

**MAIN LINE AND REGIONAL
RAILWAYS**



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Škoda Group is one of the leading European companies in the field of transport engineering, with a history spanning more than 165 years. Škoda focuses on the development and production of vehicles for railway and urban public transport. Its products include primarily electric suburban train units, battery-powered trains, low-floor trams, metro trainsets, trolleybuses, electric buses, hydrogen buses, electric motors, components, passenger coaches, digital solutions, and complete drive systems for environmentally friendly public transport.

Thanks to its ecosystem of production plants, service centers, and engineering offices, the outstanding work of thousand of project engineers, and designers, and billions invested annually in its own research and development, Škoda Group boasts a portfolio of modern vehicles that meet the latest European standards. Škoda places great emphasis on the use of cutting-edge technologies for modern urban and rail transport vehicles. Škoda is also developing railway vehicles and buses with alternative propulsion systems.

Škoda Group's transport solutions are used in the Czech Republic, Slovakia, Germany, Finland, Poland, Lithuania, Latvia, Estonia, Italy, the Balkans, Australia, the USA, and many other countries around the world.

Škoda Group currently employs 10,000 people. In addition to its production sites and technology centers in the Czech Republic, Finland, and Turkey, Škoda Group also has branches in Germany, Italy, Austria, Belgium, Hungary, Poland, and Ukraine.

Škoda Group provides comprehensive transport solutions for urban, intercity, and mainline rail transport, and it continues to work to ensure that travel is comfortable, fast, sustainable, and safe. Thanks to a wide range of boarding height options, low-floor and barrier-free access is ensured in all areas where its vehicles operate.

Škoda Group is part of PPF Group, which invests in a wide range of sectors – from financial services and telecommunications to biotechnology, real estate, and engineering. PPF Group operates in Europe, Asia, Africa, and North America.



BEEM

A battery electric multiple unit is an innovative solution for regional and suburban rail transport. Thanks to the combination of traction batteries and overhead line power supply, it can also operate on non-electrified sections, enabling the introduction of new direct connections entirely in electric traction. This reduces the number of transfers, making travel more convenient and time-efficient. BEMUs can therefore be an ideal way to increase the competitiveness of regional rail transport even beyond the main electrified routes.

Electric operation reduces both emissions and noise while ensuring smooth and dynamic rides. The design of the BEMU is based on a proven concept of regional electric multiple units (EMU) with a low-floor layout, making boarding and handling of luggage, bicycles, and prams easier. Ergonomic design and a thoughtfully arranged interior, equipped with Wi-Fi and 230V sockets, provide a comfortable environment for everyday travel. Thanks to the applied technologies, the BEMU is a flexible, environmentally friendly, and safe unit, ready to deliver modern and comfortable transport.

TECHNOLOGY

What sets the BEMU apart from a conventional electric multiple unit is its innovative battery system. Modern traction batteries are designed with a strong focus on safety while ensuring long service life, fast charging, and reliable operation across a wide range of temperatures. An advanced control system monitors every single battery cell, maintains optimal thermal conditions, and ensures stable performance even under intensive operation—guaranteeing safe and reliable functioning of the unit under all circumstances.

The batteries are typically recharged continuously from the overhead catenary during operation or while standing at stations, through regenerative braking, or from a charging station. Another option is cable charging via a heating socket or directly from the grid, for example in a depot.

By placing the batteries and electrical equipment on the roof of the unit, the low-floor passenger space between the bogies is preserved. This not only increases passenger comfort but also makes vehicle maintenance easier. At the same time, modularity is maintained, allowing for additional options in the unit's deployment.

BATTERY ELECTRIC MULTIPLE UNITS

The BEMUs meets the latest legislative TSI requirements, including fire safety requirements according to EN 45545-2. The cabinet and interior structure consist of modern non-flammable materials. The cars also have a built-in automated system for monitoring and detecting smoke and fire. Each car has a central door closing and door locking system.

MAIN TECHNICAL PARAMETERS

Track gauge	1,435 mm
Car Width	2,820 mm
Car Height	4,260 mm
Height of Entrance above TOR	580 mm
Installed Power	4 × 340 kW
Maximum speed	160 km/h in trolley mode 120 km/h in battery mode
Power supply	3 kV DC / 25 kV 50 Hz
Battery range	80 km depending on the route profile

BEMU MORAVIAN-SILESIA REGION

CZECH REPUBLIC

The design of the BEMU is based on the EMU single-deck units. The BEMU is composed of two cars. The first 4 units operate in the Moravian-Silesian Region has been in operation since December 2024. Another 15 units are expected to enter service in 2026/2027.

In the first three months, the four battery units in the Moravian-Silesian Region attracted 15% more passengers. According to estimates, they will save at least 200,000 liters of diesel annually and reduce CO₂ emissions by 500 tons.

All these 19 trains will run in the Moravian-Silesian region, which is a pioneer of this technology in the Czech Republic. The cars have a classic bogie arrangement – each car is supported by two separate bogies. The propulsion system allows the use of traction bogies under the front and middle cars. Consequently, the overall vehicle performance depends on the customer's requirements and the operational purpose of the unit. The single-deck BEMU is designed for a track gauge of 1,435 mm, and we also have a solution ready for 1,520 mm.



EMMU

Electric multiple units made by Škoda Group are among the most reliable on the market. All vehicles excel thanks to their lightweight integral construction made of aluminium profiles and modern and reliable drives. Thanks to electrical energy recovery during electrodynamic braking, energy is also utilised to the optimal extent. This significantly contributes to minimizing the unit's operating costs.

Double-deck units and push-pull trainsets are rolling in the Czech Republic, Slovakia, Finland, Lithuania, Ukraine and Germany.

Modern single-deck RegioPanter and InterPanter can be seen on lines in the Czech Republic, Slovakia, Latvia and Estonia, whose design is adapted for wide gauge tracks.

ECOLOGY

The entire production cycle of the electric vehicles and their operation and disposal are environmentally friendly. We rely on the EN ISO 14001 standard. Significant operating cost savings are achieved thanks

to low maintenance costs and reduced energy consumption. Additionally, more than 95% of the components and elements of the units are recyclable.

SERVICE

For Škoda Group, customer care does not end when it delivers the vehicles. It provides regular, high-quality service to both single-deck and double-deck units. The daily availability of the entire fleet of these modern units is a matter of course.

Škoda Group is experienced in servicing vehicles from a number of countries around the world, for example, the Czech Republic, Slovakia, Lithuania and Ukraine.

TECHNOLOGY

All electric multiple units are low-floor, providing barrier-free access. If necessary, the floor height can be adapted to the customer's requirements. The open multifunctional space near the door provides storage space for luggage, bicycles and prams. The cars have a Wi-Fi connection and are equipped with 230 V electrical sockets to easily charge mobile phones, laptops or tablets.

The train is controlled from a comfortable and safe driver's cab using a modern control system. Up to three coupled units can be controlled from a single station thanks to a superior train control system which uses WTB communication. The units are equipped with automatic train control, including automatic speed control systems.

The wireless transmission of diagnostic data is used for online monitoring of in-service vehicles. The electric units have an external and internal camera system.

The electric units meet the latest legislative TSI and GOST requirements, including fire safety requirements according to EN 45545-2. The cabinet and interior structure consist of modern non-flammable materials. The cars also have a built-in automated system for monitoring and detecting smoke and fire. Each car has a central door closing and door locking system (while rolling).

TAILOR-MADE TECHNOLOGICAL SOLUTIONS

Škoda Group offers a wide range of variability and modularity for its products. Thanks to this, it is possible to adapt them to the customer's specific wishes. At the same time, each introduces developments which are taken into account in other projects.

Electric multiple units are designed for electrified lines with different power supply systems; they can be supplied with different cabinet widths, entry heights or interior layouts. The default configuration of the electric multiple units is three-car version, but the trains can naturally be adapted according to the customer's needs. Quick coupling of several units into one functional unit is enabled by automatic end coupling.

Push-pull trainsets can be pulled by various electric or diesel locomotives, including the most modern electric locomotive Emil Zátopek.

The train capacity depends on the customer's requests, and the specific implementation may vary – it depends on seat spacing, the number of first class seats, the number of bicycle stands or the required boarding area size.

Each train has enough space for transporting wheelchairs and has been adapted for transporting people with reduced mobility or orientation, including barrier-free toilets. Other arrangements depend on the customer's requirements. The interior space may be entirely open, without doors or partitions, or divided to individual passenger compartments.

SINGLE-DECK ELECTRIC MULTIPLE UNITS

Single-deck units consist of two to seven cars. At the ends of each unit are head cars, and between these are passenger cars.

The cars have a classic bogie arrangement – each car is supported by two separate bogies. The propulsion system allows the use of traction bogies below the head and passenger cars. Consequently, the overall vehicle performance depends on the customer's requirements and the operational purpose of the unit. The single-deck electric multiple units are designed for gauges of 1,435 mm. The different widths of the vehicle body also depends on the gauge.

Thanks to a wide range of door entry heights, low-floor cars and barrier-free entry are provided. Each car can have either one or two pairs of doors.

MAIN TECHNICAL PARAMETERS

Track gauge	1,435 / 1,520 mm
Contact voltage	3 kV DC, 3 kV DC + 25 kV / 50 Hz, 25 kV / 50 Hz, 15 kV / 16.7 Hz
Top speed	160 km/h
Maximum acceleration	up to 1.1 m/s ²
Vehicle width	2,820 / 3,400 mm
Vehicle / box height	4,260 mm
Boarding height	580–760 mm above TK
Boarding door width	1,300–1,500 mm
Unit power	Number of traction motors × 340 kW

REGIOPANTER

RegioPanter electric units are primarily designed for regional lines, where passengers appreciate the comfortable and cosy seats, air conditioning and Wi-Fi access. Wide entrance doors and a fully walk-through interior without internal doors ensure fast and smooth passenger movement. The journey is also made more pleasant by 230 V sockets, Wi-Fi and a clear information system.

And there is plenty of space inside the units for people with reduced mobility, as well as many bicycle racks. Entry is, of course, barrier free. Each unit is equipped with extendible steps that adapt to different platform heights.

RegioPanter trains can be supplied as single-system units for 3 kV DC, or dual-system units for 3 kV and 25 kV 50 Hz. They are designed for a track gauge of 1,435 mm and the vehicles are equipped with a driving chassis with two asynchronous motors and one standard chassis.



Škoda has delivered almost 200 of these modern vehicles to ČD. RegioPanter trainsets with two or three cars are in operation in several regions of the Czech Republic. At the customer's request, the electric single-deck units with two

cars can seat 147 passengers and have a total capacity of 317 passengers. The electric single-deck units with three cars have 241 seats and can carry a total of 497 passengers.



Passengers can see another colour variant of RegioPanter trains in the Central Bohemia Region and in Prague. The RegioPanter PID is characterised

by its unique grey-red colouring, which it acquired as part of its integration into the Prague Integrated Transport (PID) fleet.



RegioPanter is also supplied by Škoda Group for Slovak Railways in three and four-car variants. The first one is 80 metres

long and offers a seating capacity of 247, the second one is 106 metres long and has a seating capacity of 343.



The success of the RegioPanter platform has also attracted the interest of foreign carriers. Škoda Group will also deliver new units to Bulgaria, where 25 barrier-free electric trainsets will replace outdated

trains. Each will offer more than 300 seats, air-conditioned cars and a smooth ride with minimal noise.



Škoda Group's partnership with Regiojet, the largest private rail operator in Central Europe, will bring new electric units with a unique design in the carrier's colors. These will come in two versions with two-car and three-car trainsets. The units for Regiojet will be adapted to the specific needs of the

carrier and will bring the renowned comfort to the Ústí nad Labem Region by the end of 2026. This ambitious project aims to cover 3.3 million kilometres a year over 15 years and significantly increase service quality and capacity.



Škoda Group's electric train units for the Latvian carrier Pasažieru vilciens are the first broad-gauge (1520 mm) models based on the RegioPanter platform units. They are designed for suburban transport and operate with a supply voltage of 3 kV,

with the possibility of future conversion to 25 kV/50 Hz. The vehicles are designed to operate in climate conditions from -40 °C to +40 °C. They offer a seating capacity of 400 and can carry up to 850 passengers in total.

The train for the Estonian railway operator Eesti Liinirongid (Elron) is also based on this platform platform, but is unique in a number of details tailored to specific customer requirements. For example, Estonian trains offer first class and some trainsets are equipped with a refreshment

compartment. In addition to the wider track gauge, these units are dual-system - designed for 3 kV DC and 25 kV/50 Hz power - to run on both newly electrified sections and lines with older power systems.



LONG-DISTANCE ELECTRIC UNIT WITH SPEEDS OVER 200 KM/H

Škoda Group's platform of trains for interregional and long-distance transport. The units can consist of three to seven cars with a capacity of 200 to 600 seats and can be configured according to different power supply standards – dual-system (3 kV DC, 25 kV AC) as well as the German 15 kV AC system. The chassis are designed for speeds up to 230 km/h.

Their equipment meets the highest standards for passenger comfort, pressure tightness and fire safety, which will allow their operation on high-speed lines and in tunnel sections over 5 km long. This also applies to the lines that will soon be built in the Czech Republic.

The equipment includes advanced digital technologies from the Škoda Group, which ensure comfort for passengers and operators, both in operation and in connecting units, but also offers new possibilities for remote monitoring and vehicle diagnostics. The ATO automatic train control system enables the units to operate in the currently energy-optimised mode, regulates speed according to the timetable and the track height profile and optimises braking. The remote monitoring system can then optimise maintenance costs and increase operational reliability. The train will also have an ETCS train protection system.



ARRIVA

Long-distance units designed for operation on long-distance lines from Prague to West Bohemia. The units can reach a maximum speed of up to 200 km/h, and that on two power supply systems (3 kV DC, 25 kV AC).

TWO VARIANTS OF THE UNITS ARE BEING IMPLEMENTED WITHIN THE PROJECT:

- | Three-car unit with a seating capacity of 224
- | Four-car unit with capacity 315 seats

The interior of the units is designed for long-distance operation, both in second and first class, with the first class offering maximum comfort even for longer journeys. Both variants of the unit allow for catering services, with the higher-capacity variant being equipped with a bistro. Passengers will appreciate the efficient air conditioning, modern information system, Wi-Fi connection and sockets for charging small electronics on both types of trains, and the internal and external camera system will contribute to increased security. Level boarding and a low-floor interior ensure comfortable travel for people with reduced mobility. And of course there is also a barrier-free toilet.



DOUBLE-DECK ELECTRIC MULTIPLE UNITS

Double-deck electric multiple units can consist of two or up to six cars.

These vehicles have a classic bogie concept with two separate bogies under each vehicle body. The two-floor electric units are designed for gauges of 1,435 mm and 1,520 mm. The different widths of the vehicle body also depend on the gauge.

The vehicles meet the G2 gauge with DE2 extension in the upper part according to EN 15273-2. The units consist of low-floor cars, providing barrier-free access to the lower floor. There are two pairs of doors in each car, enabling the quick and smooth movement of passengers.

MAIN TECHNICAL PARAMETERS

Track gauge	1,435 mm
Contact voltage	3 kV DC, 3 kV DC + 25 kV / 50 Hz, 25 kV / 50 Hz
Maximum speed	160 km/h
Maximum acceleration	up to 1 m/s ²
Vehicle width	2,820 mm
Vehicle / box height	4,635 mm
Boarding height	550–960 mm above TK
Boarding door width	1,300 mm

22EV

The 22Ev is a large-capacity unit designed for suburban and regional transport, building on the popular CityElefant units within the Škoda Group portfolio. These are still the basis of the fleet on many suburban and regional transport lines in the Czech Republic, Slovakia, Ukraine and Lithuania. These trains are particularly popular with passengers due to their ingenious interior layout, partial low-floor design supported by a lifting platform for convenient access to the lower deck of the train and powerful air conditioning. The 22Ev has adopted these popular features from its predecessors and added a number of additional elements of modern passenger rail transport.

The technical design of the new 22Ev units combines practicality and passenger comfort and responds to all the requirements of efficient suburban transport. Wide compartments and doors allow easy passage and passenger change. The interior layout also includes a multifunctional zone for transporting bicycles, bulky luggage, wheelchairs and prams.

The equipment of the new units complies with the latest TSI LOC&PAS, TSI Noise, TSI SRT, TSI PRM and TSI CCS regulations and offers a variable interior layout. There is also an integrated European Train Control System (ETCS) Level 2 and a system for remote transmission of diagnostic data including predictive analysis. Thanks to their low weight, intelligent parking system and ATO connection, the units have low declared energy consumption.



DOUBLE-DECK PUSH-PULL TRAINSETS AND CARS

The push-pull trainsets are non-traction cars pulled or pushed by a locomotive. The trains are designed for gauges of 1,435 mm and 1,520 mm. The boarding height range allows operating platforms with heights of 350 to 760 mm from the top of the rail.

The first generation of cars is designed for a maximum speed of 160 km/h and was derived from the proven CityElefant units. The second generation of push-pull trains has been completely redeveloped in a version for long-distance transport with a maximum speed of up to 200 km/h.

Double-deck cars are made in Finland. These include passenger, driving, restaurant or sleeping cars. All types of cars are designed to be pressure-tight and have excellent thermal insulation, which dedicates them for the demanding Nordic conditions of temperatures down to -40 °C. The inter-car transitions are also pressure-tight, allowing safe and comfortable movement between cars. All cars have a strong aluminium construction designed in accordance with applicable safety standards so that the deformation zones in the event of an accident absorb the impact energy and the passenger compartment remains protected from the collision effects.

MAIN TECHNICAL PARAMETERS

Track gauge	1,435 / 1,520 / 1,524 mm
Maximum design speed	up to 200 km/h
Vehicle width	2,800 / 2,820 / 3,200 / 3,370 mm
Vehicle / box height	4,630 / 4,635 mm
Boarding height	550-960 mm above TK
Boarding door width	800-1,340 mm

PUSH-PULL

The push-pull trainsets delivered to Czech Railways are modern vehicles designed for regional transport in the Moravian-Silesian Region. The basic version is a three-car trainset consisting of a driving car, passenger car and an end car. This trainset has a total capacity of 356 seats, with 10 seats in first class.

The maximum speed of this trainset is 160 km/h; it is partly a low-floor, providing barrier-free boarding from platforms with a height of 550 mm. The entire microprocessor control system allows the trainset to be checked from the driver's cab or from the locomotive by just one driver without anybody else having to be present. In the standard version, the trainset is equipped with an information system, Wi-Fi and a new ETCS system.

These trainsets are fully air-conditioned with comfortable seats. The spacious multifunctional areas can transport up to thirty bicycles, prams and bulky luggage. It also includes ski holders. The train trainset has five toilets, one of which is intended for wheelchair users. The trainset is also adapted for the transport of passengers with reduced visual and space orientation, and it also provides room for up to four wheelchair users with accompaniment.

CZECH REPUBLIC





The four-car push-pull trainsets designed for Germany are intended for the Deutsche Bahn line connecting the cities of Nuremberg, Ingolstadt and Munich.

The trainset is designed to develop a maximum speed of 200 km/h with a maximum operating speed of 190 km/h.

Push-pull trainsets in Slovakia consist of a double-decker control vehicle and double-decker passenger cars.

The trainset is designed for a maximum speed of 160 km/h and a track gauge of 1,435 mm.



PASSENGER CARS AND DRIVING CARS

FINLAND

Currently, several hundred of these passenger cars are transporting people on all major track lines. Thanks to their comfort and reliability, the double-deck Škoda passenger cars have become very popular with passengers. The cars have a spacious and bright interior with a wide range of services on both floors. The lower floor allows easy boarding to the car at the level of the platform, even for passengers with reduced mobility.

The Škoda Group portfolio contains three main types of passenger cars. The basic Ed model is equipped with seats for passengers on both floors and in a compartment. The Eds model is specially designed for families and passengers with reduced mobility and is divided into two areas. On the lower floor, the arrangement is adapted for disabled passengers, while there is a playground on the upper floor

and compartments providing peace for passengers with children. The third model, the Edfs, is equipped with space for both passengers with reduced mobility and families with children, and the car also has a section for a conductor and a dining car with a cooling device.

The control cars are arranged in sets in a push-pull system, i.e. with a control car at one end and a locomotive at the other. This system allows the conductor to control the train from both ends without having to change the locomotive. Upon reaching the final stop, the driver only moves from the locomotive cab to the driver's cab, and the train heads in the opposite direction. These cars offer passengers an equally pleasant and safe environment for travelling as the double-deck passenger cars.



SLEEPING AND RESTAURANT CARS

FINLAND

Sleeping cars provide a comfortable and quiet environment to relax during a long distance or overnight trip.

The Finnish railways are currently operating 40 double-deck sleeping cars. Each compartment has two beds. On the lower floor, it is also possible to connect some compartments to form a spacious family compartment. The top floor compartments are also equipped with a private bathroom. The cars are air-conditioned, and you can regulate the temperature in the individual compartments.

The latest cars made by Škoda are restaurant cars. These cars complement the company's portfolio, providing full-scale service for passengers in double-decked cars. The passenger compartments on the upper floor can also be used as a conference room for up to 41 people. The restaurant section on the lower floor of the car houses a kitchen, a sales counter and a dining room.

A café is located at the end of a car in the pass-through floor. It is an open space area for passengers where they can meet, and it can also be used for cultural programmes. At the opposite end of the car is a kiosk, which also provides service for the upper floor.



ITALIAN NIGHT COACHES

ITALY

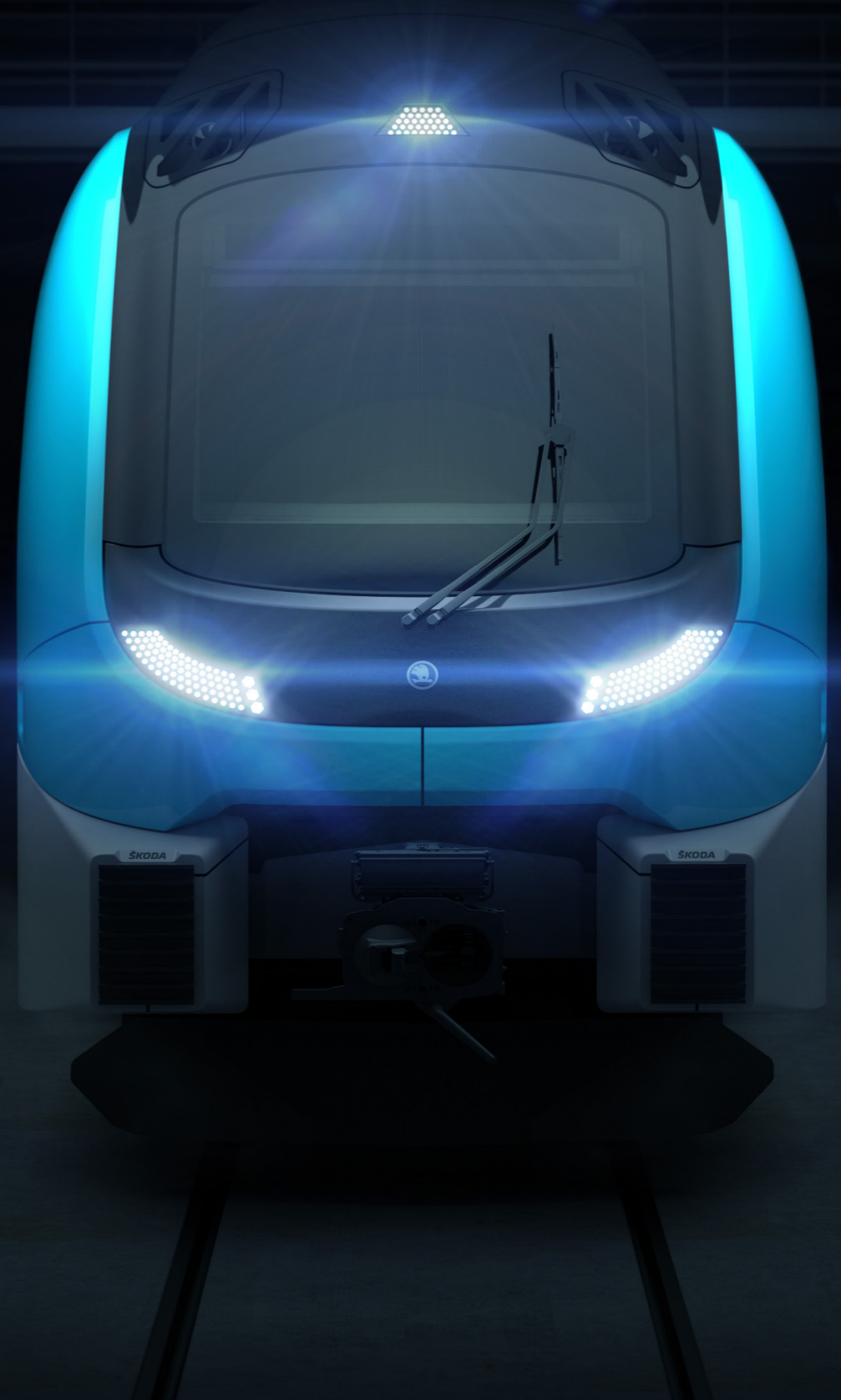
This project reflects the growing popularity of night train travel in Europe. The new coaches for the Italian railways will offer an extraordinary travel experience with greater comfort, privacy and a tranquillity resembling a conventional hotel room. The trains are thus ready to meet the demanding requirements of passengers.

The Superior coaches are equipped with comfortable spacious bedrooms, six of which are with single beds and two with double beds. Each has its own toilet and shower. Thanks to the air-conditioning solution, the temperature in each unit can be individually adjusted. The facilities also include modern information and audio/video infotainment systems. A coach also includes a staff room with kitchen equipped with electrical appliances.

The Comfort Class offers seven compartments in each coach, each equipped with four beds and its own washbasin. In addition, the facilities also include a larger space for people with reduced mobility and their companions. One toilets and transport lifts are also available for such people to facilitate their entry and exit. The air conditioning can also be individually adjusted in each compartment.

The Easy coaches offer a spacious passenger lounge with a 2+1 seating arrangement. For maximum comfort, individual sections have dividing walls, armrests and oversized headrests, and each seat has its own individual lighting. The wide central aisle allows for comfortable use of the interior space when the train is moving, while the vestibule area features luggage racks and storage spaces. There is one toilet on each side of the coach.





ETCS (EUROPEAN TRAIN CONTROL SYSTEM)

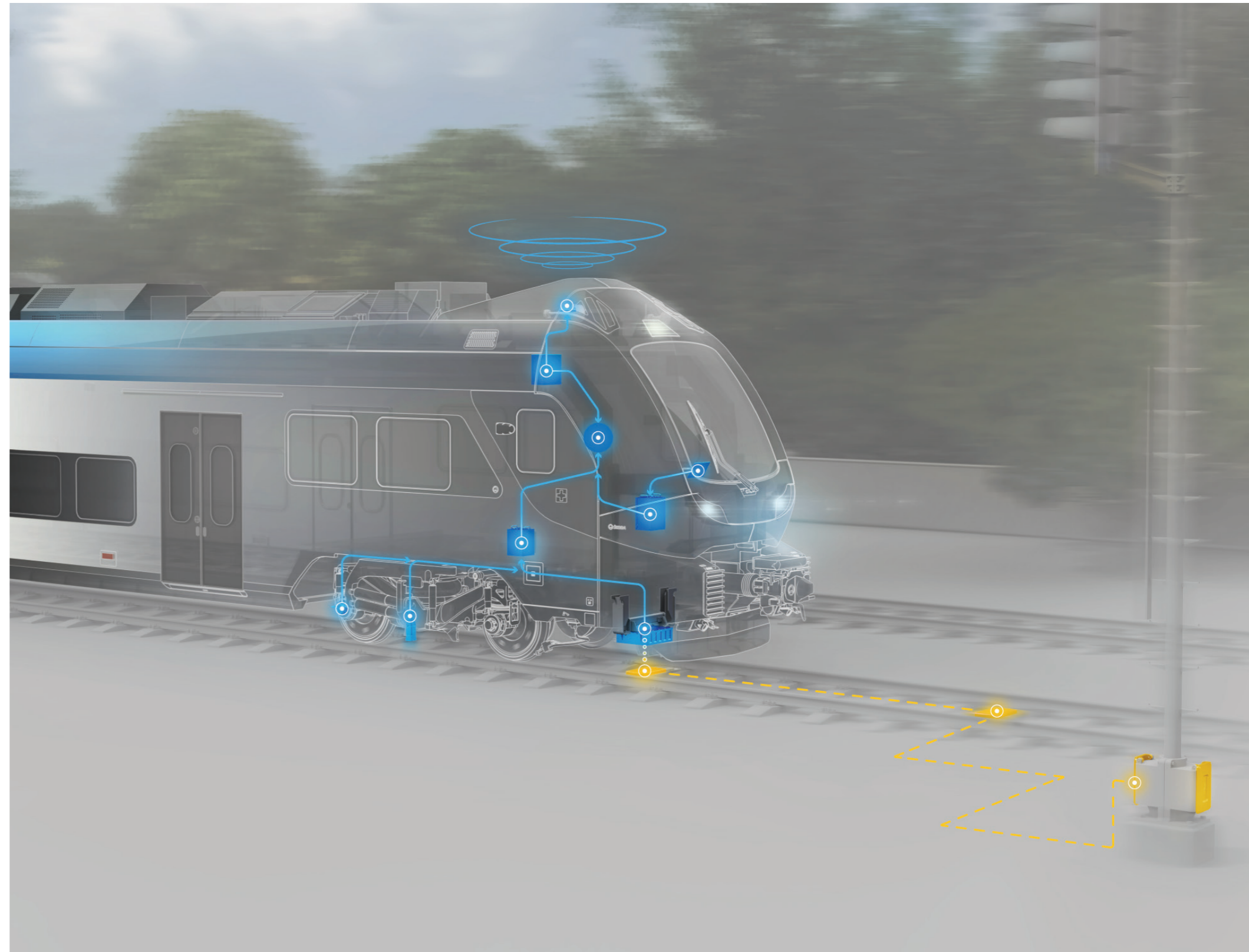
The term ETCS refers to a safety and interoperability standard for railway vehicles within the European Union. It is a unified system aimed at standardizing safety levels and accelerating cross-border transport.

Modern Škoda railway vehicles are now routinely equipped with the unified European train control system ETCS (European Train Control System). This system is designed to replace the variety of national safety technologies with a single common standard, enabling interoperability across European rail networks. The main benefit of ETCS is a significant increase in the safety of rail transport in Europe.

Škoda Group plays a key role in the implementation of exclusive ETCS operation in the Czech Republic. The total number of vehicles being equipped or already equipped with the ETCS system exceeds 400 units. For new generations of electric units, we are developing solutions that comply with the latest technical standards and legislative requirements, with a focus on the future.

We integrate ETCS not only into newly manufactured vehicles but also into existing ones through so-called retrofitting. This additional installation is being carried out on a wide range of vehicles for various operators, from express locomotives to special working machines. Škoda Group manages the entire process – from engineering through installation to the approval procedure.

Thanks to the acquisition of The Signaling Company, Škoda Group is ready to offer customers its own comprehensive ETCS system solution.





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