# INFORMATION TECHNOLOGY

The efficiency of IDGC of Centre's operation as an up-to-date power grid company directly depends on the application of information technology and automation devices. The implementation of new projects, the development of existing projects and the support for completed projects with regard to IT technologies are operations continuously carried out by the Company in accordance with the Information Technology and Telecommunications Strategy (hereinafter, the ITT Strategy).

## AUTOMATED PROCESS CONTROL SYSTEMS

In 2015, IDGC of Centre continued its operations under modernisation programmes, by expanding data collection and exchange systems, under distribution grids controllability improvement programmes, and by the implementation of a distribution and outage management system (hereinafter, OMS/DMS) in 10 of the Company's branches.

In 2015, 28 of 110 kV substations and 16 of 35 kV substations were were equipped with remote control; an automated dispatch control system was implemented in the regional dispatch control room of the regional power system, and project designing works were created for the development of telemechanics systems at 5 of 110 kV substations and 7 of 35 kV substations.

In 2015, 463 of 110 kV substations and 277 of 35 kV substations were equipped with up-to-date remote control systems.

During the reporting year, works for the implementation of the OMS/DMS system was continued at 10 branches (except for Belgorodenergo, where this system had been already introduced): schemes and facilities at 20 power grids regions were connected.

In 2016, the Company plans to introduce the remote control systems at 6 of 110 kV substations and 24 of 35 kV substations.

## BUSINESS APPLICATIONS AND BUSINESS PROCESS AUTOMATION

In 2015, a purchase management system was introduced, ensuring control over procurement procedures and the automatic generation of analytical reports on the implementation of procurement plans.

The Corporate Information Analytical Portal was introduced, which includes the following services: HR management, public relations, an energy efficiency website, a call-centre portal, etc. Furthermore, an automated management documentation system was introduced.

A corporate regulatory and reference information control system was introduced, helping to improve the efficiency of processes related to high-quality reference information in the Corporate Information Resource Management System.

Within the Company's Corporate Information Resource Management System, the following projects were implemented: a project for the accounting of equipment shutdowns, the integration of the navigation system with an automated motor transport control system, and automation of the business process that supports the Corporate Information Resource Management System and client service scenarios. Furthermore, projects for the implementation of contractual schemes to connect IDGC of Centre's facilities to the grids of related companies were carried out.

## IMPLEMENTATION OF THE IMPORT REPLACEMENT PROGRAMME

In order to implement the import replacement programme for the automation of the technological control systems equipment, telecommunications and information technologies, IDGC of Centre is attempting to minimise the number of foreign equipment and materials used in project designs, in new infrastructure solutions and in updating the existing ones. The Company's specialists follow the release of new local products in the market and monitor which companies produce this equipment. If competitive analog products are released, the equipment is tested at the special test sites to simulate its integration into the existing IT infrastructure and telecommunication network.

In 2015, projects for the construction of fiber optic lines based on local equipment were implemented into the telecommunications infrastructure at the Voronezhenergo and Kostromaenergo branches. The positive economic effect from each unit of equipment exceeded 40% when compared to the cost of the international equipment used before.

It must be noted that it is not possible to replace all telecommunication network units with local systems without a deterioration of technical specifications since not all local equipment comply with the applied electrical standards.

## TELECOMMUNICATIONS DEVELOPMENT

The Company continued its operations of introducing fiber optic lines to its branches. These fiber optic lines have a higher pass-through capacity and are the most reliable solution for common applications. The length of the fiber optic lines built in 2015 amounted to 929.22 km, which is a 13.7% increase compared to 2014.

**8,015** pcs
total number of the Company's fiber optic lines

Distance of fiber optic lines built:
- IDGC of Centre's investments – 4,222.6 km;
- Investors' funds – 2,566.2 km.

In 2015, works for the installation of satellite communication devices at the substations continued. The satellite channels are used to backup communication and data exchange channels of 35 and 110 kV substations. Overall in 2015, over 300 of IDGC of Centre's facilities were equipped with sets of satellite equipment, in particular, 3 substations in Kurskenergo and 2 substations in Smolenskenergo were equipped.

IDGC of Centre has created and actively is developing a digital dispatch control radio communication system based on up-to-date digital radio equipment, compliant with the DMR standards, integrated into the existing transportation data exchange system of the Company. This system ensures failure-free communication with maintenance groups while they are in transit.

Data collection and exchange system:
- Kostromaenergo – 3 facilities;
- Kurskenergo – 2 facilities;
- Smolenskenergo – 6 facilities;
- Tamvobenergo – 3 facilities;
- Tverenergo – 5 facilities.

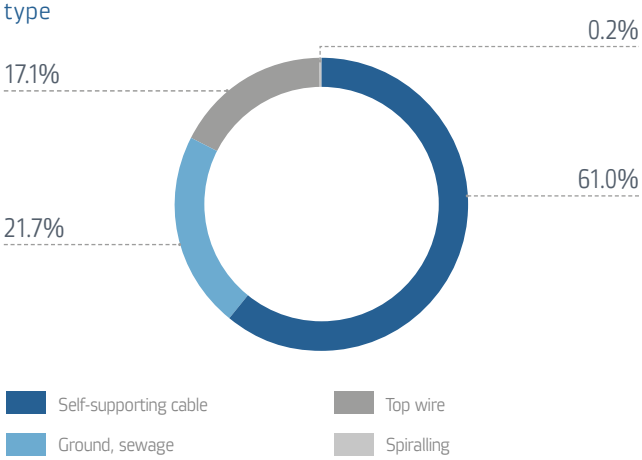
Taking into consideration telecommunication technologies development trends, the existing communication channels have been modernised to increase their pass-through capacity.

## PLANS FOR THE FURTHER DEVELOPMENT OF IT, AUTOMATION AND TELECOMMUNICATIONS

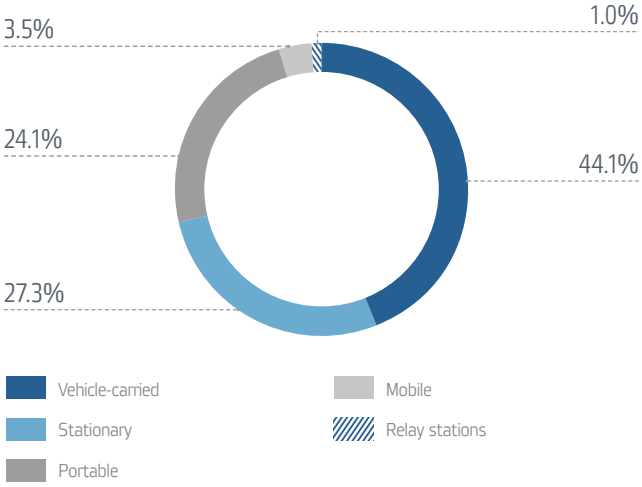
Pursuant to the IT, Automation and Telecommunications Strategy, the following activities have been planned:

- Development of an automated management documentation system;
- Development of the Corporate Information Resource Management System in the following areas: the management of customer relations, assets, maintenance and repair, bookkeeping and statements.

Fiber optic lines routed at IDGC of Centre's branches by type




Structure of IDGC of Centre's radio stations, type of station




Structure of IDGC of Centre's radio stations, type of signal