4.8. INNOVATIVE DEVELOPMENT

Innovative development is one of Transneft Group priority areas. New engineering solutions are being introduced with the view to ensure reliability and safety of the system of oil and petroleum products trunk pipelines and uninterrupted transportation of oil and petroleum products to consumers in Russia and abroad.

As per Instruction of the Russian Government No. DM-P36-7563 dated 07 November 2015 and Executive Orders of the Government of the Russian Federation No. 1471p-P13 dated 03 March 2016, based on the results of an independent technological audit, the Transneft Innovation Development Programme for 2017-2021 was created in 2016. The Innovation Development Programme was coordinated with the Ministry of Energy, the Ministry of Education and Science and the Ministry of Economic Development of the Russian Federation; it was approved at the meeting of the Interagency Commission for Technological Development at the Presidium of the Council for Economic Modernisation and Innovative Development under the President of the Russian Federation (Minutes No. 10-D01 dated 07 October 2016) and then approved by the Board of Directors of Transneft on 11 November 2016 (Minutes No. 21).

Compared to the previous Innovation Development Programme for the period up to 2017, the new one was expanded and includes initiatives for developing the system of intellectual property management and cooperation with universities, scientific organisations, institutes of the Russian Academy of Sciences (RAS), technology platforms, development institutions, innovative territorial clusters, etc.

The Innovation Development Programme was highly appraised by the interdepartmental group of independent experts among Russian fuel and energy companies (98.7% out of 100%), which is one of the highest scores for companies fully or partially owned by the state.

The currently valid Profile of the Transneft Innovation Development Programme for 2017–2021 is available on the Company's website: https://www.transneft.ru/development/innovations/.

In 2020, the following equipment was put into commercial operation as part of the implementation of the innovative project titled "Development of a Set of High-Precision In-line Inspection Tools for Ensuring Reliability of Trunk Pipeline Facilities": 1 ultrasonic inspection tool, 1 multichannel geometry tool, 2 magnetic inspection tools. In total, more than 80 tools have been commissioned since 2011 as part of the Innovation Development Programme.

New tools developed by Transneft Diascan boast accuracy and resolution equal, or even superior, to similar foreign articles.

Transneft Oil Pumps launched batch production of trunk and booster pump units. The plant ensured 100% localisation of the full cycle of pumping equipment production, which is unique and had not been produced in the Russian Federation before the launch of the plant in Chelyabinsk. Pumps with comparable parameters are manufactured by Flowserve (USA) and Sulzer (Switzerland), the world-leading companies. The plant also continued to create a test bench base for the development of modern samples of high-tech pumping equipment meeting the highest world standards.

In 2020, work continued in the field of R&D, design, experimental and engineering developments aimed at ensuring reliable, safe and efficient operation of oil and petroleum products trunk pipeline facilities, substitution of imported equipment and technology in the field of pipeline transportation, as well as improvement and optimisation of production processes.

Innovation Development Programme of Transneft for 2017–2021

AMONG THEM, THE FOLLOWING SOLUTIONS WERE COMPLETED:

1. Equipment for bench testing of mainline pumps (MLP type).

Based on results of development works (R&D) a prototype of testing equipment for NM 10000-210 mainline pumps was manufactured, sets of technical documents for a lineup of testing equipment for five standard sizes of mainline pumps (MLP 1250-260, MLP 2500-230, MLP 3600-230, MLP 7000-210, MLP 10000-210) were developed. This will optimise the testing of MLP type mainline pumps for all required diameters and pipe wall thicknesses by eliminating the need to readjust the test-room to various combinations of suction and pressure manifolds diameters.

2. Drag reducing agents (DRAs) with improved performance indicators for use in low temperature transported media.

As part of the R&D, a technology for producing domestic additives was developed and a pilot batch was produced, which retains a higher efficiency compared to conventional polyhexene-based additives at temperatures below 10°C. This substance can be applied both to crude oil at the temperature of pumped media up to 0°C and to diesel fuel at the temperature up to -4°C. A set of equipment for producing DRA batches was created and is expected to be used for testing the technology of producing new additives.

3. Test benches for electric drives.

As part of the R&D project, 2 multi-purpose automated test benches (with ranges of set and controlled moments from 2,000 to 65,000 Nm and from 30,000 to 180,000 Nm) were developed and manufactured, capable of performing acceptance, standard and periodic tests of high-speed and part-turn actuators of pipeline valves with a torque at output shaft. The equipment design includes multi-purpose mounting seats for external optional frequency inverter (FI) from various manufacturers, which provides a check on performance of actuators in regulation modes. The standard cabinet control software helps set up user settings for the FI regarding its operational changes, indication of current breakdowns and limiting settings of the electric drive's output arm.

The use of test benches optimises the drive production process at TOMZEL due to the unification of measuring and testing equipment and methods.

Key Performance Indicators of the Transneft Innovation Development Programme

Indicator	Unit of measurement	Values			
		2018 actual	2019 actual	2020 target	2020 actual
Total amount of financing for innovative projects including R&D, from own funds as a percentage of Transneft's revenue from oil transportation services (under RAS)	%	1.41	1.41	1.42	1.42
Number of titles of protection for intellectual property obtained during the reporting period and two previous years	pcs.	94	100	95	117
Integrated effect of in-house commercialisation of innovative projects, including R&D, for the reporting period and two previous years in terms of percentage of Transneft's revenue from oil transportation services by RAS	%	1.48	1.48	1.49	1.49