

Carriage-2019



- **Twin units:** transition to semi-automated passenger service technologies with a single attendant team per two carriages; smart use of the carriage space, divided into service areas and shower cubicles
- **Single-vestibule body:** reduced labour intensity of carriage equipment maintenance
- **LED lighting:** reduced energy consumption and operating expenses
- **Autonomous operation of bio-toilets:** continued operability of toilet modules, translating into improved equipment reliability

UPGRADING THE ROLLING STOCK IN 2020–2025

FPC is continuously working to improve passenger carriage design with a particular focus on the comfort and functionality of a passenger seat.

One of the focus areas is improving the tested types of open sleeping carriages.

In 2019, by order of FPC, the concept was developed of a modular open sleeping carriage, scheduled for production by JSC TVZ in 2020. The carriage features the traditional layout of passenger berths; however, the design and ergonomics will change dramatically. The primary purpose of these changes is to improve personal comfort and provide passengers with the opportunity to tailor the space to their individual needs.

This version of the modular carriage concept offers a combination of the passenger berth arrangement typical of the traditional open sleeping carriage model and “compartments” that are partitioned off with modular closet sections. In this way, the concept has kept traditional-layout berths convenient for large groups travelling together or senior passengers but also offers new berths for improved privacy achieved by using individual partitioning sections that can also be used to hold hand luggage and outerwear.

Given the planned transition to larger carriages (size T, used for electric trains), the implementation of this concept will enable adding one more passenger compartment to a carriage, increasing the length of berths and fitting a shower into a dedicated cubicle.

A life-size model of a carriage featuring this modular interior was presented at the 13th International Forum “Transport of Russia”, with the model to be showcased during 2020 at railway stations in major Russian cities to test the concept with customers. A final go/no-go decision on the concept will be taken based on a passenger survey to be organised by JSC Federal Passenger Company.



The modular carriage concept enables creating a personal space for each passenger by using individual curtains closing off a berth, a ladder and a handrail to access the upper berth, lights above the individual tables complementing general ceiling light, as well as individual reading lights, individual air nozzles, power sockets (220 V) and USB ports. The modular sections have a storage module – closets to leave luggage, small items, outerwear and shoes.

The two proposed carriage versions vary notably, but they both mark a new stage in the evolution of an open sleeping carriage.

Another R&D focus area is double-decker carriages envisaged by the Carriage-2020 project. Their specific features are expected to include:

- use of twin units
- increased double-decker height improving the passenger comfort on upper berths of the second deck by increasing the distance between the berth and the ceiling
- refreshed interior and modern design
- bogies with air suspension system (improved smoothness and passenger comfort)
- a next-generation system for detecting potential failures (mechanical parameters monitoring, real-time data

transmission to the situation centre, mileage intervals before first maintenance increased to 10,000 km)

- semi-automated passenger service technologies with a single service compartment for two carriages (improving labour productivity of the train crew).

Features to provide additional comfort for passengers in the carriage include a modern design, developed using international best practices and high-quality finishing materials; improved soundproofing and vibration insulation; Wi-Fi hotspot; intercoms for communication with a train attendant; a full-fledged self-service area complete with vending machines and a purifier; convertible tables and personal safes in compartments; automated sliding interior doors; individual temperature control at each compartment; a shower cubicle in each carriage. Planned production time of the prototype – 2020.