



FULLY ELECTRIC LOW FLOOR

SCANIA CITYWIDE



SCANIA



DESIGNED FOR SUSTAINABLE AND EFFICIENT MOBILITY

Based on more than a century of engineering experience, the new generation Scania Citywide has been developed to meet the demands of today's and tomorrow's cities. Designed to boost the appeal of public transport, it offers excellent passenger comfort and the latest technology in everything from safety systems to noise and emissions control, with the fully electric variant enabling clean and silent operation. And through its high efficiency, exceptional uptime capabilities, and outstanding passenger capacity, the Scania Citywide truly allows sustainable mobility to go hand-in-hand with operating economy.

For a better city environment

Minimising environmental impact and local emissions is all about having the right vehicle for the operation and using it efficiently. Our fully electric variant – along with our other powertrain options – enables us to efficiently meet the requirements of urban operations. The high quality of the vehicles, their innovative technical solutions, and our range of driver and maintenance services, allows operators to reduce or even eliminate emissions while also reducing cost. And because it is optimised for fast in-route charging, the fully electric variant has a reduced need for energy storage and consequently fewer batteries. This results in lower environmental impact.

The fully electric Scania Citywide also offers a positive passenger experience. A silent powertrain, an efficient climate system that can handle just about any type of climate, and independent front suspension all contribute to making the ride more comfortable. Additionally, the design and quality of material help to further minimise noise levels inside the bus, while also creating a bright, spacious and welcoming passenger environment. The exterior of the bus, with its contemporary and minimalistic design, is intended to increase the appeal of public transport.

Safety has been of utmost importance during development. The Scania Citywide has built-in state-of-the-art safety systems and features that help the driver by increasing awareness of other road users, or even controlling the vehicle when required. This can help prevent accidents and thereby create a safer city environment.

Energy efficiency for high utilisation time

Scania buses have been developed to minimise energy consumption and this is especially true for the fully electric variant. The efficient and intelligent climate system consumes minimal energy and the e-machine efficiently handles almost any climate and topography, without torque limitations. And because driving style can also have a major impact on the vehicle's energy consumption, Scania's driver support services can help achieve further savings.

With both in-route and depot charging capability, the fully electric Scania Citywide has the flexibility to meet different operational needs. Leaving the depot fully charged, the bus can handle morning peak hours without having to recharge and can then continue operating for the remainder of the day through fast, in-route charging.



Ensuring availability through reliable solutions

Reducing vehicle downtime and increasing utilisation is essential to making urban operations cost-efficient. All Scania buses are built on proven technology and components, resulting in chassis and powertrains that are dependable, durable, and robust. That reliability is the key to minimising time in the workshop and maximising utilisation of the vehicle.

The Scania Citywide is designed and constructed to make sure that sensitive and expensive components are protected if and when the vehicles are involved in collisions. Limiting damage and avoiding deformation of components such as the steering system, electric powertrain, and batteries is critical for minimising costs, as well as complex and time-consuming repairs. The vehicles are also designed to facilitate easy maintenance and to make it as efficient as possible. Here, Scania offers professional workshop services with high parts availability to secure maximum uptime.

Excellent passenger capacity

With one of the best passenger capacity figures in the industry, the Scania Citywide allows operators to keep costs down by minimising the need for additional vehicles during peak hours. High axle load capacity, reduced chassis and body weight, and new interior layout options

enable vehicle weight to be kept down, allowing for more passengers. In the fully electric variant, this is further underlined by minimised battery weight.

A first-class driver area

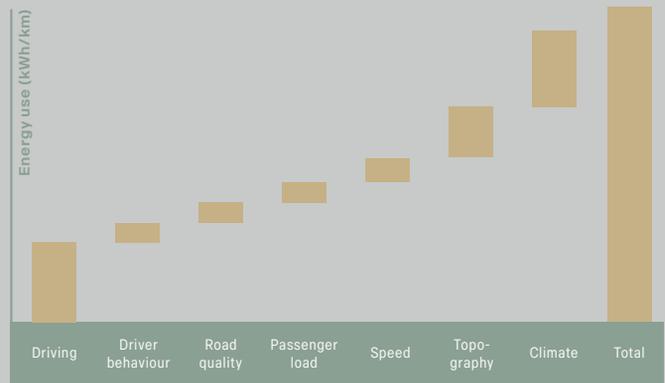
A bus operating in urban traffic is constantly exposed to the risk of external damage and the work environment for the driver can be very demanding. A quality driver environment can therefore play a crucial role in reducing the risk of collisions, downtime, sick-leave, while improving employee retention.

The driver area in the Scania Citywide is simply first-class and can even be said to be industry leading. A great turning radius, good visibility, and an overall well-balanced vehicle makes for excellent driveability, while advanced driver assistance systems give the driver good control of the vehicle through improved assisted handling, steering and braking. These features help minimise accidents, thereby avoiding both injuries and costs. Further, the demanding work environment means operators often face challenges when it comes to sick leave and employee retention. With excellent ergonomics, a range of safety features, and a high overall quality feel, the driver area of the Scania Citywide helps to avoid these issues.

Implementing an electric bus system

Compared to a system with only conventional buses, a system with fully electric buses requires additional elements to be considered in terms of optimisation. The vehicles need to be more thoroughly specified and managed in relation to operational demands and have battery configurations that harmonise with the chosen charging infrastructure. This requires careful operational planning and prioritisation between operating range, utilisation time and passenger capacity.

The energy consumption of the buses depends on several parameters, and can have a large effect on the operating range. The system should be designed to always achieve an operating range well within the limits of battery capacity and charging infrastructure.



Charging

The fully electric Scania Citywide comes with dual charging capability and can be deployed in an intelligent charging system. It can therefore leave the depot fully charged and pre-climatised with the right inner temperature in order to extend geographical range. The bus can then fast charge in-route via pantographs at one or more strategic stops, with charging taking only a few minutes.

This enables maximised utilisation time, as the bus can operate on the route for as long as needed without having to return to the depot. In addition, intelligent charging systems enable even allocation when charging a fleet of buses in the depot, while also allowing slow charging that extends battery life length and avoids expensive charging during peak hours.

Less batteries, more passengers

This charging alternative does not require the bus to carry as much battery weight, resulting in less environmental impact and higher passenger capacity compared to a bus that can only be charged in the depot. A bus without fast in-route charging capability also leaves the depot fully charged, but then has to return to the depot to charge for several hours before going back into operation again.

Service offering – battery electric buses

Implementation services

Implementing e-mobility in a city can be complex. Each city or route has unique conditions that need to be analysed in order to find the right products and charging solutions. Such factors include route length, frequency, passenger capacity, average speed, topography, climate, charging infrastructure, local regulations and more. Scania will be there to advise and assist throughout the process, helping with issues related to charging infrastructure, as well as with how to optimise the specification of the vehicles.

Repair and maintenance services

Having access to professional workshops and quality spare parts is key to keeping the vehicles in prime condition. Scania offers a range of repair and maintenance services, among them proactive data driven services to continuously assess maintenance needs for each vehicle, thus allowing for maintenance efforts to be efficiently planned and gathered. Along with our spare parts availability, these result in high vehicle uptime. Operators that run their own workshops can count on Scania for expert advice and to meet different support needs.

Driver services

Driving style can have a major impact on the energy consumption of the vehicle. By training and supporting drivers to handle fully electric buses in the best way possible, total energy consumption can be lowered dramatically, which in turn increases the geographical range before a recharge is needed. Scania has years of experience with such driver services, often resulting in energy savings of more than 10%.



PRODUCT DESIGN FEATURES

The fully electric low floor Scania Citywide is designed and produced by Scania. Everything from the chassis construction to the powertrain and the body has been developed and thoroughly tested with a focus on reliability and performance as well as on energy efficiency.

Battery placement

The battery packs are placed on the roof and in the rear, creating a well-balanced bus with better driveability, ride comfort and passenger capacity.

Battery temperature control

Handled by a closed water cooling system that, in extreme ambient temperatures, is assisted by an electric heater or AC cooling respectively. This AC is integrated in the battery cooling circuit but separated from the passenger and driver AC, and so does not affect the passenger environment. These solutions enable propulsion without power limitation in temperatures from -35°C to $+40^{\circ}$, for all conditions up to 16% slopes.

Powertrain technology

The electric machine delivers power from start and has a robust design that efficiently handles any climate and topography without torque limitations due to the oil cooling system. The powerful machine also re-charges the batteries during braking.

Electric system

The new power supply architecture comes with improved electronic control units (ECUs) and functions that improve performance and facilitate diagnostics for repair and maintenance. It also enables new functionality within ADAS, e-mobility and autonomous transport systems.

The new electric doors are standard and have fewer moving components, making them more reliable and providing smoother movement.

Safety features

Scania buses have advanced driver assistance systems (ADAS) including vulnerable road user collision warning, blind spot warning, adaptive cruise control, attention support, and advanced emergency brake. Further, electro-pneumatic parking brake technology avoids unintentional bus motion and thus potential accidents. Through reinforced body and chassis construction, our buses are built to protect passengers, drivers and sensitive components.

Chassis frame construction

The strengthened front axle, in combination with the ability to now use wider tyres, means that load capacity is increased from 7.1 to 8.2 tonnes. This allows for higher passenger capacity. It also enables optimised weight distribution between the front and rear axles, which is especially important for electric vehicles. Additionally, chassis weight has been reduced by 5% (-300 kg) without compromising robustness. Together with the in-route charging solution that needs fewer battery packs, this keeps the overall vehicle weight low.

Cut-to-length concept

Our flexible bus length options in 100 mm increments enable tailor-made layouts. Additionally, each 100 mm section equals weight savings of about 100 kg, thus enabling more passengers and energy savings.





Climate system

Our highly efficient climate system minimises energy consumption, regardless of climate. The cooling recovery system returns energy back into the system providing energy efficient airflow and climate control. The cooling system is also separate from that of the powertrain, resulting in a comfortable environment at all times.

Driver area

Offers excellent ergonomics through all-angle step-less seat adjustments, adjustable instrument panel, flexible switch placement. A lower instrument panel, slimmer A- and B-pillars, larger front window, lower side windows, new anti-reflex glass and other features increases visibility. The buses have excellent drivability with a great turning radius, advanced driver assistance systems, and improved assisted handling, steering and braking. Also, they have increased safety, a better climate system and good noise and vibration reduction.

Front suspension technology

Without compromising on passenger capacity, the new independent front suspension offers excellent passenger comfort and enables a wider aisle (900 mm). This results in new layout possibilities, increased passenger flow, space and accessibility.

Interior design

Larger and lower side windows, indirect LED ceiling illumination, a higher ceiling line, flat side ceiling panels and a broader aisle all contribute to a bright and spacious passenger environment, while sound absorbent materials help minimise noise. Furthermore, wall mounted seats and minimal gaps between panels and fixings facilitate cleaning.

Exterior design

The new contemporary and sophisticated exterior design of the Scania Citywide signals innovation, quality and forward thinking. It has a minimalistic form and roof covers for components such as AC units and battery packs. Low windows contribute to minimising the boundaries between the bus and its surroundings. Further, easy access to service points, and easily replaced exterior corner panels save time during repair and maintenance.

Electrification – the Scania view

While we believe renewable fuels will continue to play an important role for a number of years and not least in certain markets, electrification will undoubtedly be crucial in sustainable, decarbonised transport systems. With electricity from fossil-free energy sources, electrified vehicles enable quiet and clean operations, with zero particle and NO_x emissions and a drastically reduced carbon footprint.

At Scania, we are convinced that a sustainable transport system must be energy-efficient. This could be about using as few batteries as possible or about optimising charging, be it during stops or whilst driving. All while at the same time offering the load capacity needed for the specific transport operation.

A holistic approach

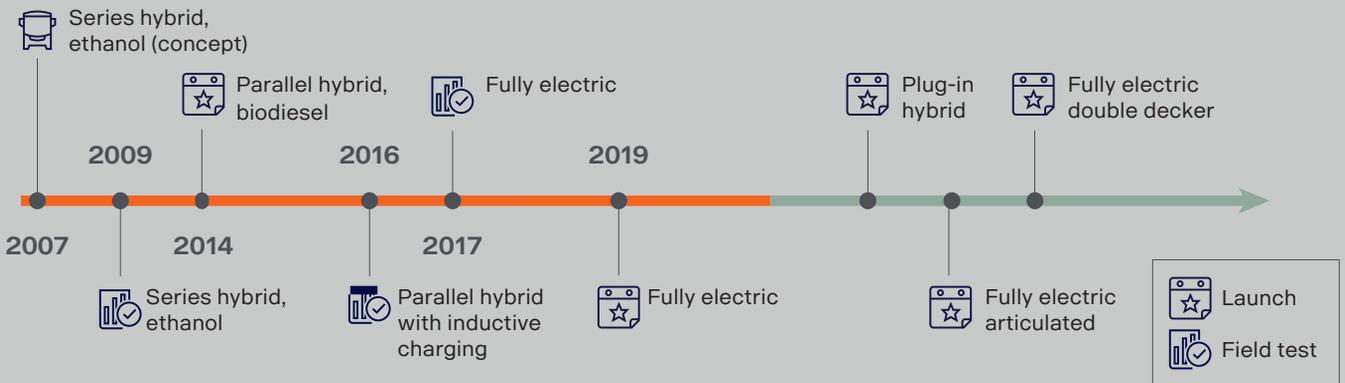
In order to achieve this, we believe that a holistic approach is required when it comes to batteries and charging. A fully electric transport solution depends on having the right charging infrastructure, and to meet that need, we see partnerships as the key. In order to define and develop viable solutions, we therefore work with municipalities, academia, private companies, infrastructure suppliers and energy providers.

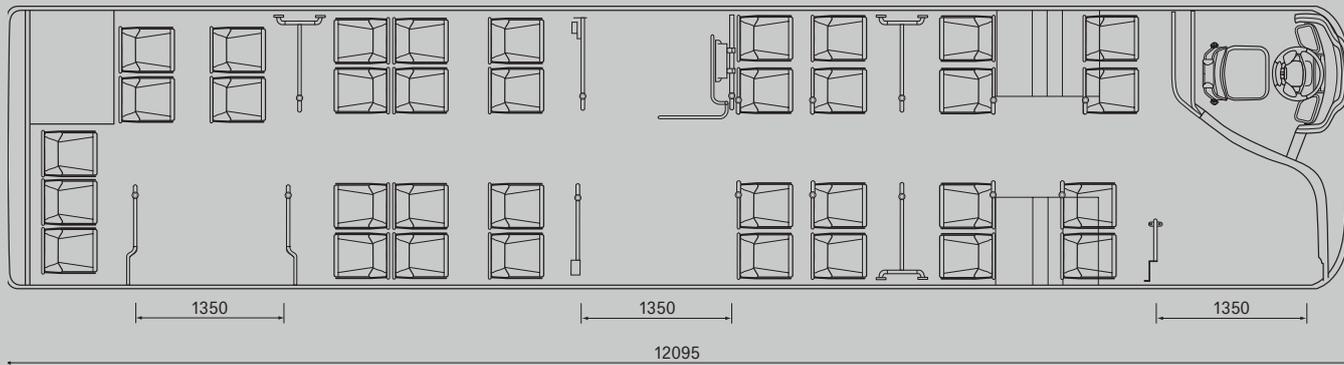
Electrification R&D

Battery and charging technology is improving rapidly, allowing vehicles to travel longer distances between charges and reducing charging time. This facilitates change in short-distance transport segments and also opens up for longer-distance segments to become electrified. However, there is not yet a technology that can be said to be most appropriate, particularly not for all types of operations. Our strategy is therefore to be open minded and have a broad approach when it comes to research and development of sustainable technologies. While we already offer battery electric vehicles and bio-fuelled hybrid vehicles, we are also developing and testing e-highway solutions and vehicles powered by hydrogen-powered fuel cells.

Sustainable productivity

In 2019, Scania invested SEK 7.2 billion in research and development. Our ambition is to find new and innovative solutions, but always with a focus on improving productivity and profitability in customer operations through low energy consumption and service costs, high vehicle uptime, all combined with excellent performance.





General

Chassis type: Low floor

Wheel configuration: 4×2

Operating temperature: -30°C to +40°

Door configuration: 1-2-0, 1-2-2, 2-2-0, 2-2-2,

Dimensions

Length: 11.4 – 13.3 m (12.1 - 13.3 m for 6 battery packs on the roof)

Width: 2.55 m

Height: 3.3 m

Front overhang: 2,780 mm

Rear overhang: 3,415 mm

Wheelbase: 5,200 - 7,100 mm

Angle of approach/departure: 7°

Front suspension: Independent

Tyres: 315/60 or 275/70 (front) and 275/70 (rear)

Minimum turning radius: 11,498 mm (for wheelbase 5,900)

Swept annular width – minimum turning radius: 6,198 mm

Passenger capacity

Total passenger capacity: Up to 100

Seating capacity: Up to 35

Weight

Gross vehicle weight: 20,000 kg

Axle load (front): 8,200 kg

Axle load (rear): 12,000 kg

Performance

Gradeability: 16% all conditions

Maximum allowed speed: 100 km/h

Acceleration: Up to 1.2 m/s²

Climate system

Heating: Heat pump and auxiliary heater

Cooling: Electrical A/C

Powertrain

E-machine:

300 kW peak
250 kW continuous (R85)
Oil spray cooled

Rated voltage: 650 V

Max. torque: 2,100 Nm

Energy consumption: 0.75–1.5 kWh/km*

Energy consumption SORT:

SORT 1 0.94 kWh/km
SORT 2 0.82 kWh/km
SORT 3 0.77 kWh/km

Gearbox:

2-speed gearbox to optimise energy consumption

Brakes: Recuperation via electric machine and electro pneumatic disc brakes

* Energy consumption is dependent on driving-, operational- and environmental conditions.

Battery

Technology: Lithium-Ion (NMC)

Number of high-voltage battery packs: 8 or 10 battery packs

Battery arrangement: 4 battery packs in the rear and 4 or 6 battery packs on the roof

Max. total capacity: 254 kWh or 330 kWh

Range: Up to 320 km**

Life length: Up to 10 years***

**Range is dependent on driving-, operational- and environmental conditions.

***Life length is dependent on driving-, operational- and environmental conditions.

Scania can offer complete service contracts based on real time data for the entire vehicle (incl. batteries) in order to secure maximised uptime.

Charging options

Inverted pantograph: Up to 300 kW

CCS Type 2 (depot charging):

DC up to 150 kW

Charging interface: ISO 15118 and IEC 61851