The new eCitaro.
Ready for the city of tomorrow.

Mercedes-Benz
The standard for buses.
Modern cities need modern solutions.

As a growing population leads to increasing mobility, the impact of urbanisation is most strongly felt in cities. This is resulting in both opportunities and risks for traffic systems, which are already operating at full capacity. One solution is a well-developed public transport system with emission-free buses. The new all-electric Mercedes-Benz eCitaro paves the way for e-mobility in the city. It runs entirely emission-free and virtually noiseless. At the same time, the eCitaro can be customised to the specific wishes and requirements of public transport services.
Every generation has its own leader.

The eCitaro is an all-electric bus which could only have been developed by Mercedes-Benz. It expands the portfolio of the worldwide bestselling Citaro with an all-electric, production-ready city bus that takes e-mobility to an entirely new level. The eCitaro, as part of the Mercedes-Benz Buses eMobility solution, is ideally equipped for tomorrow’s cities today.
The future needs a partner who knows their way around.

Electromobility is a challenge – both for private car buyers thinking about going to work or on a weekend getaway, and for transport companies that work with a fixed and finely graduated network of routes, timetables, stops and scheduling. Their vision is of a 1:1 exchange of city buses with internal combustion engines for all-electric buses. This, however, usually not possible without changes, and for this very reason, thorough preparation is indispensable – electromobility implies a full rethinking of urban mobility with buses and coaches. In addition to the higher costs and potential subsidies for electrically powered buses, conversion to electromobility requires detailed attention to energy consumption and range issues, to passenger capacity, to charging strategies, including energy supply, and, ultimately, to services ranging from equipping the company’s own workshop to multi-tiered employee training. Another key factor in electrified bus operation is the topic of operational assistance. Effective decisions can be made in daily operations by merging depot, infrastructure and bus data. To this end, the eCitaro has to be integrated into depot management, and data, such as the charge level, needs to be made available at interfaces.

Mercedes-Benz is therefore pursuing a systematic solution. The eCitaro is much more than a city bus. It is part of the complete eMobility system from Daimler Buses.
Take a peek into the future.

Mercedes-Benz is achieving a smooth transition in the development of its city buses: the dynamic, expressive design of the eCitaro takes its stylistic cues from the Mercedes-Benz Future Bus and, with its modern design language, offers a glimpse into the future of Mercedes-Benz buses. The eCitaro harmoniously combines the established classic look of a city bus with the futuristic design language of bus generations to come. This fascinating meeting point is further enriched by striking details: the Citaro Ü’s elegantly curved windscreen, the slightly lowered roof at the front, the slats with design elements in the front panel and the all-round trim of the roof superstructures. And, as expected for buses from Mercedes-Benz, design always has a practical side: the flaps in the eCitaro’s roof panels facilitate servicing.

Technical information:
All details can now be found online
Mercedes on the outside means Mercedes on the inside.

The eCitaro is not a prototype, but a fully developed all-electric bus. Its superior quality is ensured by the strongly established Citaro. Add to this the production at the Mannheim bus plant on the line of the conventionally powered Citaro. Essential components such as the drive axle or electrohydraulic steering have already proven their worth in grading city bus use. Additionally, the all-electric Citaro underwent extensive testing right up to the series start. The bus needs to pass the same tests as any other Mercedes-Benz bus since the eCitaro will be providing the same high availability as conventional city buses. Mercedes-Benz tested the eCitaro at temperatures below minus 15 degrees Celsius at the Arctic Circle and at more than 30 degrees Celsius in the summer heat of Spain. Winter testing also includes driving tests on slippery roads to check driving dynamics control systems and recuperation. The bus completed summer testing in demanding city traffic and on steep ascents and descents in the Sierra Nevada.

Winter trials 2018 in Finland:
http://www.youtube.com/MercedesBenzOmnibus
Nature conservation meets personal protection.

Mercedes-Benz has been a pioneer in safety and assistance systems for decades and pursues a vision of accident-free driving. This is why safety is also standard in the Citaro city buses. With the eCitaro, this pioneering work has now been supplemented by two world premieres in the area of assistance systems for city buses.

Designed for highly dynamic traffic behaviour in city bus traffic, the Sideguard Assist primarily supports the driver when turning to the right in city traffic, where it draws attention to other road users and stationary obstacles, warning the driver in the event of a collision hazard. Additionally, Sideguard Assist helps when changing lanes.

With the Preventive Brake Assist feature, Mercedes-Benz is launching the first Active Brake Assist for city line buses. The new assistance system warns of a potential collision with moving pedestrians as well as stationary or moving objects and automatically initiates a braking manoeuvre with partial braking in the event of an acute collision hazard. A warning cascade and braking intervention are designed for use in city traffic. Numerous other assistance systems additionally support and relieve the driver – such as the Anti-lock Braking System (ABS) and the Electronic Stability Program (ESP), which Mercedes-Benz used as the world’s first manufacturer in buses. Optionally available is also a roll pitch control with electronically controlled shock absorbers. It automatically stabilises the vehicle and thereby reduces the inclination in curves.
Others call it a workspace. We call it a cockpit.

Even the most state-of-the-art city bus needs a driver to steer it. And, with this in mind, the eCitaro’s cockpit offers only slightly from the familiar driver’s workspace. The operating concept largely corresponds to that of the conventional Citaro. The direction of travel is selected as usual with the D-N-R push buttons, but the instrumentation has been somewhat adapted. The tachometer is replaced by a power meter with a display of current power demand or recuperation. The battery’s charge status is also displayed. Via the central display, the driver can call up range, power availability and a charging indicator.

If a fuel-operated auxiliary heater is installed, a level indicator for the heating oil tank is added.
We don’t think in terms of problems, but in terms of solutions.

The handicap of all-electric city buses is their extra weight due to the batteries. Mercedes-Benz counters this with a well-thought-out weight distribution of the eCitaro’s components. For example, this applies to the variable position of the battery modules on the roof and the accommodation of the other battery modules in the rear. This is supplemented by the use of a front axle with a permissible axle load of eight tonnes. The result is an efficient capacity of at least 88 passenger seats in the solo bus even with extensive equipment. The calculation is based on a curb weight of 13.5 tonnes and an approval with the now permissible total weight of 19.5 tonnes in the EU.

Additionally, the eCitaro integrates the Citaro’s proven interior layout so that the passenger compartment layout remains unaltered. This means fleet and passengers do not have to adapt. And what applies to the Citaro, of course, also applies to the eCitaro. Public transport services can still choose from a variety of optional extras and make our bus their very own. Be it passenger seats, floor coverings, handrails, communication systems or even invisible details such as the door control – the Citaro with any drive system is and will always be an entirely customised city bus.
Battery technology designed with the future in mind.

The eCitaro is far from being a standardized bus, but rather a next-generation, individually configurable city bus. Modular technology is what makes this possible. Additionally, the eCitaro’s technology is future-proof. Since the development of battery technology is currently progressing rapidly, an optional upgrade is planned for replacement with higher-capacity batteries during the eCitaro’s service life.
For Mercedes-Benz, being dynamic is a mindset. To save energy, the eCitaro features acceleration control: whether empty or fully occupied, whether a solo bus or an articulated bus – the eCitaro always accelerates under full load with identical dynamics from the stop or the traffic light. This prevents unnecessary energy consumption and leads to passenger-friendly driving style. Both bus models have an identical 2 x 125 kW drive. In addition to the drive, the battery equipment is also modularly designed. Lithium-ion batteries are used. In the case of the solo bus, two, four or six battery modules are used on the roof. They are supplemented throughout by four battery modules in the rear. Each of the modules consists of 15 cell modules and a control unit. The individual cell modules each accommodate twelve battery cells, and the total capacity of the batteries amounts to 243 kWh.
As flexible as its everyday life: the eCitaro’s charging technology.

The eCitaro’s charging technology stands out with future-proof flexibility. To begin series production, charging via a Combo 2 plug is planned. If an intermediate charge is desired to increase the range, the eCitaro can also be optionally charged via a current collector in the future. With this intelligent modular concept of battery and charging technology, Mercedes-Benz offers transport companies the opportunity to customise the eCitaro to the individual needs of the operation or even to individual lines.
Temperature can not only be predicted, but also managed.

Due to the large interior, the huge window surfaces and the frequent opening of the doors, the interior temperature of a city bus is very energy consuming. Since no usable waste heat is generated due to the high efficiency of an electric motor during operation, the total energy consumption of an all-electric bus can nearly double, especially during the heating season. This high additional energy consumption has a clear impact on range. This is why the eCitaro’s sophisticated intelligent thermal management minimises energy consumption while ensuring maximum range.

The interior can be preconditioned to the desired temperature as early as during charging in the depot. The passenger compartment is cooled by a standard roof air conditioning system with an energy-saving heat pump.

The passenger compartment is heated by a heat pump as well as by the waste heat of an electric heating element. Additionally, the Citaro’s usual electrically operated side-wall heaters with blowers are available. The well-known front box features a double heat exchanger. Optionally, a fuel-driven auxiliary heater can be used. The automated interior temperature, which depends on the outside temperature, is especially innovative. Here you can choose between an Eco and Comfort characteristic line. This leads to an increase in efficiency of up to 40 per cent.
Highly efficient heating through networking.

The design of the passenger compartment’s air conditioning system is based on the specifications of the Association of German Public Transport (VDV). The level of comfort in the outer limits, where ambient temperatures are either extremely hot or extremely cold, is adjusted. Instead of a predetermined absolute interior temperature, a defined reduction or increase to the external value is used. Thermal management has been optimised down to the last detail.

This means that all heat-emitting components are networked together to optimise the energy required for cooling. The performance of heating and air conditioning also varies depending on the number of passengers on board. This is determined via the axle load sensors. Since the human body gives off heat, heating power can be reduced when the bus is busy.

Since the city bus passengers usually spend only a short time in the vehicle, this slight comfort limitation in favour of energy consumption and therefore range is perfectly reasonable. On the other hand, since drivers spend their entire work day in the city bus, their requirements are somewhat higher – especially recognising that maximum driver fitness needs to be safeguarded. With this in mind, the air conditioning of the driver’s work station is regulated separately and independently of the passenger compartment.

Overall, the energy required for the eCitaro’s heating, ventilation and air conditioning is close to 40 per cent lower than for the current Citaro with an internal combustion engine.
A best-case solution even in the worst-case scenario.

The daily routine of a city bus is characterised by many unpredictable adversities. This is why Mercedes-Benz prefers a worst-case scenario for the range specification and is guided by the demanding standardised SORT2 urban driving cycle. The eCitaro’s full battery equipment achieves a range of around 150 kilometres in the summer and, under ideal conditions, even as high as 250 kilometres. This means that subnetworks can be operated today without intermediate charging in the daily workload of a city bus.

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<th>Power consumption*</th>
<th>Solo vehicle (in kWh/km)</th>
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<td>Diesel</td>
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*By city driving cycle SORT2

Minimum energy consumption at maximum range – in all seasons.
Good advice doesn’t have to be expensive. Just included.

eMobility Consulting from Daimler Buses is a comprehensive consulting service in which experienced employees first present the efficiency of the eCitaro to the transport companies and then sound out the ideas, expectations and wishes of the companies. In a next step, each line is analysed individually and comprehensive data is compiled from the line length to passenger volume to average speed. Even the outside temperature plays a role here. A specially developed simulation program maps the eCitaro’s system behaviour under real operating conditions, calculates the energy requirement and simulates various recharge scenarios.

Our experts evaluate the individual deployments and link them together. This results in different variants, from the standard setting with range calculator to the topic of charge management to the organization of the depot. The advantage here is the experts’ comprehensive knowledge of their own buses, the direct communication line to the development engineers, and the professional and trusting relationship with the transport companies – which all results in very unique know-how for the bus transport system.

In addition to providing advice on how to best deploy the eCitaro fleet, the end result will include precise recommendations and calculations on charging infrastructure, energy consumption, grid connection power, and the development of cost-effective charging and load management.
Our service begins when you purchase your bus.

Service, maintenance and repairs are changing with the advent of electromobility. This is why Mercedes-Benz has prepared a complete, tailor-made service concept for the OMNIplus service brand. We are committed to supporting you in the best possible way to master the transition to electromobility. You can rely on our proven selection of OMNI plus Service Contracts, which we have adapted to the requirements of electromobility. When purchasing an eCitaro, a five year warranty for the high-voltage battery as well as the maintenance, repair or replacement of components in the high-voltage system are included as standard. You are given the opportunity to additionally expand the scope of services (maintenance and repair) at predictable costs. So that you can head into the future of electromobility fully covered and with absolute confidence – knowing that you have a reliable partner by your side.

The OMNIplus eService Contracts:

**eBasic**
With the eBasic Service Contract, you can secure your new eCitaro even better at predictable costs.

**Scope of services**
Covers repairs to the high-voltage system and the high-voltage battery, supplies other than battery charging as well as all maintenance work on the complete vehicle required by the manufacturer’s specifications. This applies to all parts installed on the vehicle as described in the manual (except for supplied parts).

**Features**
The eBasic Service Contract provides the all-round worry-free package for switching to an electric bus fleet.

**ePremium**
The ePremium Service Contract provides the all-round worry-free package for switching to an electric bus fleet.

**Scope of services**
Repairs to the entire vehicle including maintenance and wear are covered. Also included are the eBasic services.

Additional services included in the event of a breakdown:
1. Surcharge in the case of 24h SERVICE for work performed outside of normal working hours
2. All vehicle-related costs in the event of a breakdown, including: towing costs, spare parts procurement costs, travel costs and labour costs.

**Contract finalisation**
It is possible to finalise an agreement for both types of contract at any time. Duration and mileage can be determined individually. Additional packages such as for statutory inspections are also available.

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1. Excluded are: substantive damages, damage to equipment not permanently attached to the vehicle, care and cosmetic repairs, battery charging, parts delivered as spare parts, spare parts from 24h SERVICE, wear and tear. The exact scope of services is to be taken from the contractual documents.

2. The high-voltage components on the eCitaro include the powertrain (drive axles with wheel hub motors, power electronics drive control, compressors, inverters, converters and electric drive control), compressed air and air conditioning compressors, inverters. The exact scope of services is to be taken from the contractual documents.

3. Excluded are: substantive damages, damage to equipment not permanently attached to the vehicle, care and cosmetic repairs, battery charging, parts delivered as spare parts, spare parts from 24h SERVICE, wear and tear. The exact scope of services is to be taken from the contractual documents.
If public transport companies would like to undertake maintenance and repair to varying degrees in their own workshop, the consulting services for the entire eMobility system also include information on workshop equipment, the required graded employee training as well as a complete training concept.

In Dortmund, OMNIplus has set up a unique model workshop with a central training location for electromobility. This is where employees and service technicians from customer workshops are trained. The high-voltage certifications cover the entire spectrum, from cleaning staff training to high-voltage safety instructions and graded training for electricians to the training module for instructors. Additionally, customers visiting Dortmund can experience the requirements for setting up a bus workshop for electromobility. Mercedes-Benz draws on many years of experience with hybrid and fuel cell buses in the model workshop.

We have also given serious consideration to the future of your eCitaro – with OMNIplus services designed to meet the requirements of electromobility, perfectly integrated and tailored to the specific needs of public transport companies. This means you will be on the road with your fully electric buses – safely, reliably and predictably – for a long time.
Important for you. Important for us. Technical data stored in the vehicle.

Electronic vehicle components (e.g. Engine Control Unit) contain data storage for vehicle technical data, including but not limited to: diagnostic trouble codes in the event of a malfunction; vehicle speed, braking force, or operating conditions of the restraint system and driver assistance systems in case of an accident (no audio and no video data recording). This data is either stored in volatile form, e.g., diagnostic trouble codes, over a short period of time (a few seconds only), for instance in the case of an accident, or in aggregated form, e.g., for component load evaluation. The data can be read using interfaces connected to the vehicle. Trained technicians can process and utilise the data to diagnose and repair possible malfunctions. The manufacturer can use the data to analyse and improve vehicle functions. When requested by the customer, technical data can form the basis of additional optional services. In general, data from the vehicle is transferred to the manufacturer or a third party only where legally allowed, or based on a contractual customer consent in accordance with data protection laws. Further information regarding storage of vehicle technical data is provided in the vehicle owner’s manual. Mercedes-Benz Buses and Coaches naturally handles customer data confidentially.

About the information in this brochure.
Information about the product is subject to change after this brochure went to press (08/18). The manufacturer reserves the right to make changes in the design or form, deviations in colour, and changes to the scope of supply during the delivery period, insofar as the changes or deviations are reasonable for the customer, taking into account the interests of the seller. The illustrations may also show accessories and special equipment optional extras that do not form part of the standard scope of supply. Colours may vary for typographical reasons.

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