Improving the efficiency of infrastructure

The Russian Railways Budget Committee has established key performance optimisation parameters and developed and implemented a range of cost-cutting measures in an effort to improve the Company's operating efficiency.

Track renovation

The design solutions for railway track reconstruction (modernisation) and major track repairs provide for an increase in speed and the lifting of existing restrictions for passenger trains over a stretch of 1,233.2 km and for freight trains over a span of 945.8 km.

For the first time since 2013, there was no:

- increase in track length with tonnage exceeding industry standards (25,200 km);
- growth in track scores.

In addition, the number of equipment failures in track facilities decreased by more than 7%.

The Company's main efforts to reduce the length of tracks with tonnage exceeding industry standards aimed to repair first- and second-class lines with particularly heavy congestion, weight and passenger traffic.

Automation and telemechanics facilities

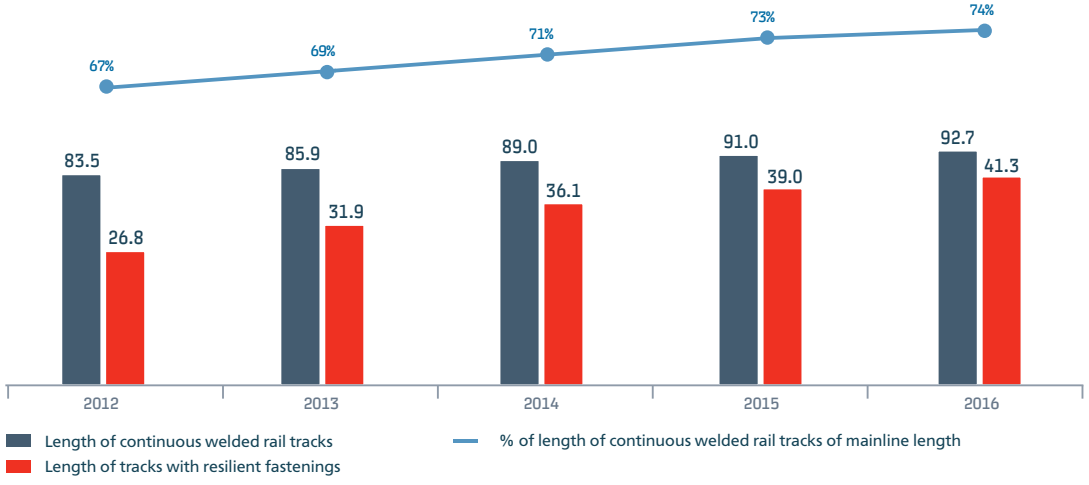
Major repairs made it possible to reduce first- and second-category equipment failures by 12.3% in 2016 compared with 2015, the number of delayed trains through the fault of automation and telemechanics facilities by 2% and not exceed the traffic safety targets in terms of the permissible level of events in 2016 for automation and telemechanics facilities (4 incidents occurred with a target of 4).

Electrification and power supply facilities

The fulfilment of the major repair plan in 2016 made it possible to increase the reliability of power supply devices and reduce the number of first- and second-category equipment failures by 15% compared with the same period of last year.

The number of first- and second-category equipment failures for delayed trains on Russian Railways infrastructure totalled 48,200 in the reporting year, a decrease of 14,400 events from 2015, or 23%. The number of first- and second-category technological disruptions on the Russian Railways network totalled 602,100 events, a decrease of 609,500 events from 2015, or 50.3%. The delay time of freight trains at the responsibility of the units decreased by 557,273 train hours versus 2015, or 19%.

Length of continuous welded rail tracks, including with resilient fastenings, '000 km



Dynamics and structure of the traction rolling stock fleet in 2016

At the end of the year, the Russian Railways locomotive fleet in operation was comprised of 14,188 units, including:

- in freight traffic – 7,341 units;
- in passenger traffic – 1,624 units;
- in utility traffic – 1,814 units;
- a total of 3,409 units were involved in special shunting and other shunting operations.

At the end of 2016, the working locomotive fleet of Russian Railways was comprised of 9,728 units, including:

- in freight traffic – 5,272 units;
- in passenger traffic – 732 units;
- in utility traffic – 898 units;
- a total of 2,826 units were involved in special shunting and other shunting operations.

Russian Railways purchased 493 locomotives in 2016, including:

- 261 electric locomotives, including 43 passenger and 218 freight locomotives;
- 232 diesel locomotives, including 15 passenger, 118 freight and 99 shunting locomotives.

Measures to improve the utilisation efficiency of locomotives

One of the strategic areas of work for locomotives is the renovation and unification of the locomotive fleet by operating domain.

New locomotives are distributed in accordance with the operating domain method. The supply of new locomotives makes it possible to gradually get rid of the locomotive fleet in operation and redeploy it to railway operating domains that have increased freight turnover as well as retire the fleet that has exhausted its standard service life.

A total of 374 locomotives were relocated throughout the Russian Railways network in 2016 (246 electric trains and 128 diesel trains).

The following work was carried out in 2016 to improve the efficient use of locomotives:

- In the Eastern operating domain, the number of trains weighing 7,100 tonnes was increased from 2 to 4 pairs per day. In addition, the train weight for 2x2ES5K and 2VL80S electric locomotives on the Mariinsk-Smolyanino section was increased from 7,100 to 7,500 tonnes based on pull and energy efficiency tests;
- as a result of testing on the Lena-Severobaykalsk section for 3ES5K series electric locomotives, the weight of freight trains was increased from 5,800 to 6,000 tonnes, which resulted in the entire Tayshet-Taksimo section operating trains weighing 6,000 tonnes;
- based on pull and energy efficiency tests, freight trains weighing 6,300 tonnes were put into operation on the Mariinsk-Irkutsk section starting from March 2016, which increased the train weight on the section from 6,000 to 6,300 tonnes;
- pull and energy efficiency tests were conducted in the operating domain of Zabaykalsk Railway to determine whether coupled freight trains weighing up to 12,600 tonnes could operate on the railway. Based on the testing results, they were put into operation during large-scale track repair work;
- eliminating infrastructural restrictions on traction power supply made it possible to conduct test runs of 2x2ES6 series electric freight locomotives on the Chelyabinsk-Main – Kinel – Rybnoye section, which increased the train weight on the Syrzan-Rybnoye section from 6,500 to 7,000 tonnes;
- the supply of 3ES10 series electric locomotives to the Sverdlovsk Traction Directorate allowed for increasing the operation of freight trains weighing 9,000 tonnes in the Kuzbass-Northwest operating domain from 2 to 4 train paths;
- the supply of 2TE25KM series diesel locomotives to the Moscow operating domain made it possible to expand the domain of their operation to the Republic of Belarus on the Smolensk-Vitebsk section, free up the fleet of 3M62U series diesel locomotives and increase the maximum freight train weight from 6,000 to 6,500 tonnes.

As part of the Year of the Passenger and in accordance with the action plan to improve the quality of passenger service in 2016:

- technology for the non-stop operation of the EP20 electric locomotive to and from the Goryachy Klyuch station was tested, reducing the travel time of Trains No. 102/101 and No. 104/103 between Moscow and Adler by 1 hour to less than a day;
- The travel time of Trains No. 46/45 and No. 70/69 Moscow-Voronezh and Moscow-Belgorod was reduced by 45 minutes in both directions and takes less than 6.5 hours;
- the optimisation of traction service and the use of EP20 electric locomotives reduced the travel time of Trains No. 36/35 St. Petersburg-Adler (double-decker railcars) and No. 33/34 Moscow-Tallinn by 1.5 hours;
- the travel time of the experimental passenger train on the Moscow-Bryansk route using the EP20 electric locomotive was reduced by 45 minutes and takes 3 hours 46 minutes. A spliced-current section at the Sukhinichi station was put into operation in non-stop mode with a maximum speed (40 km/h in the odd direction and 60 km/h in the even direction).

Development of effective technologies to manage the freight car fleet in 2016 given the large number of rolling stock operators. Results of the introduction of SNOP for railway freight transportation

In an effort to improve railway transportation efficiency, Russian Railways works consistently to implement the provisions of the Single Network Operating Procedure (SNOP) taking into account federal laws and other regulations of the Russian Federation concerning railway transportation.

The SNOP is used when solving problems involving the technical regulation of the transportation process, the organization of train traffic, the work of locomotives and locomotive crews and the provision of information and is the basis for regulations on interaction between the Company's functional branches. Work organised on the basis of SNOP provisions made it possible in 2016 to achieve positive dynamics in the main rolling stock use indicators.

The SNOP is used when implementing the Integrated Programme for the Phased Transition to the Organisation of Scheduled Freight Train Traffic. This technology is implemented both at the regional level and throughout the entire railway network. As of 1 January 2017, 641 specialised schedules had been developed and put into operation.

Measures are currently being prepared to update the SNOP in 2017-2019 taking into account the organisation of the transportation process with the use of operating domain technologies and the introduction of principles with an internal and external customer focus.