

«Digital Transformation 2030» Concept



The concept of "Digital Transformation 2030" is an important message for the implementation of intelligent control systems based on digital technologies in the energy sector enterprises.

The use of RFID - technologies will provide an advantage in the rate of reduction of specific operating and investment costs, will optimize the development, maintenance of infrastructure and the structure of process control.

In accordance with the Decree of the President of the Russian Federation of 05.07.2018 No. 204 and the order of the Government of the Russian Federation of July 28, 2017 No. 1632r, when implementing the Concept, it is necessary to maintain priority for goods and software of Russian origin.



RFID Technology Features

- Creation of an electronic passport of a marked object (inventory number, characteristics, information on inspections / repairs, etc.)
- Real-time object identification
- Reduce unplanned repairs
- Reducing the likelihood of accidents and contingencies
- 100% control of infrastructure bypass
- Object life cycle monitoring
- Minimization of the "human factor"



Marking of fixed assets

PatchTag RFID tag (for marking power line towers)

Enclosed universal tag with a large registration distance of more than 20 meters, mounted on metal objects. Designed to work in extreme conditions of the far north.



TargetTag RFID tag (for marking transformer substation units)

The label is intended for marking metal-containing products. For error-free reading of the RFID tag, the antenna is located in an elastic case on a special adhesive base. Distance of registration is 4 meters.

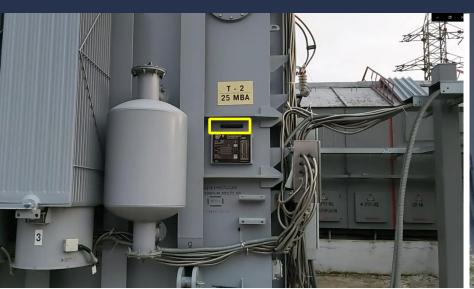


RFID tags are attached to all fixed assets subject to accounting. The tag identifier code is mapped to the name in the inventory sheet. As a result of marking, the read RFID tag is assigned the item nomenclature of the object from the information system.

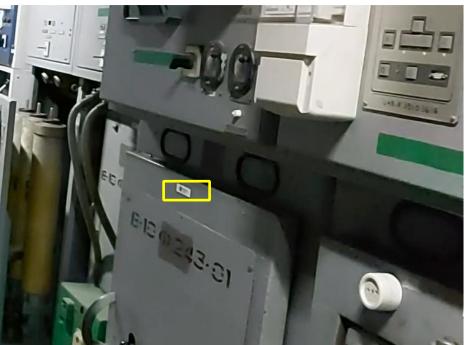
After sending the report, this information will appear in the information system.



Marking of fixed assets









Working with marked objects





Designed for reading RFID tags in conditions without access to power sources, as well as outdoors.

Benefits:

- Read RFID tags during product search
- Inventory
- Automatically transfers data on all operations to the RFID system via wireless Wi-Fi or GSM
- Allows to read RFID tags autonomously



Working with marked objects



Inventory

Highest inventory rate. A building for 10,000 accounting units is inventoried for 4 people / day.

As a result of the actions taken, a report is generated on the correspondence of information from the information system to the actual presence of objects in a specific location. Also, if the reader detects objects that are irrelevant to this location, the system will automatically notify the user of this and send a notification to the information system.

Search

The search for a given accounting unit can be performed in a matter of minutes.

Search and inventory operations of fixed assets are carried out using mobile RFID readers. The operator receives information about the object automatically in real time.



RFID for monitoring maintenance and repair

RIFD technology can be used to prevent emergencies due to untimely maintenance of facilities.

Procedure:

- The chief engineer forms a task for maintenance and repair and sends it to a mobile RFID reader
- 2. A crawler logs in near the facility and receives detailed instructions on how to carry out work, as well as information on safety when performing work.
- 3. The crawler records the fact of servicing the facility, the time and name of the work performed both in the information system and in the tag of the facility itself.

Creation of service reports is performed automatically using software that requests data from the database and saves it to a file (for example, MS Excel).

Detailed information about the object is tied to a unique identifier of the equipment and is stored in the enterprise ACS database. The base provides storage of a detailed history of the operation of a marked object.



Additional features



The introduction of RFID technology allows controlling the placement of equipment of mobile communication operators at facilities leased from power grid companies (power transmission lines, transformer substations).

Benefits:

- Legalization of connection and laying of lines during the audit "in the fields";
- Conducting a comprehensive inventory of routes and equipment;
- Determination of affiliation and nomenclature in the field;
- Determination of the reliability of belonging to a particular operator.



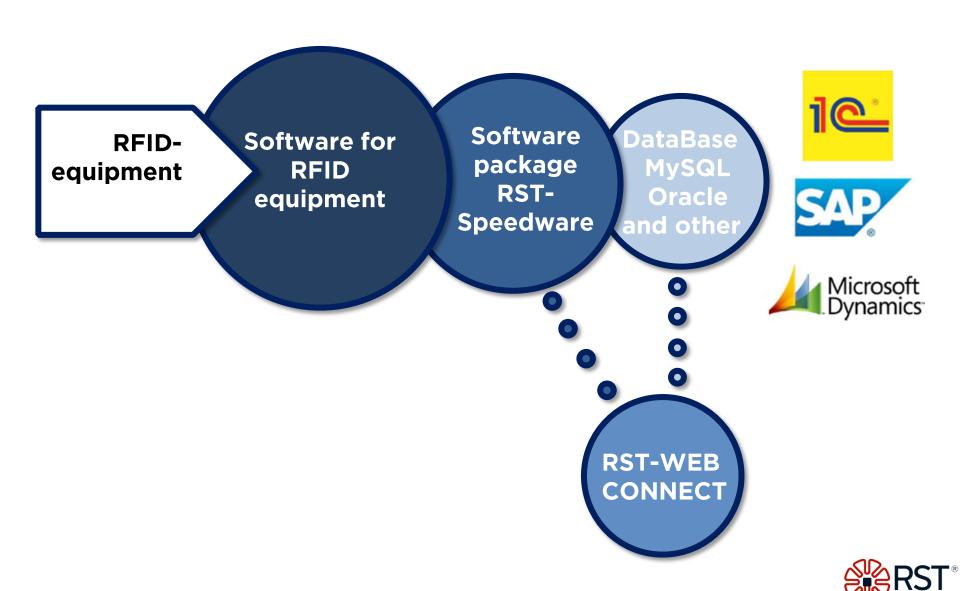
RFID Implementation Results at Lenenergo PJSC

The results of the pilot implementation of RFID technology at individual facilities (10-110 kV overhead line supports, 110 kV substation equipment) of Kingisepp Electric Networks, a branch of PJSC Lenenergo:

- Updating of all objects in the territory, including their condition and time of the last visit of the responsible employee
- Control the movement of personnel in a clearly fixed time
- Prompt entry of data into the certification object, including scheduled repair time
- Entering data on field metering objects inside the vehicle. Possibility of passing sections of overhead lines while in a vehicle, especially in difficult conditions
- Obtaining information about the metering object located at a distance of tens of meters, in conditions where the approach to the object is difficult
- Reducing the likelihood of emergencies
- Increase employee security



Software architecture of the RFID solution



Software RST-SPEEDWARE



Middleware for collecting data from all readers and storing information in the database.

RST-SPEEDWARE receives from the database tables tasks for a particular reader to perform operations with RFID tags, sends the specified tasks to readers, monitors the execution of tasks, and saves the results of tasks in the database.

RST-SPEEDWARE performs the functions of:

- Saving the results of registration of RFID tags in the database
- Saving the results of operations on RFID tags in the database (writing, reading, blocking, etc.)
- Saving in the database diagnostic information about the status of the reader
- Transfer of data and commands from the database tables to a specific reader



Software RST-WEB-CONNECT



The software is designed to integrate with the Information System and manage the operation of the RST-SPEEDWARE software.

RST-WEBCONNECT software performs information exchange between the IS and the database, processes the data collected in the database, the RST-SPEEDWARE software, generates and stores commands for readers in the database.

RST-WEBCONNECT software can perform additional processing of the results of the RST-SPEEDWARE software and reader software for further transmission to the IS or for generating data for building reports.

RST-WEBCONNECT performs the following functions:

- Reception, transmission and processing of information from the IS
- Processing the information collected in the database from readers to transfer it to IS
- Formation and storage in the database of commands for readers based on data received from the IS

Software RST-INVENTORY



The software is designed to control the mobile reader.

Its configures the reader and controls its operation based on commands received from RST-SPEEDWARE software.

RST-INVENTORY software performs the functions of:

- Information exchange with RST-SPEEDWARE
- Processing of registration results of RFID tags and operations on them
- Marking objects with RFID tags
- Search for objects marked with RFID tags
- Selection of objects marked with RFID tags according to nomenclature positions
- Inventory of objects marked with RFID tags
- Reader configuration
- Saving the results of the execution of commands in the memory of the reader in the absence of communication with the RST-SPEEDWARE

Company introduction

RST-Invent – is a Russian RFID-tags and equipment vendor, RFID-system and software developer.





Work experience since 2005



Own RFID-tags and equipment facilities in the Leningrad region



Geographic reach: RF, USA, Asia, Europe



A full cycle of competencies in RFID: from the development of the element base to the implementation and maintenance of ready-made solutions



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