement, ergonomic driver's seat,

led lighting and a new sprinkler system for the battery compartment.

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Academic study sheds light on some matters

# Public transport not adapted to the elderly

In the margin of Busworld, an interesting seminar brought some new insights about a frequently forgotten group of public transport users: the elderly. There is no doubt about the aging of the population. The question is whether public transport operators are conducting a policy adapted to this target group. The answer is no, according to the study by Professor Christian Haas of Frenesius University (D). It is not about wheelchair users, but about people who are getting slower in their movements, in taking decisions, who do not see or hear that well anymore due to their age.

Together with IVECO BUS and DB REGIO, professor Haas looked for the bottlenecks and possible solutions. Iveco Bus does no longer require introduction. DB Regio, subsidiary of the German Railways operates 5,000 own buses and another 8,000 buses on top of that through leased lines. Worth the effort for both parties to call in the help of professor Haas and his research team to map out the problems and provide solutions.

The objectives were as follows: elderly people have a right of access to mobility, they should be able to participate in social activities, how do we keep them on the bus or how do we get new elderly people on the bus, and not unimportantly: more passengers (probably in the off-peak hours) generate more revenue, increasing the profitability of the transport company.

Finding: apart from the introduction of low floor buses and low entry buses in the late 80s, hardly anything specifically for elderly people has been done.

Prof. Haas conducted medical and sociopsychological research. He is particularly pleased to work with and for Iveco Bus and DB Regio because – as he says himself – his research work can provide concrete solutions to the benefit of people.

## Some cases

Some cases can provide some clarification. Apart from the issue of entry and exit, the question is: how do I get to a seat before the bus leaves? If this is not easy, people stay at the door although standing up should not be an option. Measurements were made during accelerating, braking and turning. It appears that elderly people sustain – on one leg – as much force as up to 169% of their body weight. Above that point, standing becomes inconvenient. It should be clear that the older person will want to sit down as soon as possible.

Prof. Haas' team also measured in a stationary bus how much time an older person needs between boarding the bus and go and sit on a random free seat. A healthy older person needs 50 seconds, a slightly older one needs 100 seconds and a weak older person needs 150. Extrapolated on 615 million passengers per year (DB Regio), this gives the following figures:

In case of an increase by 10% of older people 7,830 hours, in case of an increase by 25% 19,575 hours. In case of an increase by 10% of weaker older people 26,626 hours, in case of an increase by 25% up to 64,063 hours. If the flow in the buses does not improve, this will have disastrous consequences for the commercial speed and operating costs. Other studies focused on the speed at which decisions are made. Subjects had to go and sit on a designated seat, indicated by an icon. Young people needed 6 to 7 seconds, older people 50 to 60 seconds. Through cameras that followed the eyes, it was found that the elderly not only have a narrower range of vision, but also that they are distracted by bright colours. Handles and bars in bright yellow must be avoided. Also the meaning of the icons is hardly known. On top of that, these are different among the various operators, even when they are active in the same area. A European uniformity



On the photo: Stéphane Espinasse of Iveco Bus, Golfer Waldhausen of DB Regio and prof. Christian Haas, Frenesius University.

urges and regular information campaigns by the transport companies are necessary as well.

## Seats

What also came to light is the unadjusted height of the seats. Some older people voluntarily chose seats on platforms. Not to climb it first and then sit down, but to go sit on the seat from the normal floor and then pull their feet on the platform. The R107 regulations determine that the top of the seating surface should be around 430 mm above the floor. This is too low to be able to get up smoothly. Bed manufacturers already picked this up and offer higher beds for elderly people. A solution would be to adjust the R107 regulation and to bring the height of some reserved seats to 658 mm.

Another problem lies in the seats just behind the front axis. These – often

reserved for elderly people – seats are against the driving direction. Elderly people have orientation problems more often than young people, so when they are on such a seat, they do not always know where to get out of the bus. Although they have to make a little climb for it, older people prefer to sit right in before or even on above the drive shaft. This gives them a better overview of the front of the bus which gives them a more pleasant feeling.

Access with a rollator through the front door seems not to be that easy either. Nevertheless, elder people (even without a rollator) prefer to get in at the front of

the bus where the driver notices them. They hope that the driver will not leave until they have found a seat or at least will not accelerate too much.

And there were other interesting cases. The conclusion of prof. Haas was that the manufacturers and operators should take into account the neuromechanics of people who are growing older when it comes to development, engineering and specifications. A matter Iveco Bus and DB Regio jointly commit themselves to. The professor and his team will continue to test the proposals and changes. See you again in a few years.

## Mellor shows low-floor electric bus

Mellor's brand new showpiece is an electrically powered and on a Fiat Ducato chassis based minibus for public transport. This Mellor electric minibus is called Orion E. According to the manufacturer, it is the first fully electric minibus with low floor. It offers space for sixteen seats but is flexible enough to fit four wheelchairs as well.

This flexible layout is possible because the Orion E runs on front wheel drive. The engine delivers 2,500 Nm at maximum torque. Mellor has been developing this bus for two years in cooperation with the Dutch Emiss. According to Mellor, the action radius is 100 miles, or 170 kilometres on one battery charge. Charging the lithium-ion battery takes only about 100 minutes. Mellor expects a battery life of at least between five and seven years. The first deliveries will take place by the end of this year already.

Mellor employs 74 people. The Mellor production line has the capacity to deliver six vehicles per week. The Orion is also available as ordinary diesel version. It is estimated that there are still between 1,500 and 2,000 Mellors driving around in the UK. They also provide the Tucana II model, based on the Volkswagen Transport T6, which also has room for



Mellor shows brand new showpiece: a low-floor electric bus.

sixteen seats. In its objective of gaining ground on the European continent, they have been concluding dealerships with BK Invest for the Scandinavian market, E-Vade in Germany and the Dutch E-Bus for the Benelux region (the Netherlands, Belgium and Luxembourg). Mellor can be found at Busworld in hall 9, stand 919A.

## Otokar launches Ulyso

Turkish manufacturer Otokar seizes the Busworld opportunity and launches its latest creation: the Ulyso.

This ten-meter-long coach has a 316-hp Cummins under the hood and has space for seating 36 travellers + toilet. Those who do not want a toilet, can go up to 44 seats. The cargo space is 5.5 m<sup>3</sup>. The Ulyso is intended for short multi-day trips, but can also be used sporadically for school transport. By default, the Ulyso features a rear-view camera, refrigerator, boiler, ESP, LDSW, SEGE seats, wood flooring and two Bosch monitors.

The Ulyso goes on sale from the start of the exhibition and can be delivered as from February. Those who prefer an automat will have to have one month of extra patience. An Ulyso with a wheelchair lift will be available mid-2018.

The new Ulyso with the distributors for Belgium: father and son Meeuwissen.



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Translation: X-L-Ent  
Lay-out and printing: Ally Graph-x  
Publisher: Mieke Glorieux