

Ensuring High-Quality, Reliable, and Uninterrupted Power Supply to Consumers

In 2020, Rosseti Kuban generally achieved the main objective of production activity of maintaining the power equipment reliability at an adequate level.

In 2020, the number of accidents in Rosseti Kuban in power grids of 0.4 kV and above decreased by 7.6% year-on-year. In 2020, accidents classified according to Clause 4 of the Rules for Investigating the Causes of Accidents in the Electric Power Industry approved by Decree of the Government of Russia No.846 dated October 28, 2009 and investigated under the supervision of the Rostekhnadzor representatives were not recorded in Rosseti Kuban.

The decrease in the main accident rates in 2020 was achieved due to implementing technical measures to maintain the high reliability of the equipment. In 2020, the Maintenance and Repair Program for the main energy system process was fully implemented; in physical terms for the main nomenclature items, it was fulfilled by more than 100%. To ensure the absolute energy system reliability, additional work was done on PTL and SS, including that based on the examination and test results, to eliminate the identified defects due to the operative redistribution of expenditure limits of the Maintenance and Repair Fund.

In 2020, the main activities were aimed at:

- maintaining the rated parameters of production assets – power lines, substation equipment, and RPA devices;
- timely identifying and eliminating defects based on the power equipment diagnostics results;
- ensuring readiness for preventing and eliminating the process violations, specifically:
 - agreements concluded with contractors and related power grid companies, as well as with the Russian Ministry of Emergency Situations and the Federal Service for Hydrometeorology and Environmental Monitoring (Rosgidromet) have been prolonged,
 - readiness of 392 brigades, 1,791 employees, 715 units of equipment, including 22 mobile teams (126 employees) equipped with appropriate technical means (22 units of motor vehicles, 27 units of special equipment), tools, rigging, spare parts, communication means, special clothing, catering, and financial means has been ensured,
 - the Company's emergency reserve has been completed,
 - the readiness of 120 emergency power supply (EPS) sources with a total capacity of 13,110.5 kW for use has been checked, of which 109 mobile EPSs with a total capacity of 12,670.5 kW,
 - two training courses on drilling interactions in response to emergencies with the threat of power outages with the participation of representatives of the Ministry of Emergency Situations of Russia in the Krasnodar Territory and the Republic of Adygea, executive bodies of the Krasnodar Territory and the Republic of Adygea, and local self-government have been conducted.

Preparation for the heating season is being successfully implemented. The Company confirms its readiness for operation during the heating season every year by receiving the Readiness Certificate. Within the framework of preparation for the heating season 2020/2021, production programs are implemented, scheduled emergency training courses are conducted, events as per the requirements of Rostekhnadzor are held.

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7.6%

The results of the assessment of power facility readiness for the operation during the heating season 2020/2021 were approved by Order of the Ministry of Energy of Russia No.973 dated November 5, 2020. The readiness index of Rosseti Kuban is equal to 0.99.

To prevent fires and ignitions at the Company's facilities, Order No.169 On Preparations for the Fire Hazard and High-temperature Period of 2020 dated March 11, 2020 was issued. Actions included in the Order were carried out to the fullest extent, in particular:

- the maintenance of the fire protection installations was monitored at 350 facilities by a contractor;
- 1,495 primary fire extinguishing means (fire extinguishers) were purchased and 1,272 fire extinguishers were recharged;
- 145 fire doors were installed;
- operability of two internal fire water supply systems was restored;
- functionality of fire protection installations was restored at 11 facilities;
- based on the fire safety day results, 2,702 violations were detected, of which 2,626 ones were eliminated. The remaining violations will be eliminated as scheduled;
- 514 sets of escape hoods were acquired for the Company's employees.

In the reporting year, fires and ignitions at the Company's facilities and emergency power equipment outages as a result of the fire were not recorded.

The Company's preparation for the flood period was carried out by the Company's Central Flood Commission (approved by Decree No.47 On the Preparation and Tasks for the Successful Operation during the 2020 Flood Period dated January 31, 2020) as part of the activities of the established Power Grid Complex Headquarters and similar commissions of the Company's branches. 75 organizational and engineering measures were taken.

- Organisational measures:
 - 11 meetings of the Flood Commissions were held, at which issues on preventing and eliminating possible process violations and/or emergencies at the Company's power facilities during the spring-summer flood period were considered.
 - Monitoring of power facilities in the possible flooding areas was performed and their list was updated. According to the monitoring results, this list includes up to 389 facilities (0.5% of the total power facilities), including 112 supergrid ones (24 35–220 kV substations, 88 35–220 kV gantry sections) and 277 distribution grid facilities (211 10–0.4 kV gantry sections and 66 10–0.4 kV transformer substations).
 - The training is to be conducted (from April 14 to April 15, 2020) involving the management bodies and material and human resources of the territorial links of the Krasnodar Territory and the Republic of Adygea RUERS functional subsystems to drill the actions of the Company's management bodies and material and human resources in natural and technogenic emergencies caused by the impact of hazardous weather events during the flood period. Based on the restrictions imposed by the resolutions of the Heads of the Regions due to the spread of COVID-19 at the Krasnodar Territory and the Republic of Adygea, as well as on Order No.156 of Rosseti On Organization of Production Activities in High-alert and Emergency Regimes dated April 10, 2020, the training will be implemented after lifting the restrictions that are still present at the moment.
 - 54 emergency training courses were conducted in the Company's power grid branches to eliminate the possible consequences of flooding the power facilities.
 - The Heads of the Company's Executive Office and the Power Grids of Adygea branch took part in two meetings of the Commission for Emergency Situation and Fire Safety (CES and FS) of the Krasnodar Territory administration and two meetings of CES and FS of the Republic of Adygea administration on the operational readiness of power equipment in the Company's operational responsibility area during the 2020 flood period. The executive bodies and the CES and FS of the administrations of these constituent entities of the Russian Federation did not submit any claims or comments to the Company.
- Engineering and technical measures
 - Engineering protection of two power grid facilities in risk zones was ensured: bunding of the 35/10 kV Dondukovskaya substation area (Adygea power grids), drainage work at the 110/10 kV Yuzhnaya substation (Power Grids of Sochi).
 - The following measures were taken at overhead power transmission lines of 35 kV and above located at the flooding area: the pole 217 of 220 kV Krasnodar – Tverskaya overhead lines is reinforced, the poles 75–76 of 35 kV Khadzhokh – Dakhovskaya overhead lines are provided with the pile foundation, the pole 21 of 35 kV Apsheronsk – Zavodskaya overhead lines is provided with the pile foundation, the shore is reinforced.
 - The examination of 299 linear and 90 areal power grid facilities was performed.
- Check of readiness:
 - of the Company's material and human resources to eliminate the consequences of process violations due to the impact of a flood on power grid facilities (readiness of 392 brigades – 1,794 employees, 711 units of equipment; including 22 mobile teams – 127 employees, 49 units of equipment was provided);

- of watercrafts and water pumping equipment (readiness of two Merlin-440 boats with Yamaha engine, two inflatable boats, and 26 motor pumps was provided);
- of emergency power supply sources (readiness of 120 EPS sources with a total capacity of 13.11 MW, of which 109 mobile EPS sources with a total capacity of 12.67 MW was provided).

During the flood period, the Company's Grid Management Center daily interacted with the regional centers for hydrometeorology and environmental monitoring of the Krasnodar Territory and the Republic of Adygea and Sochi Hydrometeorological Center, as well as crisis management centers of the Main Directorates of the Ministry of Emergency Situations of Russia for the Krasnodar Territory and the Republic of Adygea to obtain operative data on weather conditions and flood situation at the water bodies of the region.

Main causes of accidents in the Rosseti Kuban power grids in 2020

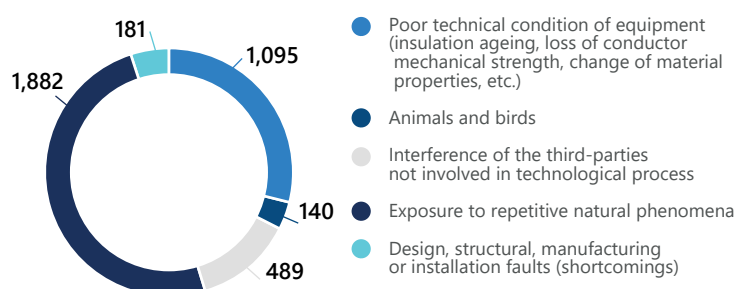
All activities according to the requirements of the Federal Service for Ecological, Technological, and Nuclear Supervision (Rostekhnadzor) with a deadline of 2020 have been fulfilled and decontrolled.

To ensure reliable operation of the Power Grid Complex in the conditions of de-energizing consumers, the Company's headquarter operates permanently, representatives of which regularly participate in ensuring the secured power supply in the Krasnodar Territory and the Republic of Adygea.

During the flood period, 127 messages (including 103 daily hydrometeorological bulletins and 24 storm warnings) about adverse weather events with information on the flood hazard due to the increase of rivers have been received, which is less by

36%
year-on-year.

Main causes of accidents in the Rosseti Kuban power grids in 2020



Repair and Maintenance

In order to ensure sustainable power supply to the facilities of industry, agriculture and population of the Krasnodar Territory and the Republic of Adygea, the Company annually develops and implements the Maintenance and Repair Program (M&R) considering:

- the rated frequency of overhauls, midlife repairs, and routine maintenance of power equipment;
- technical condition of the facilities;
- results of preventive tests;
- the need to comply with the requirements of supervisory authorities;
- elimination of technological disturbances;
- feasible and efficient operation of power grids.

For the reporting year, the M&R Program has been successfully implemented in all areas. In fact, in 2020, Rosseti Kuban implemented the activities for RUB 3,010.2 mln or 102% vs target (RUB 2,941.8 mln). Deviation from the target values has occurred due to implementation of the additional works by own resources concerning clearing of 0.4–110 kV overhead lines right-of-ways, set of measures aimed at provision of reliability and safety of power supply for mass resort recreation in the Krasnodar Territory and the Republic of Adygea during the 2020 resort period by means of redistribution of cost limits from the reserve of the Chief Engineer (provided in the work contract) for implementation of the additional works on M&R in 2020.

Key Repair Program performance indicators

Work description	Actual in 2018	Actual in 2019	Actual in 2020	Target in 2021
Clearing the overhead line right-of-ways, ha	1,620.19	2,177.7	2,464.0	1,455.8
Replacing ground wires, km	77.08	78.7	77.2	66.9
Replacing insulators, pcs	43,062	95,082	95,733	67,406
Repair of power transformers, pcs	21	34	16	10
Repair of circuit breakers, pcs	899	940	895	917
Repair of isolating switches, shorting plugs, disconnectors, pcs	1,698	1,749	1,923	1,850
Repair of TS, pcs	604	3,026	2,059	1,775
Repair of PTL, km	3,124.3	14,023.97	13,259.34	9,813.7

In addition, to improve reliability of the Power Grid Complex operation, the following works are carried out in 2020 in accordance with the Comprehensive Program for Improving the Reliability of Operation of Substation Equipment and PTL of Main Grid, 0.4–10 kV Distribution Grid:

- reactive power sources restored – 550 capacitors replaced;
- key and electromagnetic interlocks restored at 23 35–110 kV substations;
- 276 physically worn out bushings of 35–110 kV oil switches and power transformers replaced;
- thermovisional inspection of 467 overhead lines and power supply cable and overhead lines of 35 kV and above (planned figure – 305 pcs), 908 35–110 kV substations (planned figure – 297 pcs), 3,876 TS and 0.4–10 kV overhead lines (planned figure – 3,669 pcs) performed;

- 310 35–110 kV stationary valve-type lightning arresters operating more than 25 years replaced with overvoltage limiters of corresponding voltage class;
- 1,151 poles at 10 kV overhead lines and 5,362 poles at 0.4 kV overhead lines replaced;
- 1,497.94 km of wire of 0.4–10 kV overhead lines replaced;
- 12.5 km of 0.4–10 kV cable lines repaired;
- 519 transformers of I-II sizes repaired.

In 2021, the M&R limits of RUB 3,062.2 mn are set, which is 2% less than the actual expenditures in 2020 (RUB 3,010.2 mln). The activities planned for implementation under the M&R Program 2021 are sufficient to maintain technical conditions of equipment and PTLs at the “good” level and will allow providing the consumers of Rosseti Kuban and its branches with reliable power supply.