

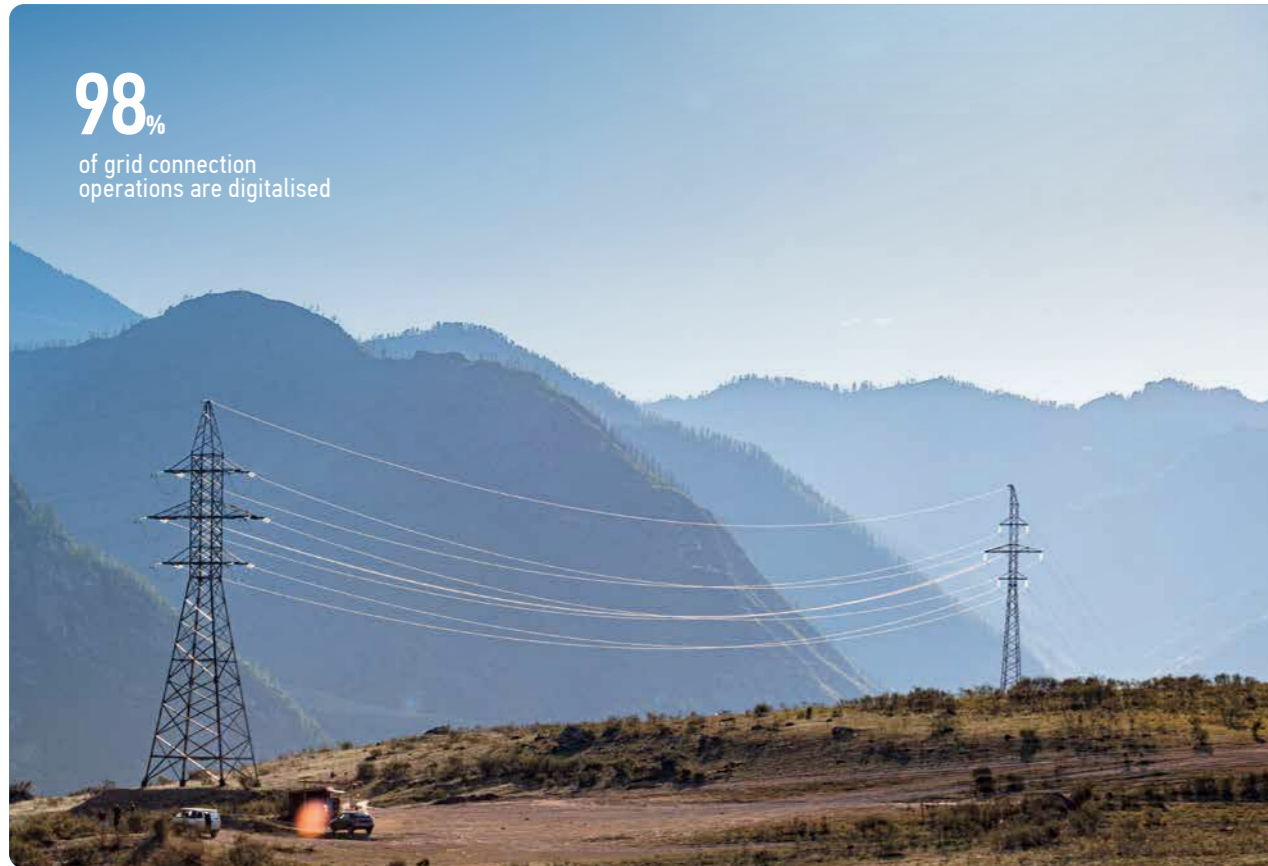
Innovation activities

Technological and innovative development

Promotion of energy and environmental safety

Consumers

One of the best ways to increase the operational efficiency of the Rosseti Group's companies is to adopt the most recent scientific and technological advancements.



Key events of the year

98% of grid connection operations are digitalised

The Group places a high priority on the advancement of IT infrastructure in order to provide effective customer engagement. In 2023, more than 98% of grid connection applications were received and processed using digital means.

Important: the portal functionality is constantly expanding, with dozens of services including installation of smart electricity meters and smart home equipment, organisation of outdoor lighting networks, and turnkey installation of individual charging stations for electric vehicles and solar panels.

Commissioning of a new highly automated 220 kV Tyutchevo substation

A new highly automated 220 kV Tyutchevo substation was commissioned in the Moscow Region. With this power facility, the Pushkinsky urban district enjoys more reliable power supply: a provision was made for grid connection of new residential, industrial and logistics complexes.

Important: the power facility features modern automation equipment and microprocessor-based relay protection systems. It was the first to employ outdoor integrated gas-insulated switchgear (GIS).

340 kilometres of fiber-optic communication line in the Volga Region power transmission grids

Rosseti built 340 kilometres of FOCLs in the Volga Region power transmission grids. Modern digital data transmission systems connected 16 key power supply centres in Mordovia, as well as in the Nizhny Novgorod and Vladimir Regions. Additionally, the upgrade covered the communication systems of substations that supply power to territories with a population of over 5 million people, railway and gas transmission infrastructure facilities, and residents of the Technopark-Mordovia research and production centre specialising in the development of innovations.

Important: the Rosseti Group places a strong focus on development of a digital communications network in all regions where it operates. Digital communication channels are essential for transmitting corporate and technological information, implementing smart grid and remote control technologies.

New technical solution for melting ice on PTL

As part of R&D, PJSC Rosseti Volga developed a multifunctional mobile technical solution that combines a redundant power supply (RPS), a mobile step-up transformer station (MSTS), and a multifunctional unit for melting ice on the wires of overhead power transmission lines (OPTL).

Important: with this unit, one can promptly melt ice and frost deposits on PTL wires and, if necessary, simultaneously and promptly supply electricity to a group of consumers for the period of restoration of the main power supply.

Rosseti's innovative project won the National Environmental Technology Award

PJSC Rosseti Centre's development — a packaged modular energy storage system — won in the Energy Efficiency and Energy Saving category of the ECOTECH-Leader 2023 National Environmental Technology Award. The system is designed to supply power to small local communities that are situated far from the primary power supply hubs.

Important: the storage system is an entirely Russian invention without a counterpart in any of the neighbouring nations. Osipovo village in the Staritsky district of the Tver Region has been receiving autonomous power supply from the system for over a year, demonstrating its effectiveness in practice.

Key indicators

R&D expenditure, RUB bln



Length of transmission FOCL, thsd km



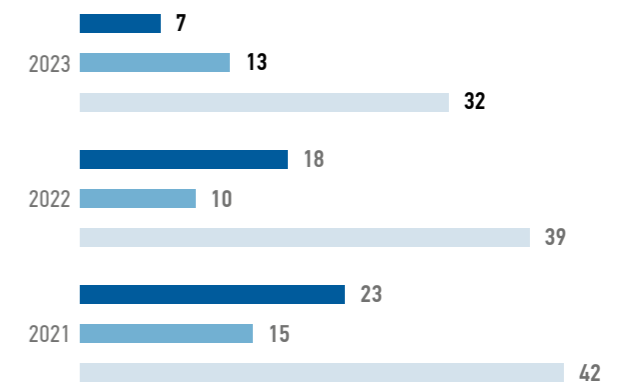
Length of distribution FOCL, thsd km



92,700 KM
length of transmission FOCL

75,100 KM
length of distribution FOCL

R&D results, pcs



- Put into pilot operation
- Rolled out in subsidiaries
- Protection documents received