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# Industrial solutions of the NEC Group

# About us



The **NEC Group** (National Energy Company JSC) is an association of technology companies that manufacture innovative Russian products and provide services for the electric power and industrial sectors

## NEC in figures

**> 140,000 m<sup>2</sup>**

Total area



**> 70 bln rubles**

Total revenue



**> 4,000 people**

Number of personnel



**Unified**

**Science and Technology  
Center**

More than 50 innovations



## Our goals



Technological autonomy of Russia through the development and localization of complex products



Traditions of modern engineering school and competence centers in different regions of the country



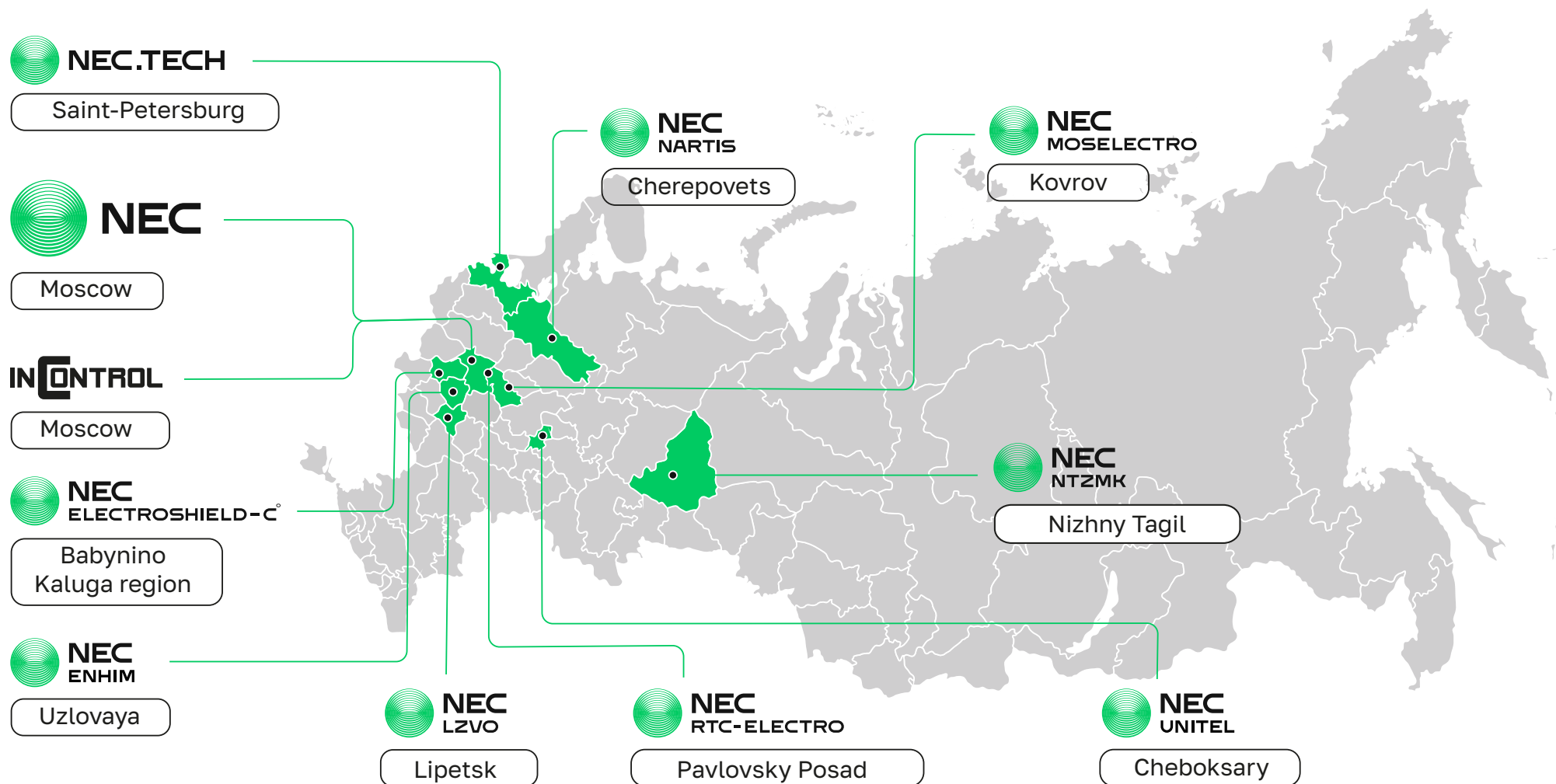
Leadership in key areas and enter competitive international markets



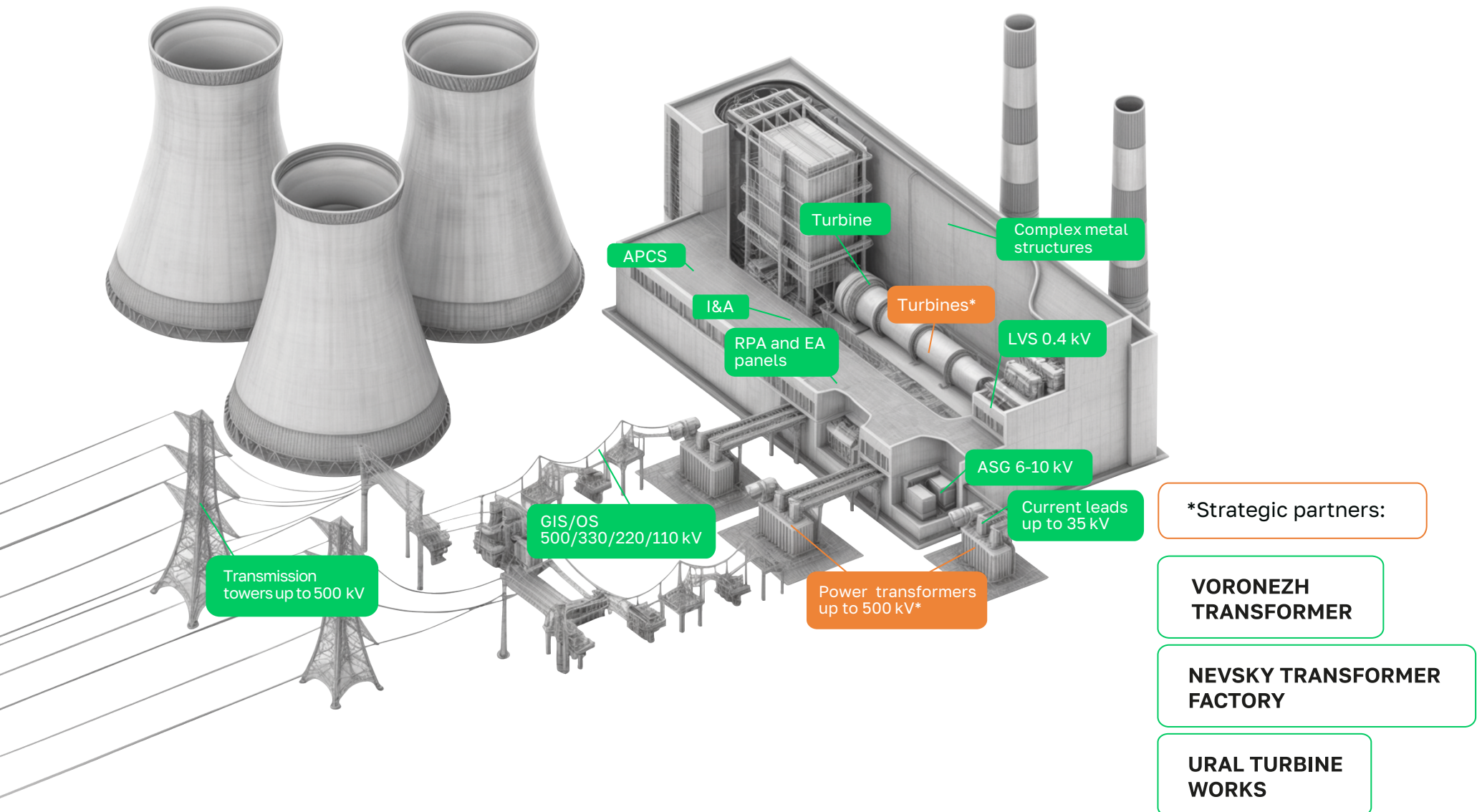
Full provision of power facilities with high-quality machinery manufactured in house



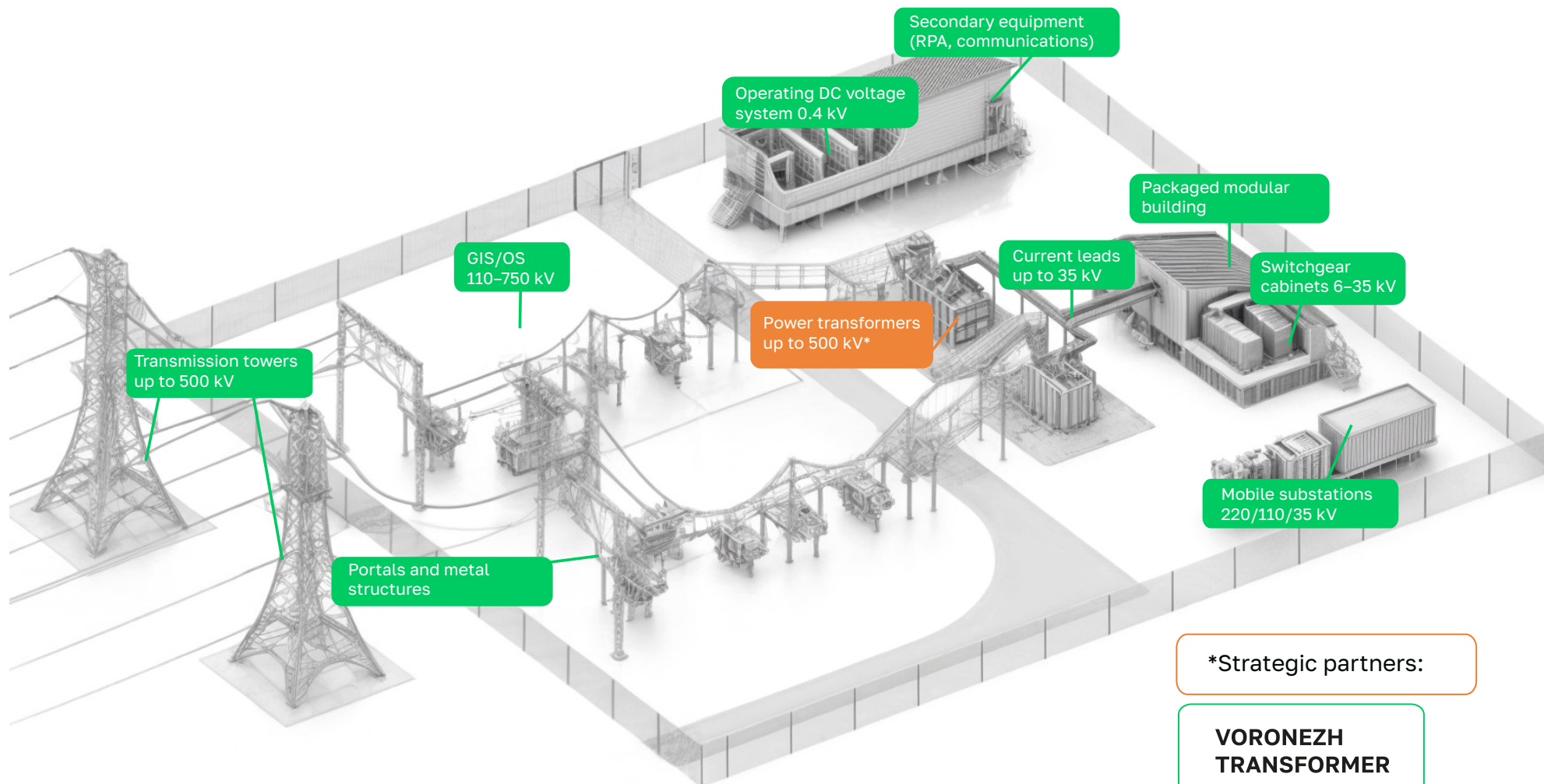
# Map of assets



# Solutions for generation facilities



# Solutions for electrical networks

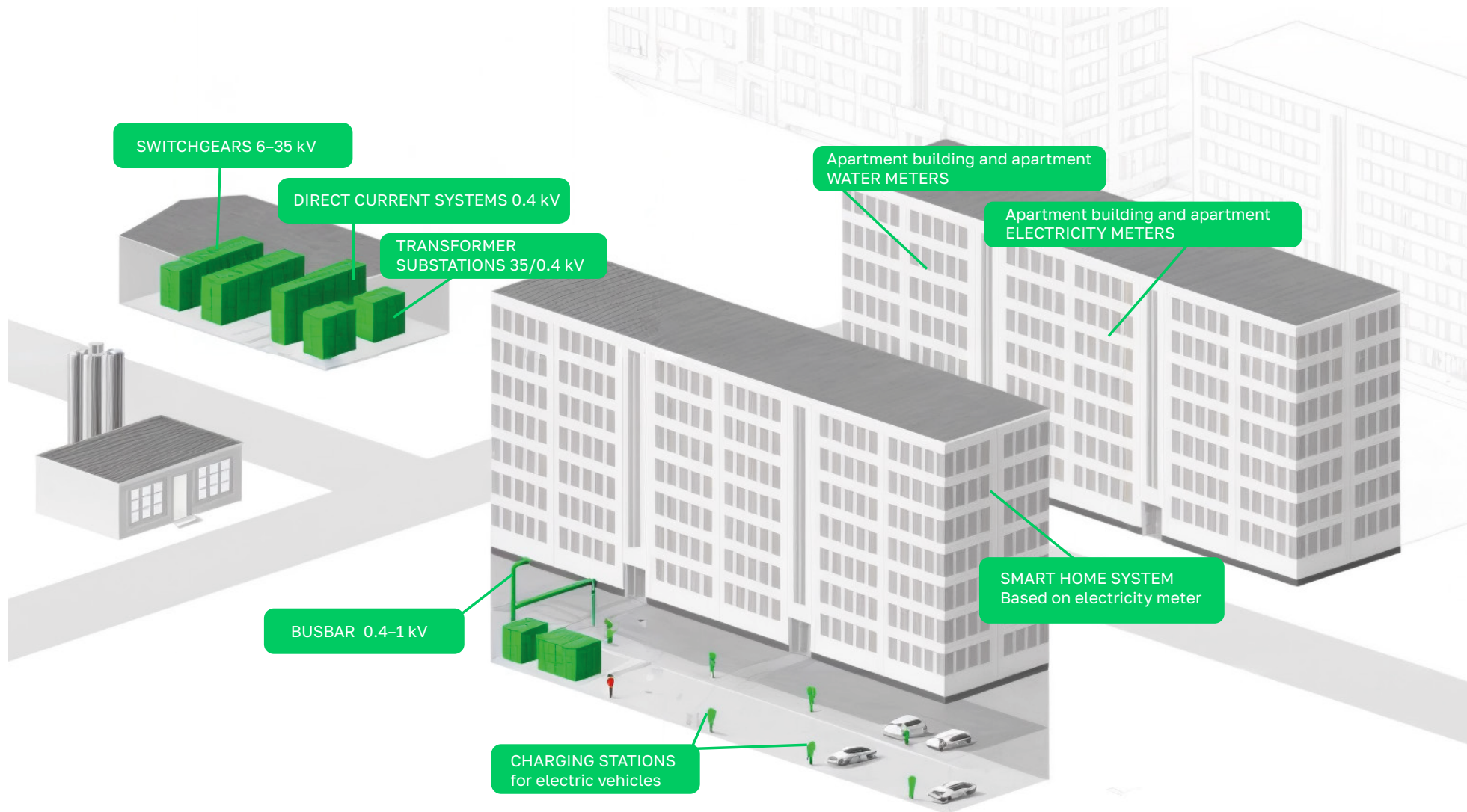


\*Strategic partners:

**VORONEZH  
TRANSFORMER**

**NEVSKY TRANSFORMER  
FACTORY**

# Solutions for urban infrastructure and development





# Members of the NEC Group



NARTIS Plant LLC

Date of founding:

**2018**

Area:

**> 11,200 m<sup>2</sup>**

Number of employees:

**> 700 people**

Production capacity:

**2.5 million**  
meters per year

## Activities:



Smart metering devices



Production of DC and AC charging stations



Development of its own parts (electronic components)



Water and gas meters

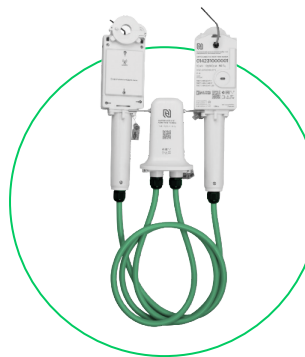


# Solutions



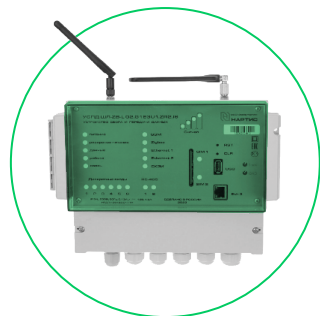
## Electricity meters

Produced in various modifications, which differ in terms of precision class, maximum current, rated voltage, network connection options, type of communications interface, antenna type, load control method, housing dimensions, operating conditions and architecture. Compliant with the requirements of Rosseti PJSC STO 34.01-5.1-009-2021 standards



## Commercial metering system 6–10 kV

Designed for measuring active and reactive electric energy in both forward and reverse directions and active, reactive and total power, line voltages, phase currents, network frequency, specific energy of losses in current circuits, positive and negative sequence current, negative sequence current ratio, reactive power factor, power factor in three-phase three-wire AC networks with an industrial frequency of 50 Hz and insulated neutral voltage of 6/10 kV (depending on its modification)



## Data acquisition and transmission device with CIPF

Designed for receiving and storing data from electricity meters, energy resources meters and other digital meters of the data measuring system through digital interfaces, for recording discrete signals, and for transferring the received information to higher level computer systems, automated information-metering systems and smart metering systems



## DC/AC charging stations

Designed for charging electric vehicle batteries. Produced in various modifications which differ in terms of maximum current, voltage and power ratings, number of connectors, connector types, installation methods, enclosure dimensions, operating conditions and architecture





Production and supply of complete electrical equipment  
for voltage classes 0.4-35 kV

Date of founding:

**1946**

Number of employees:

**> 500 people**

Area:

**> 22,100 m<sup>2</sup>**

## Activities



Development and production of electrical equipment: DS, DTS, MITS, switchgear, GIS, LVDS, reclosers, current leads, busbar



Implementation of complex energy supply projects



Design and installation of the supplied equipment



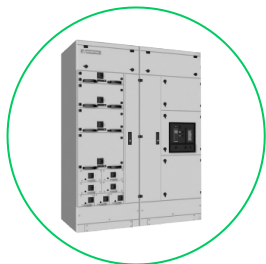


# Solutions



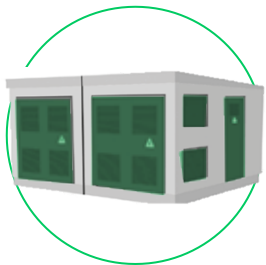
## Switchgear 6–35 kV:

Full range of air-insulated switchgear 6(10)/20/35kV for grid and generation facilities



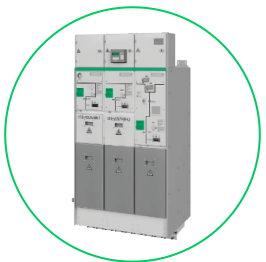
## LVDS -MESHCH up to 0.69 kV:

Compact, modular design 4b sectionalization  
High degree of protection up to IP54



## DS/ DTS/ MITS

Capacity up to 3150 kVA, voltage from 6 to 35 kV  
Equipment with transformers of any manufacturers of self-manufactured LVDS and switchgear  
Design, supply and installation



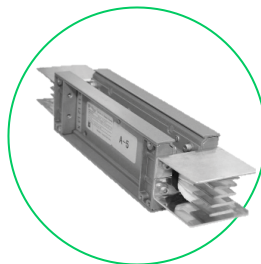
## GIS 6–20 kV:

GIS for distribution networks  
Expandable configurations for secondary distribution



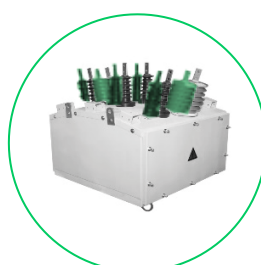
## Air-insulated current leads up to 35 kV:

Over 70 years of manufacturing experience  
No. 1 in Russia  
Availability of KEMA test reports



## Busbar up to 1 kV:

AC and DC current up to 6300 A  
Copper or aluminum conductors  
IP54 internal installation. Power take-offs with equipment from any manufacturer  
Plug-in for BIM design



## Reclosers

Rated current 400, 630 and 800 A  
Rated voltage 6.10 kV  
kiosk and pole types



Production of equipment for automation of substations and power systems

Date of founding:

**2009**

Number of employees:

**> 400 people**

Area:

**> 11,500 m<sup>2</sup>**

## Activities:



PKUS SKO Teleprotection Equipment



Integrated solutions for relay protection and automation, power management and E-SCADA 6-750 kV



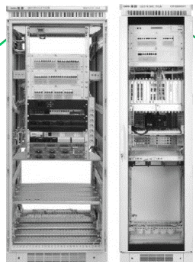
UNIT-AP Arc Protection Device



Teleprotection Command Tester (UTK8)

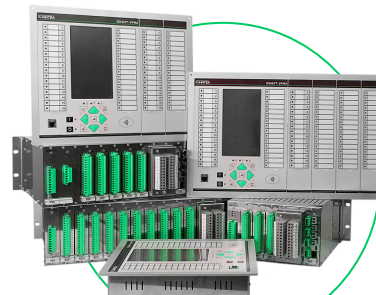


# Solutions



## Equipment for technological networks and communication systems

Full cycle of communication systems: from design to production. Development of technological solutions for facilities of any complexity, covering all sections of communication systems



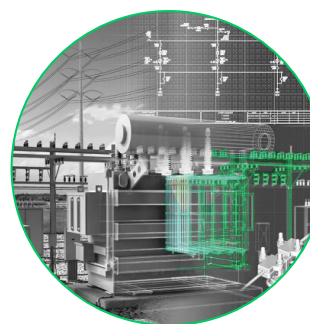
## UNIT-AP Arc Protection Device

The UNIT-AP device is designed for instantaneous arc fault protection



## Teleprotection Command Tester (UTK8)

The UTK8 is able to test teleprotection equipment that utilizes binary inputs / outputs for transmission of the commands



## Integrated solutions for RPA, APMS for APSCS 6–750 kV

Development of complex technical RPA, APMS and APSCS for industrial and electric power facilities of voltage classes 6 (10)–750 kV. Equipment manufacturing. Realization of turnkey complex projects



Development, production and implementation of CPCS, information security systems and information-analytical systems

Date of founding:

**1993**

Area:

**> 4,000 m<sup>2</sup>**

Number of employees:

**300 people**

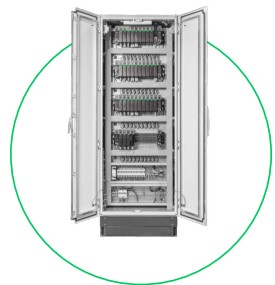
Russian leader  
in the development  
and implementation  
of APCS for power facilities

## Activities:

- ★ Turnkey automation of power engineering and industrial facilities, implementation of projects for import substitution of APCS
- ★ Development and production of the INCONT software and hardware system for the creation of APCS and ISS for power and industrial facilities up to the 1st category of importance CIIF
- ★ Turnkey information security of CIIF
- ★ Operational personnel training simulators
- ★ Information and analytical systems
- ★ Independent expertise, consultations, training, provision of related services

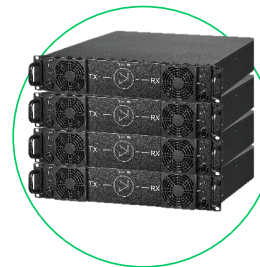


# Solutions



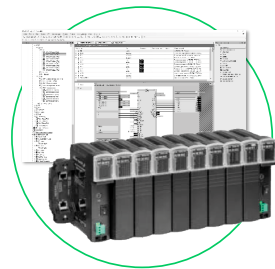
## Automated process control systems

Development of design and detailed documentation, ensuring all documents are prepared, production, factory testing, delivery, construction, installation and commissioning, maintenance services under warranty



## Information security systems

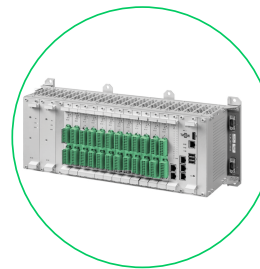
Categorization of CIIF, development of threat and intruder models, development of design and detailed documentation, packaging, production, factory testing, delivery, construction, installation and maintenance services under warranty



## INCONT software and hardware system

The ecosystem of products and solutions for the automation, safety and efficiency of energy and industrial equipment.

INCONT software and hardware system is the first cross-platform and cross-controller system in Russia and is compatible with the following controllers: INCONT, Regul R500/ R600, TPTS-NT. INCONT software and hardware system can be used to create solutions for APCS, ACS, DCS, EPS, AVMMCS, as well as for operational control and dispatching



## INCONT automation systems

INCONT industrial automation systems are a modular, design- component product designed to build responsible, high-loaded, fast, fault-tolerant and distributed APCS. All input/output modules required for building large systems are available as part of the system



## Information and analytical systems

A set of information and information-management systems that use a unified field of APCS data, increasing the efficiency of process equipment operation, both due to the accuracy of mode management and by providing production services with timely analytics for making optimal management decisions



## INCONT operational personnel training simulators

INCONT simulators are a software and hardware system consisting of APCS software and hardware tools identical to those installed in facilities, a simulation model of process and electrical equipment, as well as service systems to support the training process





Production of import substituted flame retardant turbine oil

Date of founding:

**2023**

Number of employees:

**> 100 people**

Production capacity:

**1,200 t/y**

Area:

**4 200 m<sup>2</sup>**

## Activities:



Production of fire resistant hydraulic fluid of OMTI type for regulation and lubrication systems of steam and gas turbines



Localization of production of a wide range of products based on the synthesis of phosphoric acid esters (second stage)





**Fire-resistant turbine oil Enkhim 55 TU  
20.14.73-002-19153700-201**

Turbine flame retardant oil based on trixylenyl phosphate is intended for use as a lubricant and hydraulic fluid in the lubrication and control systems of turbine units using high parameter steam. It contains no additional additives and has an isomeric composition



**Fire-resistant turbine oil Enkhim 55 TU  
20.14.73- 002-19153700-201**

Fire resistant hydraulic fluid modified with improved maximum permissible concentration (5 mg/m<sup>3</sup>) is used for lubrication and control systems in gas and steam turbines, turbocharger lubrication systems, reactor coolant pumps, generators, etc., and also for conventional hydraulic equipment



Production and supply of current leads and busbars for voltage classes 0.4–110 kV

Date of founding:

**2006**

Number of employees:

**200 people**

Area:

**> 12,300 m<sup>2</sup>**

## Activities:



Production for low voltage systems: molded busbar of TKLN type and busbar of SBB sandwich type



Production for medium voltage systems: molded current lead of TKLS type, PIMCL with RIP-insulation, PIMCLEI with EPDM-insulation, current lead without insulation

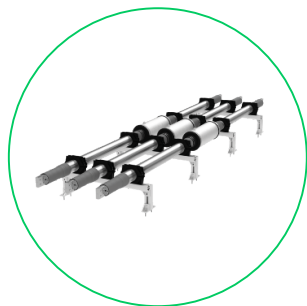


Production for high-voltage systems: current lead with RIP-insulation, supply of cable end/connection couplings





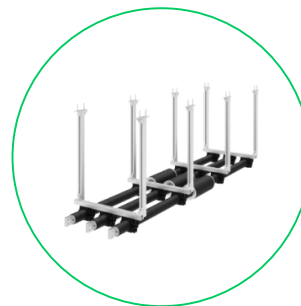
# Solutions



## ТПЛ

Phase-insulated current leads with molded RIP-insulation

Urated up to 110 kV  
Irated up to 11,500 A



## PIMCLEI

Phase-insulated current leads with extruded insulation

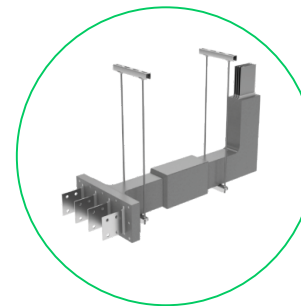
Urated up to 35 kV  
Irated up to 6,300 A



## TKLS

Токопроводы комплектные с литой изоляцией

Uном до 20 кВ  
Iном до 18 000 А



## TKLN

Fire-resistant busbars with molded insulation

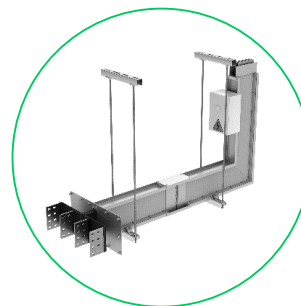
Urated up to 1.5 kV  
Irated up to 11,600 A



## OCL

Open current leads (hardwire)

Urated up to 35 kV  
Irated up to 6,300 A



## SBB

Sandwich type busbars

Urated up to 1 kV  
Irated up to 6,710 A



Leading manufacturer of steel construction steel structures for industrial, civil and special purposes

Date of founding:

**1942**

Number of employees:

**> 700 people**

Production capacity:

**> 3,000  
tons/month**

Area:

**> 63,500 m<sup>2</sup>**

## Activities:



Manufacturing of metal structures for industrial and infrastructure facilities



Manufacturing of steel structures for power facilities



Manufacturing of transmission towers up to 500 kV



# Completed projects



## **Lakhta Center Multifunctional Center**

Volume: 12,585 tons  
Saint-Petersburg  
2015–2017



## **Central Olympic Stadium**

Volume: 8,400 tons  
Sochi  
2011–2014



## **Skolkovo Business Park Multifunctional administrative and trade complex**

Volume: 2,517 tons  
Skolkovo, Moscow  
2014–2023



## **Okhotny Ryad shopping center**

Volume: 4,500 tons  
Manezhnaya Square, Moscow  
1995





Investment project: construction of a modern plant for the production of complete gas insulated switchgears (GIS) 110–500 kV and high-voltage equipment

Date of founding:

**2024**

Projected number of employees:

**> 200 people**

Projected production capacity:

**200 GIS cells**

Area:

**> 18,000 m<sup>2</sup>**

## Activities:



Production of electrical equipment and implementation of integrated power supply projects for generation facilities and power grids



Production of GIS 110–500 kV based on in-house manufactured components: circuit breakers, disconnectors, earthing switches and quick-acting earthing switches, control cabinets, metal structures, and also current and voltage measuring transformers and GIS module housings



Provision of related services



# Solutions



## **GIS – LZ 110**

Rated voltage – 110 (150) kV  
Rated operating voltage – 126 (170) kV  
Rated frequency – 50 Hz  
Short-circuit current – 40/50 kA  
Rated current – 2,000/ 3,150/ 4,000 A  
Three-phase version  
Indoor and containerized installation



## **GIS – LZ 220**

Rated voltage – 220 kV  
Rated operating voltage – 252 kV  
Rated frequency – 50 Hz  
Short-circuit current – 50/63 kA  
Rated current – 3,150/ 4,000/ 5,000/ 6,000 A  
Three-phase/single-phase version  
Indoor and containerized installation



## **GIS – LZ 330**

Rated voltage – 330 kV  
Rated operating voltage – 363 kV  
Rated frequency – 50 Hz  
Short-circuit current – 50/63 kA  
Rated current – 4,000/ 5,000 A  
Single-phase version  
Internal installation



## **GIS – LZ 500**

Rated voltage – 500 kV  
Rated operating voltage – 550 kV  
Rated frequency – 50 Hz  
Short-circuit current – 63/80 kA  
Rated current – 4,000/ 5,000/ 6,300 A  
Single-phase version  
Internal installation



Transformer Manufacturer

Date of founding:

**2000**

Area:

**> 6,400 m<sup>2</sup>**

Projected number  
of employees:

**> 240 people**

## Activities:



Development and production of 0.66–750 kV  
measuring transformers



Development and production of current and voltage sensors



Development and production of power transformers





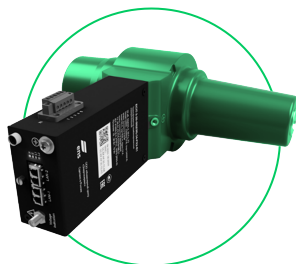
# Solutions



Electromagnetic measuring transformers and current sensors for 6–35 kV switchgear



Outdoor electromagnetic measuring transformers for ORU-35kV



Combined digital transformers for 6–35 kV KRU, KRUE



Electromagnetic measuring transformers for current busbars and turbo generators for voltage classes up to 24 kV



Electromagnetic measuring transformers for 6–35 kV switchgear, PKU, and reclosers



Electromagnetic current transformers for power transformers and high-voltage switches for voltage classes of 35–750 kV



Low-power power transformers for voltage classes of 6–10 kV



Integrated Science and Technology Center

Number of employees:

> 200 people

Size of R&D department:

50

### Activities:



## Development of domestic microelectronics and electronic components



Development of software and technical documentation for electricity, water and gas meters and electric charging stations



## Development and design of energy storage systems



## Development of a digital twin of the power system



Development of software and technical documentation for equipment at electric power facilities



Expertise in the development of industry standards and regulatory and legal documentation





# Solutions



## Software

Embedded software for the acquisition, processing, transmission and storage of measured electrical energy data



## Communications and communication equipment

Operates as part of a combined system with other network devices, collects, converts, stores and transmits information



## RP and EA equipment

Equipment for monitoring, control and transmission of relay protection and automation (RPA) and emergency automation (EA) commands



## Meters

Intelligent devices that measure and record the consumption of resources (electricity, gas, water) and transfer the information to industrial controllers



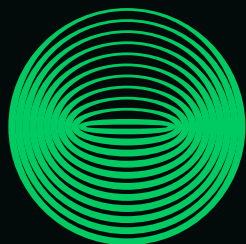
## Charging stations for electric vehicles

Development of design and embedded software for fast, convenient, stylish and reliable charging stations for electric vehicles using domestically manufactured components



## Digital twin at energy facilities

Development of an automated system that collects and processes data in a facility or power system, updating of equipment model parameters



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ENERGY  
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