

## Production of Locomotives with Asynchronous Traction Drive

In 2012, with the support of JSC “Russian Railways”, joint projects between Russian manufacturers and their foreign partners were successfully implemented in the development and production of innovative rolling stock — Sinara Group with Siemens AG and CJSC Transmashholding with Alstom. Both foreign companies are world leaders in their fields of activity.

### Moreover, in 2012:

- ▶ the technical specification for the 2TE116UD diesel locomotive with a General Electric engine and for the 2TE25AM diesel locomotive with a MTU engine were approved.
- ▶ acceptance tests of the TEM 14 double diesel locomotive and EP20 electric locomotive with asynchronous traction motors were carried out.
- ▶ qualification tests of 2ES10 electric locomotive were carried out.
- ▶ technical requirements for a locomotive with a gas-fueled reciprocating engine and GT11 natural-gas-powered locomotive were developed.
- ▶ the technical specification for the development of a 4-axle piggybackcontainer platform was approved.
- ▶ the acceptance tests of a covered goods wagon with sliding walls and an axle load of 25 ton-force were carried out.
- ▶ the draft design of the ES2G electric train was completed (LLC Ural Locomotives).

### ADVANTAGES OF THE ASYNCHRONOUS TRACTION DRIVE:

- Increased power with the same dimensions as a DC motor
- Longer life cycle
- Improved reliability
- Reduced life cycle cost
- Possibility of electric regenerative/dynamic braking to stop
- Increased tonnage rating

EP20 Olymp Passenger Electric Train	2ES10 Granit Freight Locomotive	2ES5 Freight AC Electric Locomotive	2TE25A Vityaz Main Line Diesel Freight Locomotive	TEM9H Diesel Shunting Locomotive
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### IN OPERATION SINCE 2012

SUPPLY IN 2013–2015

2013	2014	2015
30	25	24

The two-system EP20 locomotive with asynchronous traction motors was developed by the engineering center Rail Transport Technologies, a joint venture of CJSC Transmashholding and Alstom Transport. The locomotives are produced by Novocherkassk Electric Locomotive Plant (part of the CJSC Transmashholding Group).

This is a pilot project aimed to develop a single platform of 5th generation Russian electric trains. Certification testing of the new EP20 passenger electric train has been successfully completed (see details in the Section “Development of the Express and High-Speed Rail Network”).

EP20 is designed for express passenger traffic (up to 200 km/h) and has the following characteristics: it does not have any equivalents in the “1520 area” and is very competitive with foreign trains; its life cycle costs are 15% lower than existing models.