



# URBAN TRANSPORT

INTRODUCING A NEW BUS GENERATION

# EURO 3

**SCANIA**



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# ACHIEVING SUSTAINABLE MOBILITY

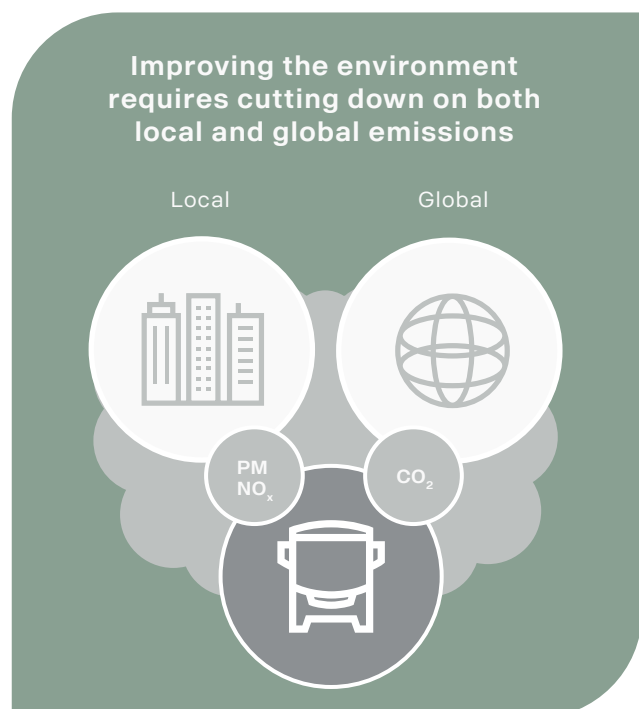
Metropolitan areas all over the world are affected by the rise in transport needs that comes with urbanisation. This presents challenges in terms of congestion as well as emissions and pollution that affect both people and the environment.

Much can be gained by reducing the number of vehicles and instead getting people to commute together. But to make that happen, the public transport system needs to be an attractive alternative for potential passengers, and to further reduce emissions, the system also has to consist of energy-efficient vehicles running on renewable fuels. Simply put, switching to more sustainably powered vehicles will be crucial to create a transport system that stays within the environmental boundaries of this planet.

Scania wants to be a frontrunner in this shift to sustainable transport. And we know that caring about the bigger picture means putting a lot of effort into the details. Over more than a century, we have accumu-

lated a deep understanding and a knowledge base that allows us to develop buses and services that make sustainability go hand in hand with operating economy - which is needed to make sustainable transport happen on a wide scale.

Further, it cannot be achieved through a single solution. We at Scania instead approach the challenge from all angles, offering a wide range of efficient quality products and services to meet the varying needs in urban environments.









# LOW-EMISSION POWERTRAIN OPTIONS

Bus traffic in and around cities is highly complex, combining many different needs. In inner cities, buses travel at relatively low speeds with frequent stops, and passengers often commute short distances. When it comes to suburbs and outer areas, the vehicles often travel at higher speeds with fewer stops, largely carrying passengers who travel longer distances.

## Having a wide approach










When aiming to minimise emissions from a bus fleet, it is crucial to have a wide approach. Notably, most buses in metropolitan areas are not found in the inner city. Instead, suburban and regional traffic often account for a larger number of buses and a much larger part of fuel usage and emissions.

Minimising emissions in the different parts of a metropolitan area is largely about analysing how this should best be done and what technology is most suitable today.

Scania's wide offering of renewably fuelled powertrains enables minimised environmental impact in all parts of a region - utilising the technology most suitable for the local conditions.



These percentages show common distribution of vehicles and CO<sub>2</sub> emissions in a public transport bus fleet serving a metropolitan area of more than a million inhabitants.

Inner city	 Biodiesel/FAME	 HVO	 Biogas
Suburb	 Biodiesel/FAME	 HVO	 Biogas
Region	 Biodiesel/FAME	 HVO	 Biogas

Scania's wide portfolio of low-emission vehicles.

## Gas powertrain benefits

Scania has developed gas engines for more than a century. Running on both liquified gas (LBG/LNG) and compressed gas (CBG/CNG), our engines can contribute to the reduction of CO<sub>2</sub> emissions by up to 90%\* compared to diesel. Furthermore, Scania engines require no additives in order to use the fuel, eliminating dependence on the additive's availability, and reducing costs.

In addition to CO<sub>2</sub> emission reduction, powertrains driven by gas also produce less sulphur, nitrogen and carbon monoxide emissions, and are quieter than their diesel counterparts. For Urban operators this mean a significant reduced environmental impact and at the same time lower noise levels for a better city environment.

\* Using biogas.

### GREEN

Up to 90% reduction in CO<sub>2</sub> emissions.

### CLEAN

Better air quality with less particle emissions.

### SMART

Lower operating costs than equivalent diesel.

### QUIET

Less engine noise and less vibration.

## A win-win-win possibility

Biogas is produced through the natural breakdown of food and sewage waste. It uses a process called anaerobic digestion to split waste material into gas (bio fuel) and solids (bio fertilizer).

The production of biogas does not just give communities a sustainable renewable fuel source, it can also help boost local economy and reinforce social responsibility. This creates a win-win-win situation for operators, authorities, and society at large.



## Renewably fuelled powertrains

Scania has vast experience of powertrains that run on renewable fuels, having built our first biofuel engine in 1916. Today we offer a wide range of engines which also run on fuels such as biodiesel/FAME, HVO and biogas. Engines running on renewable fuels play a key role in reducing emissions and can provide an immediate solution to meet climate and environmental targets. This is especially true for high-mileage operations, such as suburban and regional traffic.



### Biogas

Produced from various sources, of which the most cost-effective is often local sewage and organic waste.

This engine can also run on natural gas or a combination of the two, facilitating operations and a transition to biogas.

CO<sub>2</sub> reduction compared to diesel from a well-to-wheel perspective: 50–90%, typically 80%.

Up to  
**90 %**



### Biodiesel/FAME

Produced from sources such as rapeseed, soy and other oil plants, as well as from waste cooking oils.

CO<sub>2</sub> reduction compared to diesel from a well-to-wheel perspective: 50–80%, typically 60%.

Up to  
**80 %**



### HVO

Produced from sources such as waste oils, rapeseed oil and animal fats. HVO can be used in most diesel engines without any changes.

CO<sub>2</sub> reduction compared to diesel from a well-to-wheel perspective: 50–90%, typically 83%.

Up to  
**90 %**



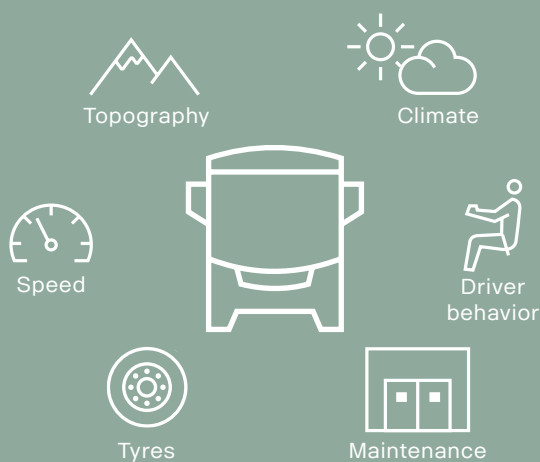






# ENERGY-EFFICIENCY THAT MAKES A DIFFERENCE

## Factors affecting fuel consumption



The energy consumption of a bus depends on several parameters. To achieve the most energy-efficient operations, it is necessary to consider the impact of product technology, product usage, maintenance, and more. By considering all of these factors, fuel consumption can be lowered which in turn reduces CO<sub>2</sub> and other emissions.

### Addressing consumption from all angles

Scania addresses the fuel consumption issue from all angles making sure operators have the right vehicle for the operation and that it is used in an optimal way.



With high-quality buses, innovative technical solutions that support the driver, as well as through high-quality maintenance and driver services, we help cities and operators minimise the environmental impact. Initially, it is crucial to make sure the bus is specified to perform in a way that reduces energy consumption, but without compromising on factors such as performance and passenger capacity. This process covers choice of powertrain components, support systems, possible use of alternative fuels and more.

During operation, the vehicle must be kept in optimal condition through high-quality maintenance. Which can include axle alignment as well as regular maintenance such as checking tyre pressure and status and oil and filter changes.

As described, driving style also plays an important part in the vehicle's energy consumption. Scania's driver services, consisting of both training and coaching of drivers, can have an immediate impact and typically reduces fuel consumption and emissions by as much as 10%.

### Science-based targets

As the first major manufacturer of heavy commercial vehicles, Scania's far-reaching climate targets have officially been approved by the Science Based Target initiative (SBTi). Scania is committed to achieving the Paris agreement goals of limiting global warming to 1.5°C above pre-industrial levels. Scania will cut CO<sub>2</sub> emissions from its own operations by 50% by 2025 and reduce emissions from its products by 20% during the same period.



# SAFE AND APPEALING BUSES



## Safety first – inside and around the bus

Safety is of utmost importance in urban environments, in which the conditions are often stressful for bus drivers. Therefore, vehicle design as well as digitalised and automated services play a crucial role in limiting risks and protecting drivers, passengers, pedestrians, cyclists, and other road users.

### Accident prevention

To prevent accidents and create a safer city environment, Scania buses have built-in state-of-the-art safety systems and features. These systems help the driver by increasing his or her awareness of surrounding road users or even helping to control the vehicle when needed. Our advanced driver assistance systems (ADAS) include vulnerable road user collision warning, blind spot warning, adaptive cruise control, attention support, and advanced emergency braking. Some of these systems are already legal requirements in certain countries, but all of them are available in Scania buses today.

Additionally, electropneumatic parking brake control prevents unintentional bus motion and thus potential accidents, as it locks the brake until acceleration is activated. Driving can then be further assisted through Scania Zone, a service which, among other things, helps the driver comply with speed regulations and speed limits, for instance around schools or in bus depots.

### Minimising potential damage

Although accident prevention is of course to be preferred, accidents can happen. Therefore, the vehicle itself, right down to its individual components, needs to be designed in a way that protects the driver, passengers and all involved counterparties. Scania buses help avoid major deformations and prevent, for example, passenger cars from sliding under the bus. Through reinforced chassis construction at the rear and reinforced body construction in the front, our buses are built to be as safe as possible. For everyone.

## Buses to increase public transport appeal

To encourage more people to use it, the public transport system must be accessible, user-friendly and time-efficient. Another crucial aspect is that journeys should be comfortable and relaxing, and in this, the vehicle itself plays an important role.

### A pleasant ride

Scania buses offer independent front suspension that is very forgiving, making the ride more comfortable. Our advanced suspension technology also allows the aisle to be made wider without compromising on passenger capacity. The wider aisle can also help improve accessibility. This has an impact on how passengers perceive the journey,

not least passengers who are physically impaired. Additionally, the buses' excellent driveability, combined with Scania's driver services, can help to substantially improve passenger comfort.

Having fresh air and the right temperature inside the bus is also crucial to the passenger experience. Scania's highly efficient climate system minimises energy consumption, regardless of climate. This, along with the fact that this cooling system is separate from that of the powertrain, results in a comfortable environment with good air flow at all times. In addition, low noise levels make for more relaxing journeys.



# IMPROVING OPERATING ECONOMY

Operators in urban environments know the importance of keeping costs to a minimum. At Scania, customer profitability constitutes a foundation for the products and services we develop - always with the human perspective in mind.

Our buses are highly energy-efficient and reliable, which, along with the professional supporting services we offer, benefits operating economy. And because they boast high passenger capacity figures, they can potentially also keep costs down by lowering fleet investments.

Moreover, keeping drivers safe, healthy and alert is another aspect of operational importance and the top-quality driver area in Scania buses can make a big difference.









# ENERGY EFFICIENCY THAT LOWERS COST

As mentioned, a vehicle's energy consumption depends on a number of factors. Powertrain performance and vehicle construction are two important parameters, as is specifying the vehicle according to operating conditions such as topography and climate. Moreover, how the product is used in operation will also have a major impact on energy consumption.

This is achieved through a number of factors, with the most significant savings coming from improved engine and gearbox efficiency.

During operation, energy efficiency also depends on the actual performance of the powertrain, and regular, high-quality maintenance is key to keeping performance optimal.



**14%**

potential fuel and  
emissions savings

## Powertrain performance

Because fuel consumption is one of the main factors in operating cost, an efficient powertrain can save a lot of money. Scania develops and offers highly energy-efficient powertrains. Compared to the previous generation, the new generation of Scania buses can reduce fuel consumption and emissions by as much as 14%, and without compromising on performance.

## Optimising vehicle usage

Besides the powertrain, driving style also has a major impact on fuel consumption. The driveability of Scania vehicles and our driver assistance systems and driver services can help operators achieve large savings.

Operation-based, hands-on driver training, driver support via the instrument panel, and adjustments through driver coaching typically contributes to fuel and emissions savings of 10%. In addition, Scania's fleet management services allow operators to view and collect real-time fuel consumption data and make operational adjustments or schedule trainings to improve.







# ENSURING AVAILABILITY

We know the cost of downtime, and that increased vehicle utilisation is key to achieving cost-efficient operations. To make this possible, the vehicle first and foremost needs to be well designed and reliable with good driveability. Keeping the vehicle in peak condition then also requires workshop services that are both professional and relevant. All in all, this reduces both downtime and operational costs.

## **Buses designed for uptime**

Scania produces around 100,000 vehicles each year, and our buses are built on proven technology and components. This results in chassis and powertrains that are dependable, durable, and robust – meeting a wide variety of demands in terms of topography, climate conditions, driving styles and road conditions.

The vehicle's design and construction must also ensure that sensitive and expensive components are protected in the event of a collision. Limiting damage and avoiding deformation of components is critical in order to minimise costs and complex, time-consuming repairs. In short, having reliable vehicles is of essence to minimise time in the workshop and maximise operational usage. Additionally, Scania buses are designed to make maintenance as easy and efficient as possible. Easy access to regularly changed parts and good cleanability ensures that the vehicle does not spend more time in the depot than necessary.

We build our vehicles with all this in mind, but also to prevent and avoid accidents altogether, which is of course to be preferred. Therefore, Scania buses offer great driveability and state-of-the-art driver assistance systems.

## Connected and tailored workshop services

Keeping vehicles in top condition is crucial in all urban operations. Through a comprehensive service network, Scania provides expert repair and maintenance services, supported by outstanding parts availability. We offer services specific to the needs of each individual vehicle, making sure they are neither underserved nor overserved. This ensures high availability throughout the fleet and eliminates unnecessary costs. Based on real-time vehicle data, we can draw up tailored maintenance plans that maximise uptime and minimise disruption to daily operations. Connectivity and real-time data also allow proactivity, either completely preventing a breakdown through vehicle data analysis and operational data or preparing the workshop and parts by initially diagnosing the vehicle remotely. Furthermore, having access to this data allows the workshop time to be used as efficiently as possible. By combining and concentrating repair and maintenance to the same occasion, total downtime can be reduced. All this can be performed in a Scania workshop or with Scania supplying the required support to operator workshops.

## Kuala Lumpur Batu Caves - Petronas Twin Towers

Medium strain on the powertrain due to many start and stops

Steep hills putting strain on the retarder. High to extreme high temperatures and high humidity.



### Wear and tear



Engine



Gearbox



Retarder



Air filter

## Amsterdam

### Bus running in flat topography

City centre operation in a flat topography with frequent start and stops. The high humidity results in shortened service intervals for the air filter.



### Wear and tear



Engine



Gearbox



Retarder



Air filter





# EXCELLENT PASSENGER CAPACITY

In traffic planning, travel patterns and the number of passengers travelling in the system are two of many important factors that need to be taken into account. If possible, reducing the fleet by even a single bus can have a big impact on operating cost, for example by lowering fuel and maintenance costs and the need for additional drivers.

Therefore, buses with high passenger capacity figures can potentially keep these costs down for operators, while also improving passenger flow in the public transport system. And by limiting the need to operate extra buses during peak hours, high capacity buses can also bring down fleet investment spend.

With one of the best passenger capacity figures available, Scania buses allow operators to reap these benefits. High axle load capacity, reduced chassis weight, means vehicle weight can be kept down, allowing for more passengers.



# 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 drivers can be very demanding. We have therefore developed a driver area that we believe is industry-leading. A great turning radius, excellent visibility, and an overall well-balanced vehicle makes for excellent driveability, while advanced

driver assistance systems gives the driver good control of the vehicle through improved assisted handling, steering and braking. This increases safety and helps minimise accidents, thereby avoiding unnecessary costs.

Due to the demanding work environment, operators also face challenges when it comes to high

sick leave and employee retention. In addressing this issue, the driver area is an important factor and Scania has designed the best possible work environment for drivers in terms of ergonomics and reachability, climate control, safety features as well as the overall quality feel. All in all, this benefits both the drivers and operators.



# SOLUTIONS

Scania wants to help cities and operators achieve sustainable mobility, and we believe the way to do that is through complete solutions consisting of both products and services.

Our flexible product portfolio consists of a wide range of products with multiple options, allowing for customised configurations that enable operators to meet various needs in urban operations.

The services we offer can be of equal importance. Our service offering consists of a number of services for minimising emissions and optimising operating economy, focusing on areas like fuel economy and uptime.

This complete package enables us to offer suitable solutions catered to each operator's individual challenges and needs.



# PRODUCT OFFERING

## Scania K-chassis – low entry



2-axle



3-axle



Articulated low



Articulated high

## Scania K-chassis – high floor



2-axle



3-axle



Articulated

## F-chassis\*



2-axle



3-axle



Bi-articulated

Combustion (Euro 3)	Output	Torque	Fuel
9-litre	250 hp (184 kW)	1250 Nm	Biodiesel, HVO, diesel
9-litre	310 hp (228 kW)	1550 Nm	Biodiesel, HVO, diesel
13-litre	360 hp (265 kW)	1800 Nm	Biodiesel, HVO, diesel

Combustion (Euro 6)	Output	Torque	Fuel
9-litre	280 hp (206 kW)	1350 Nm	Biogas, natural gas
9-litre	340 hp (250 kW)	1600 Nm	Biogas, natural gas

*\* The information in the brochure is focused on K-chassis and is not always relevant for F-chassis.  
For more options, see Scania’s travel offering.*





# SERVICE OFFERING

## Driver services

Enables drivers to drive safer and more efficient, and can reduce the need for maintenance.

### Scania Driver Training

Combines theory and practice, covering topics such as safe and efficient driving, not only to save energy but also regenerate energy. The training even handles other aspects of professional driving, always with a focus on profitability, fuel economy and reduced emissions.

### Scania Driver Evaluation

An on-board device that assesses the driving style by comparing it to that of drivers operating in similar conditions. The result, which can be used to achieve long term improvements, is visible in the Scania Fleet Management Portal and Scania Fleet App.

## Fleet management system

Through the Scania Fleet Management Portal and the Scania Fleet App, operators can gain access to valuable insights into the performance and status of their fleet. The data collected onboard the coach provides valuable insights into driving styles, productivity and economy. This level of tracking and diagnostics can bring significant benefits in terms of increased uptime, improved safety and reduced operating costs.

### Scania Zone

A position-based system for real-time vehicle adjustments in predefined zones. It allows operators to ensure that each vehicle stays within the set speed limits, increasing safety and comfort as well as lowering fuel consumption. Scania Zone is an optional add-on in Scania's fleet management system.

## 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.

### Scania Flexible Maintenance

Uses real-time vehicle data to produce maintenance plans tailored to each vehicle's actual operation, meaning no underservicing or overservicing. This is done by continually monitoring and analysing operational data to ensure maximum uptime and scheduling maintenance customised to operational needs, thus increasing productivity and decreasing disruptions.

### Scania Fleet Care

The fleet operator receives a dedicated Fleet Manager from Scania equipped with advanced tools and systems, to optimise maintenance and prevent breakdowns based on operational data and vehicle data analysis.

## Customer workshop services

Tailored collaboration services designed to facilitate workshop services for the operator by streamlining and quality assuring the workshop and processes to meet Scania's high standards.

## Financial services

Flexible financing and insurance solutions that match operational needs, tailored to provide predictable costs and manageable risks – over the entire lifecycle of the vehicles.

### Scania Financing

Tailored solutions for financing expansion or fleet renewal. Supported by professional knowledge of transport business financing and optimised for the local tax and legal environment.

### Scania Insurance

Tailored solutions that, together with a claims support service and Scania Assistance, will help get the vehicle back on the road quicker, safeguarding uptime – and peace of mind.



Tempo de operação do compressor



Tempo de operação do compressor



1º  
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11/01/2023  
1.052,34



