

Solaris novelties AT BUSWORLD 2017

Ever since 2001, Solaris has been continuously participating every two years in the biggest bus industry fair in Europe, the Busworld. Located in the Flemish part of Belgium, right next to the French border, the tiny Kortrijk turns into the European bus industry capital for over one week in October. This is where many vehicle have premiered. Solaris, too, has prepared a vehicle début for the trade fair visitors - namely the articulated version of the new-generation electric bus.

➤ The new Solaris Urbino 18 electric

One of the market advantages of Solaris is its innovative products which often become trendsetters for the whole sector. That is what happened to hybrid buses in 2006, as well as to electric vehicles in 2011. Since then, nearly the whole bus industry has set course for e-mobility.

Length	18 000 mm
Width	2 550 mm
Total height	3 400 mm (including pantograph)
Axle base	5 900 / 6 000 mm
Front axle	Independent axle ZF RL 82 EC
Rear axle	ZF AV 133, reverse axle, i=9,81
Neutral axle	ZF AVN 132
Traction motor	TSA 240 kW (4-pole)
Wheels	275/70 R50 x 22,5"
Charging system	Plug-in, Schunk pantograph, power up to 240 kW

Battery	High Energy: 240 kWh
Electric fittings	Medcom
Air conditioning	Passenger compartment, driver's cabin
Seat type	Ster 8MU
Number of seats	38 (*)
Seats accessible from low floor	12 (*)
Passenger capacity	135 (29 t)
Door arrangement	2-2-2-2
Entrance height	320 mm
Articulation mechanism	Hubner 19,5 (electronically controlled)
Brake	Electrodynanmic

(*) - required load capacity index: 50

The "direction e-mobility" has been a key area of development for Solaris in the past years. This is evidenced by a growing number of supplied and ordered battery vehicles. By the middle of this year, Solaris had already sold nearly 200 buses with electric drives. They include 8,9-metre MIDi-class and twelve-meter buses. What is more, this year the product range of battery buses has been extended by an articulated version of the new generation.

This year's Busworld fair in Kortrijk will see the official début of the fourth-generation Solaris Urbino 18 electric. The product is based on the construction of the new generation Urbino passengers have already made an acquaintance with after its premiere in 2014. Up until now the articulated bus variant has been available only with a diesel engine. As of this year, the Urbino family will gain a new member - the 18-metre zero-emission bus.

On display at the Kortrijk trade, the articulated electric bus will be fitted with a 240 kW central traction motor. Its energy storage system

consists in 240 kWh batteries of the Solaris High Energy type. In the case of the model presented at Busworld batteries can be charged either by means of a plug-in connector or via a roof-mounted pantograph.

Owing to the reduced unladen weight of the vehicle and the advantageous distribution of axle load, the passenger capacity of the presented vehicle totals 135 people. This is, of course, only one of the many options available to customers, because, as usual, Solaris is extremely flexible with regard to the needs of operators. The interior design is one of many elements that can be fine-tuned to the expectations of carriers. The same applies to the battery capacity or the way these are recharged. All of these efforts are to make Solaris buses more functional and economical depending on existing conditions.

What is important for operators, the new-generation articulated Solaris Urbino electric 18 is not only a test version presented on trade fairs. Rather, it is a mature

serial product. Even before the Busworld fair the first copies of the new model made it to carriers. One of those who bought the new bus is the Cracow-based MPK to whom Solaris has supplied 20 electric buses in total this summer. Seventeen of these were 12 meters long; the three remaining ones were articulated buses. One of them is truly exceptional - that is bus number 15,000 to have rolled out of the Solaris factory in Bolechow.

Meanwhile, in the past weeks operator PKM Jaworzno supplemented its bus fleet with 22 electric buses, nine of which are articulated vehicles of the new generation. Interestingly, after completion of that order, one third of the Jaworzno bus fleet is now made up of electric vehicles. That way this Polish city of 100,000 inhabitants can be called beyond doubt an e-mobility leader in Europe.

The number of electric cars on the streets of European cities is rising quickly. Solaris takes actively part in the development of e-mobility.



➤ The new Solaris Urbino 10.5

The second vehicle on the Solaris stand will be none other than the 10.5-metre new generation Urbino.



The main advantages of that bus are its small external dimensions and its excellent manoeuvrability thanks to which it is extremely effective both in small towns, as well as on the narrow, cramped streets of many European metropolises. The vehicle was built on the basis of a 12-metre Solaris modules, but the bus has been shortened by 1.5 meters between the first door of and the second axle compared to the new Urbino 12. Shortening the construction of the bus required also a reduction of the wheelbase from 5,900 mm to 4,450 mm.

A 209 horsepower Cummins ISB6.7E6C engine has been installed in the model showcased at the fair. However, just like in the diesel Urbino 12, it is possible to install a DAF MX11 drive unit instead. Both solutions guarantee dynamic and economical driving. The engines meet highly restrictive Euro 6 emissions standards.

In spite of its small dimension, the bus is doing very well on busier routes, too, with its 23 seats six of which can be accessed from the low floor. The passengers' comfort during a ride is ensured by a highly efficient air conditioning system,

modern LED lighting (amber-coloured, no less) and USB ports for charging mobile devices, located in the handrails.

Three Solaris Urbino 10.5 buses started cruising around Vienna this year. More vehicles are already lined up on the assembly line - they are being produced specifically for the Polish cities of Komorniki and Kutno, but also for Firth in Germany and French Abondance. A picturesque location, the latter will be able to witness the advantages of the new Solaris Urbino 10.5 on winding and steep mountain roads.



Length	10 550 mm
Width	2 550 mm
Height	3 040 mm
Axle base	4 450 mm
Front axle	Independent axle ZF RL 82 EC
Drive axle	ZF AV 132, axle transmission I = 6.20
Front overhang	2 700 mm
Rear overhang	3 400 mm

Internal combustion engine	CUMMINS ISB67 E6 C 280B (209 kW)
Transmission	ZF 6AP
Fuel tank	310 l
Additive tank	40 l
Air conditioning	Passenger compartment, driver's cabin
Door arrangement	2-2-2
Seats	23
Seats accessible from low floor	6

➤ The new Solaris Urbino 12 Hybrid

The third vehicle to be presented by us during the Busworld is the new Solaris Urbino 12 with a serial hybrid drive. It is one of the 208 hybrid buses Solaris is going to supply to Belgian operator TEC for the Walloon Region.



The supplier of the hybrid unit HybridDrive is an American manufacturer – BAE Systems. The environmental-friendly drive allows to significantly reduce fuel consumption and pollutant emission into the atmosphere. It is made possible by an electric engine fuelled with power from a power storage facility. That facility, in turn, is charged with the help of a generator using a low-capacity (4.5 litres) Cummins diesel engine (a 210 HP Cummins ISB4.5E6).

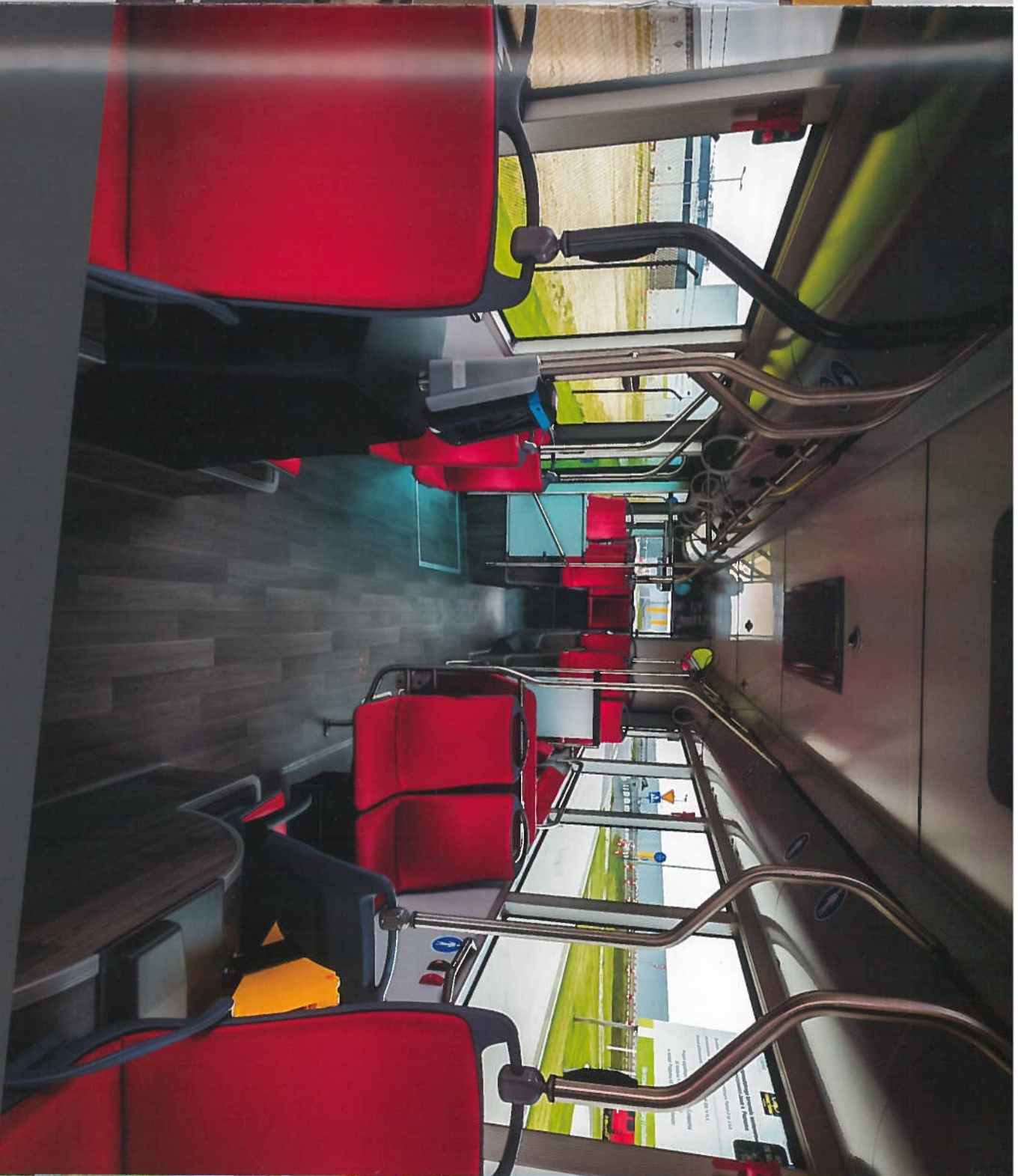
The new Solaris hybrid Urbino 12 is also available as a zero emission option, which makes the vehicle like an electric bus. Thanks to the installation of the Stop-and-Go system, the diesel engine turns off completely during stopovers at bus stops and the opening of doors,

but it turns on again immediately after the supercapacitors run out of power. A GPS has been installed in the vehicle, too, including corresponding software that allows for the activation of the Arrive-and-Go function. This option allows to switch off the diesel engine even as the bus is approaching a bus stop. Various tests have shown that thanks to this environmental-friendly solution the bus is able to use up to 20 percent less fuel than similar vehicles with a conventional drive would use. Moreover, the engine operates so quietly that the noise level can be reduced significantly, which comes in handy in particular in crowded city centres.

As of recently Solaris' new offer also includes an 18-metre version of the producer's hybrid bus with a serial

drive of BAE. The bus is equipped with a six-cylinder, 6.7-litre and 300 HP engine of Cummins ISB6.7 engine, as well as an asynchronous central motor with a peak performance of 200 kW.

The new Urbino 12 Hybrid boasts exceptional drive parameters, but what makes it stand out particularly is the forceful and yet smooth acceleration. One of the main features of the drive is that it can recuperate kinetic energy during braking and this energy is subsequently transformed and stored as electric power in a storage facility – in 0.82 kWh supercapacitors.



Length	12 000 mm	Electric engine	BAE HDS 100 peak performance 190 kW
Width	2 550 mm	Maximum speed	75 km/h
Height	3 100 mm	Fuel tank	200 l
Axle base	5 900 mm	AdBlue tank	40 l
Front axle	Independent axle	Air conditioning	Passenger compartment, driver's cabin Konvekta KL 47 TT
Drive axle	ZF AV 133	Door arrangement	2-2-2
Front overhang	Axle transmission i = 7.36	Passenger capacity	99
Rear overhang	2 700 mm	Seats	21
Drive	BAE hybrid drive	Seats accessible from low floor	7
Energy storage system	BAE supercapacitors		
Internal combustion engine	CUMMINS ISB 4.5 E6		