

## **Russian Electrotechnical Company Limited**

Advanced solutions for generation, conversion, distribution, storage of electrical energy for shipbuilding, transport infrastructure, energy, oil and gas and other industries



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### **ABOUT COMPANY**



#### History of the company's development Creation of a 0.4 kV frequency converter "PAPIR" with a power from 1 MW to 5 MW 2020 Creation of a 0.4 kV frequency converter "PAPIR" with a power Creation of a UPS with a from 1 MW to 5 MW supercapacitor storage for a data 2022 center with a capacity of 2.4 MW 2016 Creation of a 0.4 kV frequency converter "PAPIR" with a power from 1 MW to 5 MW 2018600 400 Creation of a 0.4 kV frequency converter 200 "PAPIR" with a power from 1 MW to 5 MW 2016 2017 2018 2019 2020 2021 2022 2023 2024 02 Growth of financial indicators

### **CERTIFICATES**

30, 2018.





"Certificate of Recognition of RKO" Russian River Register dated 05/31/2021

"Certificate of Conformity GOST R ISO 9001-2015" 05/21/2021

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емы добровольной сертификации «ГАРАНТ СООТВЕТСТВИЯ»

### **PRODUCTS**



#### **Bidirectional frequency converters**



- "PAPIR" series
- Constant 600-1200 V
- AC 400 V
- Power from 1 to 5 MW



- Series "BIRCH"
- Constant 600-1200 V
- AC 400 kV
- Power from 500 to 900 kW

#### **Frequency converters**



- Series "SUNFLOWER"
- Constant 1200 (1500) V
- AC 660 (600) V
- Power from 1 to 5 MW



- Constant 540 V
- AC 400 V
- Power from 90 to 600 kW

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### PRODUCTS



# Unified electric power system of the Unified Energy System (предложение – The "TRANIT" series) of the "TRANIT" series

Converter technology and storage devices are combined through a control system into a single complex, which, thanks to its advantages, allows us to achieve a new level of functionality and reliability for the following application:

- in electric transport;
- in local energy distribution.

#### **Dynamic voltage compensator ''Canon''**



A modern and effective solution to eliminate short-term voltage fluctuations (overvoltages, voltage sags) of relatively shallow depth. Canon is used in powerful power systems up to 1 MW.



### PRODUCTS

#### **Power cell**

The cell is designed for building power converters, such as:

- frequency converters;
- rectifiers;
- inverters;
- PWM controllers (DC/DC converters)



#### Ultra fast charging station UBZS (лушче убзс взять с ковычки, либо сделаи аооревиатуру из англ слов, а

#### то какойто набор букв)



The UBZS is equipped with a unique automatic transfer switch (ATS) circuit and is designed for charging electric vehicles from different types of curents:

- River tram "Sinichka"
- Electric buses
- Electric cars

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### **ENERGY STORAGES**



#### Supercapacitor energy storage devices

High-power modular drive for energy storage and recovery systems with capacity and voltage scalability

- Possibility of serial connection of modules up to 4400 V
- Supports high energy and power processes
- Instant response to dynamic changes in the electrical grid
- Support for local generation of electrical energy during peak (second) loads
- Ensuring power quality
- Service life:  $\geq 10$  years, 1 million charge/discharge cycles
- Operation in the temperature range from  $-40^{\circ}$ C to  $+65^{\circ}$ C
- Maintenance free



Supercapacitor module 70,8F / 144 V



System of series-connected modules up to 4400 V

### НАКОПИТЕЛИ ЭНЕРГИИ



#### Lithium-ion energy storage devices (LiFePo)

High-power modular Category A Li-ion drive for energy storage systems with the ability to scale in capacity and voltage

- Possibility of serial connection of modules up to 1500 V
- Long lasting power support
- Instant response to dynamic changes in the electrical grid
- Support for local generation of electrical energy during peak (minute) loads
- Ensuring power quality
- Charge in the temperature range from 0  $^{\circ}$ C to + 55  $^{\circ}$ C
- Discharge in the temperature range from 20  $^{\circ}$ C to + 55  $^{\circ}$ C
- Self-discharge <3% for 1 month



Storage device LiFePo, 280 A\*H / 720 V (201 kW\*H)



#### **Uninterruptible power supplies (online / offline)**

Providing uninterrupted power supply to high-tech equipment using supercapacitor or li-ion drives

- Application area:
- Data centers
- Industrial enterprises
- Housing and communal services, etc.

Drives used:

- Support time < 20 sec supercapacitor storage devices
- Backup time > 20 sec Li-ion drives



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## **DESIGN SOLUTIONS (надо посмотреть русскую**

#### версию)

### **Uninterruptible power supply for the DC bus of the frequency-controlled drive (VFD DCB UPS)**

As part of VFDs that power synchronous and asynchronous electric motors. The storage device used is supercapacitors (SC). (фотку бы переделать, русские аббревиатуры поменять на англ)

### **Advantages of product implementation**

- stabilization of voltage parameters of DC Bus of VFD in 400V (все таки я бы расшифровал эти страшные буквы)
- Efficiency increased by eliminating additional conversion cycles
- Compensation of the pulse component of the load and asymmetry in power grid and VFD load
- Maintenance of critical technological processes in regular operation mode

- long resource and service life (1 million charge-discharge cycles and service life of at least 10 years)
- reduced operating costs, no costs for climate control systems
- Maintenance-free, environmentally friendly scalable to work with multiple VFDs over a common DC bus and a common energy storage device







#### Energy routers for ensuring the operation of smart grids and micro grids

- redistribution of active load power between different (asynchronous) energy sources
- Peak load compensation using energy stored in the storage device balancing the load and compensating its reactive power in order to maintain an acceptable quality of network voltage 0.4 kV.

#### **Effect of implementation**

- Reducing peak loads, leveling consumption schedules, release of extra power to connect new consumers.
- The ability to connect to existing capacities.
- Possibility of selling excess electricity to the grid, simplifying integration with distribution grids.

- Streamlining the processes of transmission, distribution and consumption of electricity.
- Exclusion from the power supply system:
  ATR automatic transfer of reserve
  UPS uninterruptible power supply
  ESE energy storage system
  RPC reactive power compensation device
  load balancing equipment







#### **Energy routers for ensuring the operation of smart grids and micro grids**

Designed for:

- handling equipment
- Electric transport (metro, trams)

### **Advantages of product implementation**

- CAPEX and OPEX savings up to 40% energy savings up to 30%, peak power up to 50%
- increasing the service life of engines and braking systems
- reducing the cost of their operations
- Possibility of operation under temperature conditions - -40°C to +65°C
- possibility of scaling, connection of additional equipment without the need to build new additional input power sourse





Supercapacitor storage device as part of operational direct current system (ODCS)

### **Advantages of product implementation**

- reduction of required battery capacity up to 90%
- reduction of capital investments in reconstructed substations by up to 75%
- eliminating the impact of impulse load on the battery, extending the service life of the battery up to 3 times
- protecting the power grid from voltage surges and dips
- significantly increasing fault tolerance and reducing accident rates
- providing instant response to power changes



Reduced investment (Using the example of a substation with «ShPE-44»)



### PCB manufacturing





REC Ltd. manufactures printed circuit boards. Professional equipment is used in production, and all procedures are performed in conditions prepared for this.



### PRODUCTION





The equipment is manufactured on the basis of our own production









### THANK YOU FOR YOUR ATTENTION

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