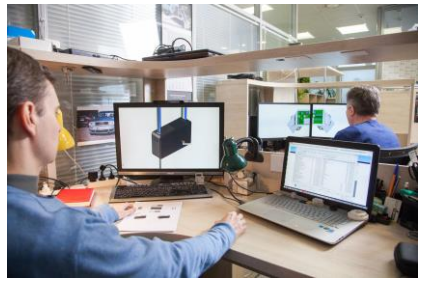
NERO

Nero Electronics

The company is a full-cycle manufacturer of innovative smart metering systems and devices with communication interfaces.



1995

Starting our own business

Developing and manufacturing of all devices is in Belarus.

History

1995

Starting our own business

Own development and manufacturing are organized as Sketch, LLC. Automatic devices for roller shutter control are sold under the same trademark.

2000

Patent for PLC technology was granted

Creation of our own efficient PLC protocol with reliable data transfer through existing electrical powerline became the company's milestone development which laid a foundation for automation systems for roller shutters, gates and lighting, and later–for the electricity metering market devices.

2004

Becoming a resident of Minsk Free Economic Zone

Belarusian founders along with German partners, Inprojal GmbH, established Nero Electronics, LLC. The company became a resident of Minsk Free Economic Zone.

2007

Development of energy resource metering systems

Nero Electronics uses patented technologies for creating communication modules and smart meters for the Concern Energomera, JSC, one of the Russian market leaders in automated commercial electricity metering systems.

2009
Independent entry into the European market

Continuing close cooperation with Improjal Gmbh, Nero Electronics buys out a share from the German partner and starts developing on the European market of in roller automatics and energy metering autonomously.

2015
Collaboration with famous design studio

Design of Nero Electronics' devices reaches a new level. Appearance of the smart home system and new meters with communication interfaces was developed in collaboration with industrial design team of Artemy Lebedev Studio.

2019
Office and production expansion

The company's active growth was accompanied by the two-fold expansion of the office, development, and production. An automated wave soldering line was launched. Also, a nitrogen generator room — unique for the CIS civil enterprises — was created.

2020...
Development of a complex resource metering system

Nero Electronics is a developer and manufacturer of a complex solution for automated metering data collection and processing for all resources at once, i.e. electrical energy, water, heat and gas.

NERO

Company Nowadays

Full-cycle production in Belarus

Factory capacity up to **2 000 000** modules per year

Member of High Technologies Park

63 Patents on communication technologies

Dealer network in **15 countries**

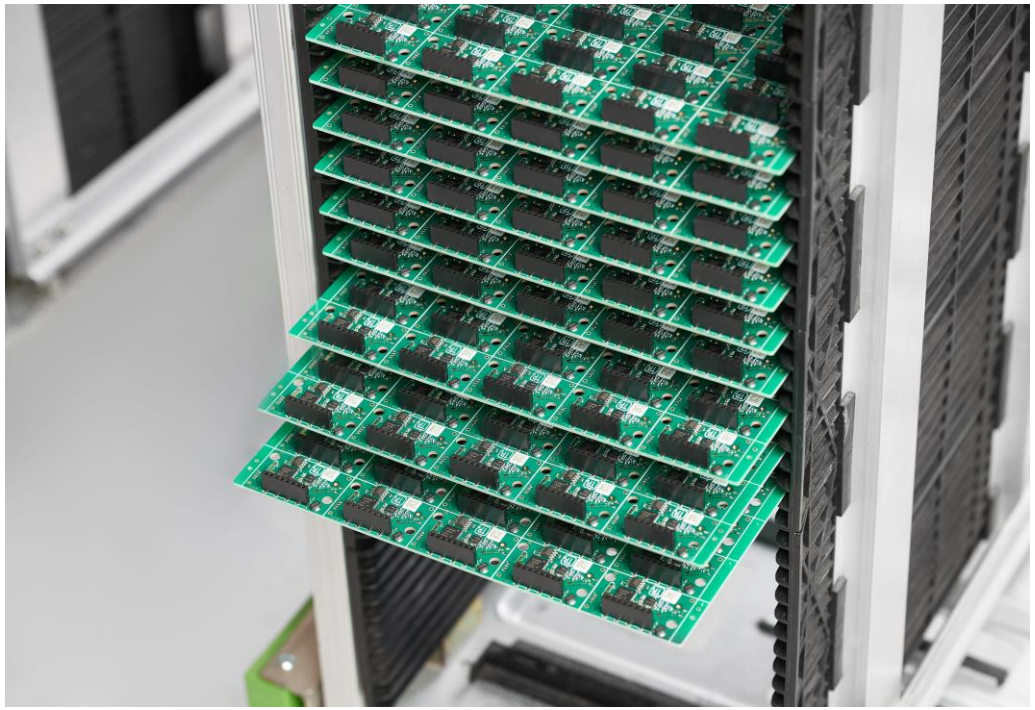
More than **> 500 000** devices sold annually

Low level of claims: **0,05%**

More than **> 200 employees**

High-tech Manufacture

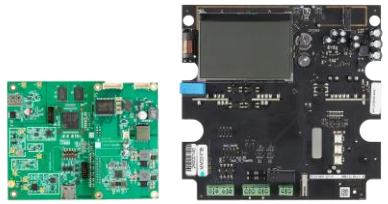
- Meeting **strict** requirements of ESD protection
- Components supplied by world **leading** manufacturers
- Accurate and precise **calibration**
- Efficient and modern production system



Quality Control

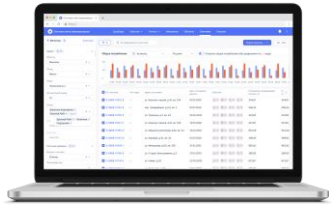
- System of **multi-stage** quality control with use of profound inspecting equipment
- Device programming and **debugging**
- **Functional** testing with use of complex test-bench equipment

Variety of Products and Solutions



Electronic modules, components and communication technologies for smart metering systems and devices of our partners

Ready meters with embedded communication technologies



Complex systems for remote readings: from smart meters to data analytics in a convenient personal account

Product Lines

Line:
Gas

Line:
Water

Line:
Electricity

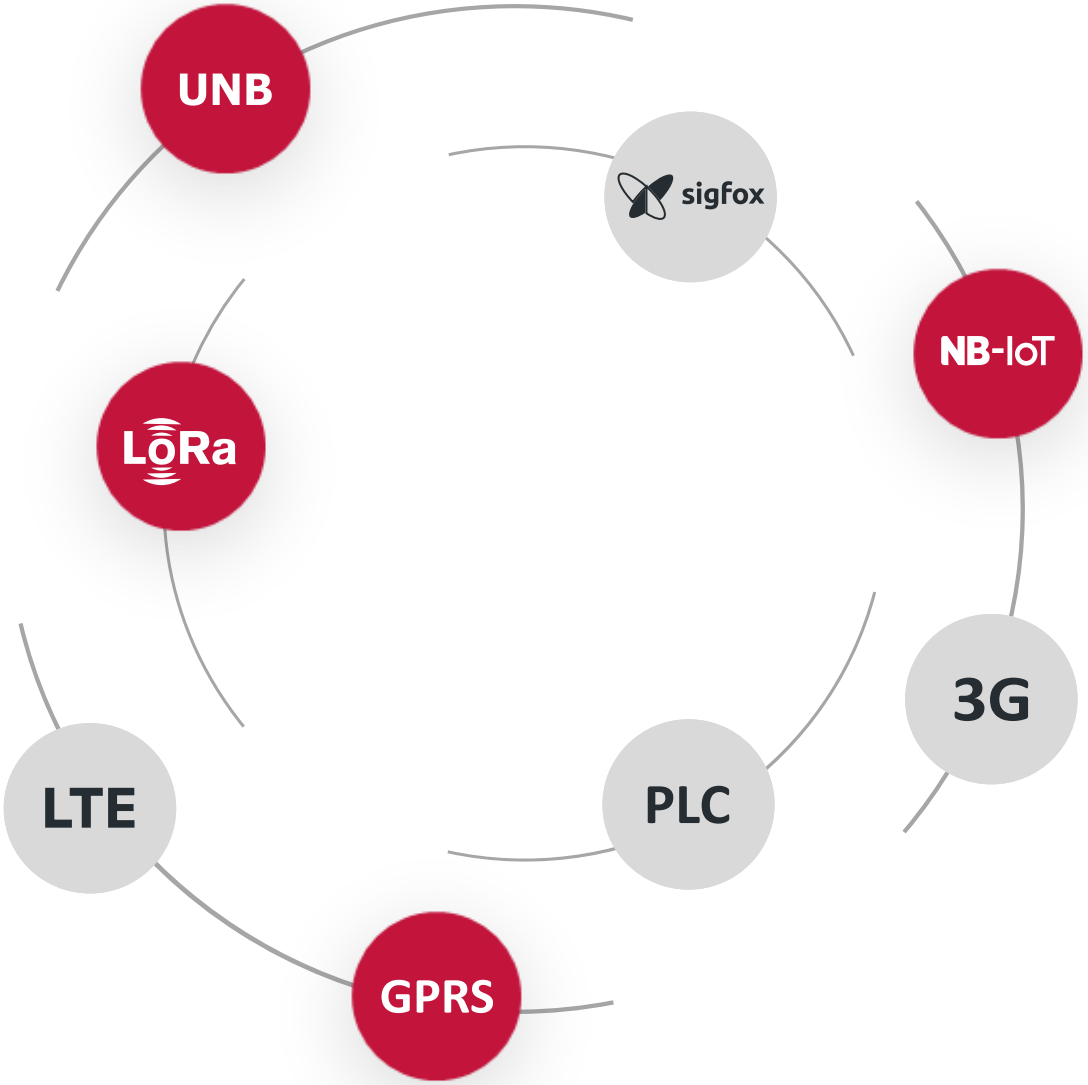
Line:
Radio
Modems

Line:
Concentrators

NERO

Communication Technologies Available

Choose the technology that suits you best



Completed Projects

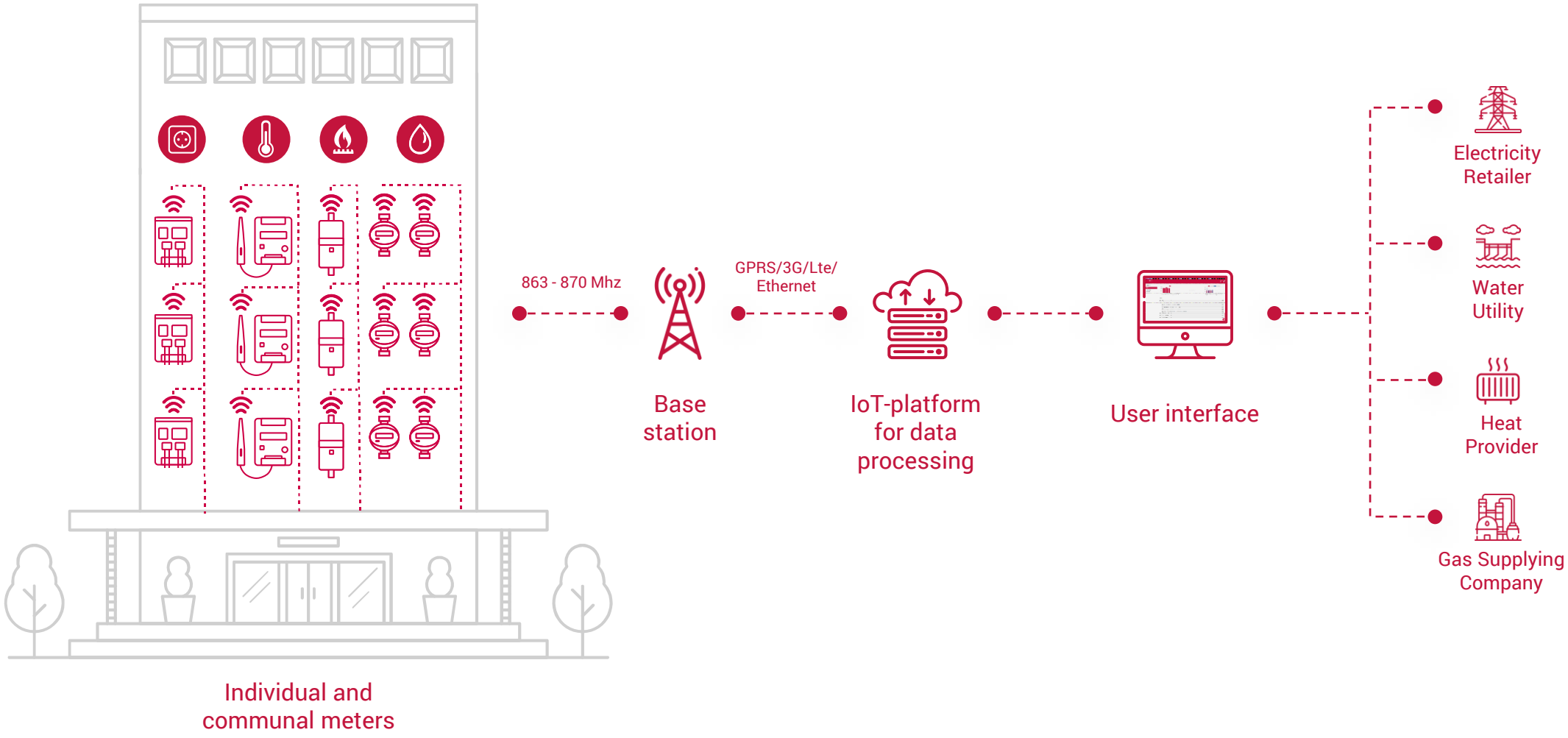
2 500 000
smart metering points in Belarus → Market share of **60%** among smart electricity meters according to the results of 2021

30 000
smart metering points → Have been established in the city if Zhezkazgan

550 000
modems → Production of modems with PLC technology and SMP protocol for EAC

NERO

Unified Accounting System with Base Stations



Smart Single Jet Water Meters

Traditional measurement technology, supplemented with modern functionality and communication interface for remote data acquisition

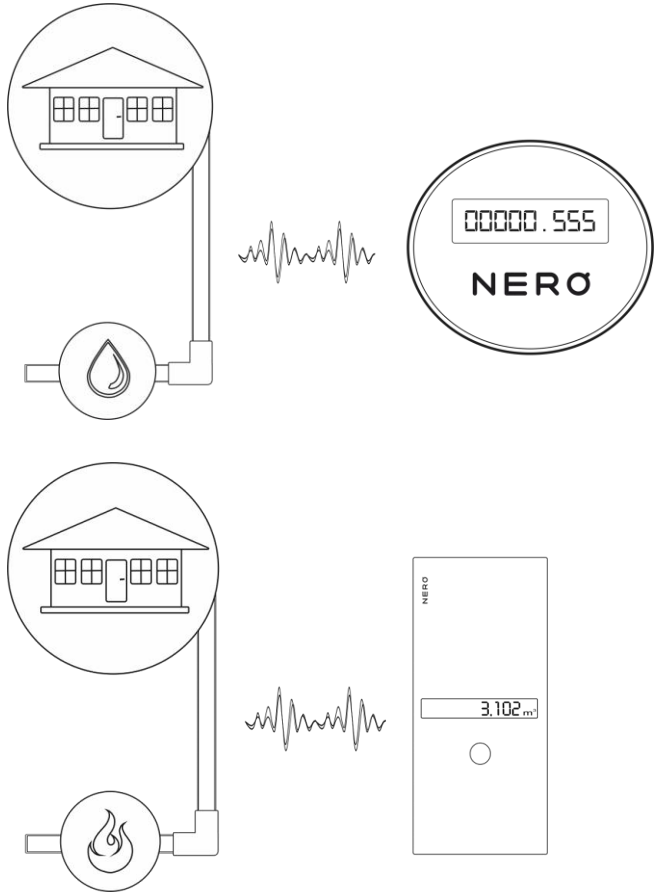
Features

- Up to R160 measurement range;
- Embedded communication module;
- Reverse flow indication;
- Electronic head and indicator;
- Electronic head rotating 360°;
- Resistant to magnetic fields;
- Easy installation: horizontal and vertical.

Proprietary Ultrasonic Technology

As the flow changes the ultrasonic pulse velocity changes as well and then is converted into volumetric flow data.

- Having no moving parts, the ultrasonic meters are not subject to mechanical wear.
- Ensure accuracy of flow measurement for decades.
- Do not create pressure losses in the pipeline.



NERO

Smart Ultrasonic Water Meters

High precision of measurements during all lifetime with no pressure loss in the pipeline

Features

- Up to R400 – wide measurement range;
- Built-in communication module;
- Resistant to mechanical wear, do not require filter installation;
- Reverse flow indication;
- Resistant to magnetic fields;
- Automatic error diagnosis;
- Easy installation: horizontal and vertical.

Smart Ultrasonic Gas Meters

High reliability of measurements throughout the entire service life, remote transmission of readings

Features

- Wide range and accuracy of ultrasonic measurement;
- Built-in communication module;
- Compact size;
- Temperature correction and pressure correction;
- Data archive storage;
- Built-in monitoring and diagnostics system;
- The service life is not less than 20 years.

Radio Modem: Automation of Readings from Traditional Meters

Radio modem is used to allow the remote monitoring of the consumed resources in case they are measured by traditional meters without IoT capabilities

Features

- Is suitable for communal water meters, heat meters, and also any other meters with pulse outputs;
- Two pulse inputs allow one modem to get the readings from two metering devices, e.g., two heat meters of neighboring apartments;
- Conducts channel-by-channel accumulation and storage of data archives for a period of up to 6 years with saving once a day;
- High IP68 enclosure protection.

Base Station

Receives readings from individual meters (water, gas, electricity meters) and radio modems using Nero UNB LPWAN technology and transmits them to utility servers via Ethernet or LTE connection

Features

- Provides a two-way communication and reception of readings from hundreds of thousands of metering devices within a radius of several kilometers;
- Carries out data exchange between subscribers and elements of the upper level of the system;
- Radio communication is carried out in the frequency range 863 - 870 MHz (a specific range is selected based on the legislation of the country);
- The station is based on an anti-jamming panoramic receiver;
- The enclosure provides a high degree of protection against dust and moisture IP65 for outdoor installation.

NERO

Single-Phase Multi-Tariff Electricity Meter

Features

- **Wide choice of embedded communication technologies;**
- Multi-tariff metering;
- Accuracy class for active and reactive energy 1;
- Data displayed and transmitted:
  - generation and consumption,
  - active and reactive energy,
  - voltage quality, etc.
- Alert messages: unauthorized interventions, voltage dropout, overheat, etc.;
- Resistant to magnetic fields up to 500 mIT, records date and exposure time;
- Relay for remote voltage disconnect;
- Mountable on a DIN-rail.

- G3-PLC
- Smart PLC
- RS-485
- Radio RF433
- Radio + PLC
- Optical port
- GPRS, LTE
- LoRaWAN
- Sigfox
- NB-IoT
- Smart UNB

Embodiment Types

L1

- 152 * 116 * 51 mm
- modern and compact design
- 2 screws in the cover
- mountable on a DIN-rail

L2

- 153 * 116,1 * 48,6 mm
- modern and compact design
- 3 screws in the cover
- mountable on a DIN-rail

SL

- 200 * 120 * 73 mm
- retro style design popular in Belarus
- 2 screws in the cover
- mountable on a DIN-rail

NERO

Three-Phase Multi-Tariff Electricity Meter

Features

- **Wide choice of embedded communication technologies;**
- Accuracy class for active energy 0,5S/1; reactive energy: 0,5/1;
- Records the mains frequency, current and voltage in each phase, angles between the vectors of phase voltages and vectors of phase currents of voltages, power factor in each phase;
- Data transmission protocols: DLMS/COSEM, Smart Meter Protocol.
- Removable GSM/GPRS modem or data concentrator;
- Signals about tampering with the housing cover and the terminal block clipses, exceeding the energy and power limits;
- Non-volatile data memory, built-in real-time clock for electricity metering by tariff zones of the day.

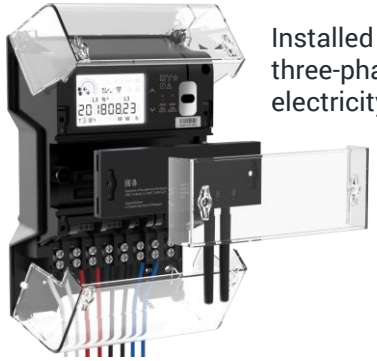
- G3-PLC
- Smart PLC
- RS-485
- Radio: RF433
- Radio + PLC
- Optical port
- GPRS, LTE
- LoRaWAN
- Sigfox
- NB-IoT
- Smart UNB

Concentrator

The device is intended for acquisition, processing, storage of data from meters and transfer of information via information channels to the upper level in automated systems for comprehensive utility metering. It is installed as a part of a three-phase smart electronic meter.

Features

- 2 GPRS/LTE modules, micro-USB, Wi-Fi module;
- Provides event log storage and information transfer on request;
- Multilevel protection against unauthorized access: mechanical seals, an eight-digit password for access, encryption of information during its transmission through the interfaces of the lower and upper levels of the device.
- Linux based operating system;
- Storage depth: 6144 readings per interval.



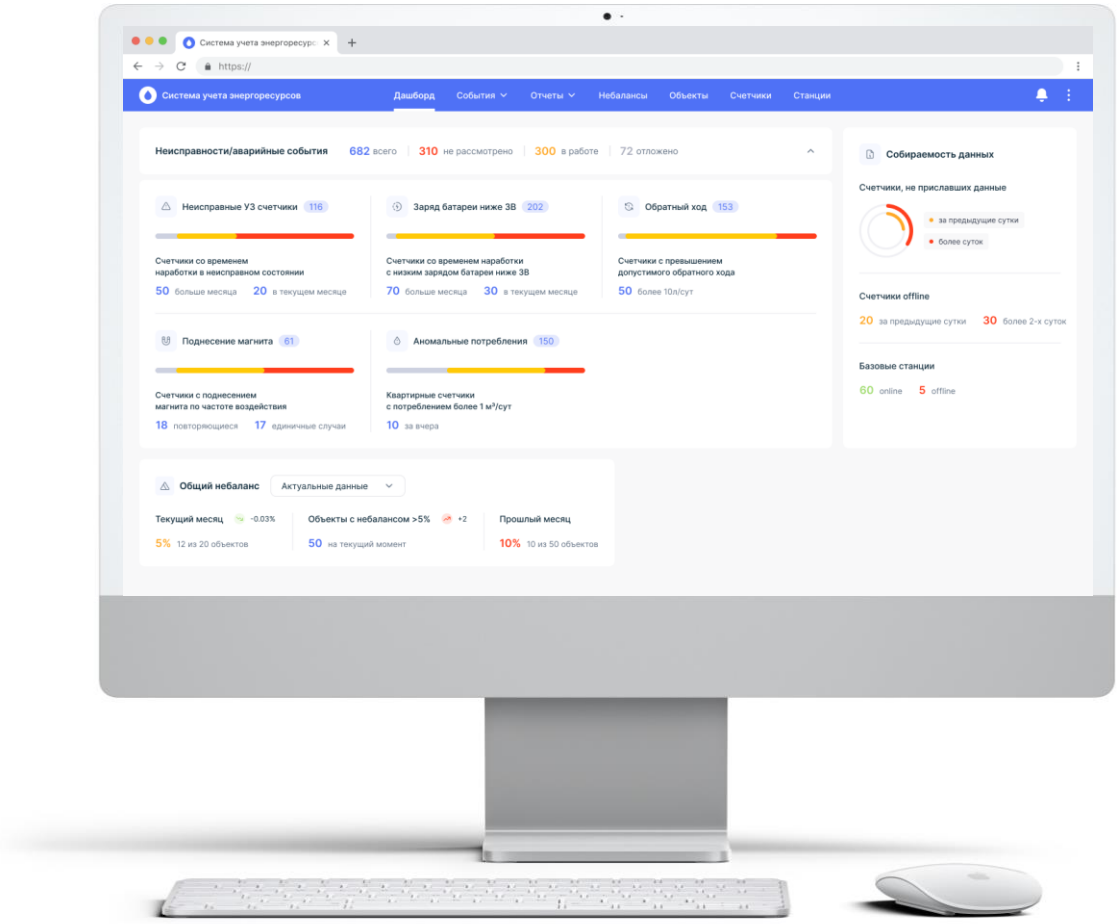
Installed in a three-phase electricity meter

IoT-Platform for Data Processing and Visualization

- Daily readings
- Reading reports в Excel, etc.
- Consumption graphs for the period
- Ability to add groups of devices

Additional opportunities

- Emergency events monitoring
- Meters’ battery voltage view
- Expanded unbalance report



NERO