



ELECTRONICS DEVELOPMENT

Industrial power converters and digital controllers



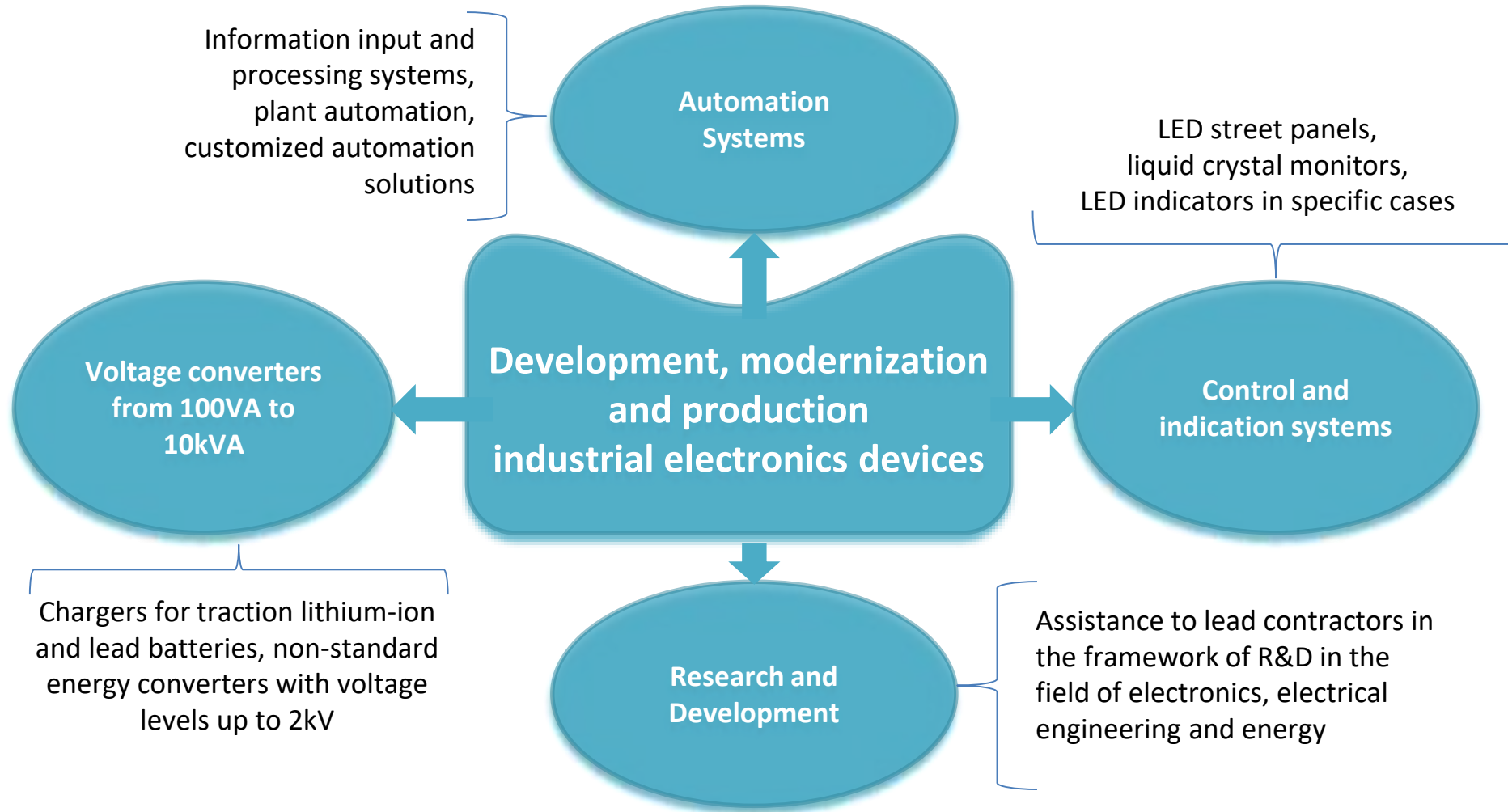
A little bit about us

We are a team of specialists who came out the Department of Industrial Electronics of the Moscow Power Engineering Institute. The presence of academic degrees and scientific articles by each specialist only confirms the fact that professionals in the field of industrial electronic device development can come to your aid!

The main activities



All intellectual property rights are transferred to the customer



Our mission

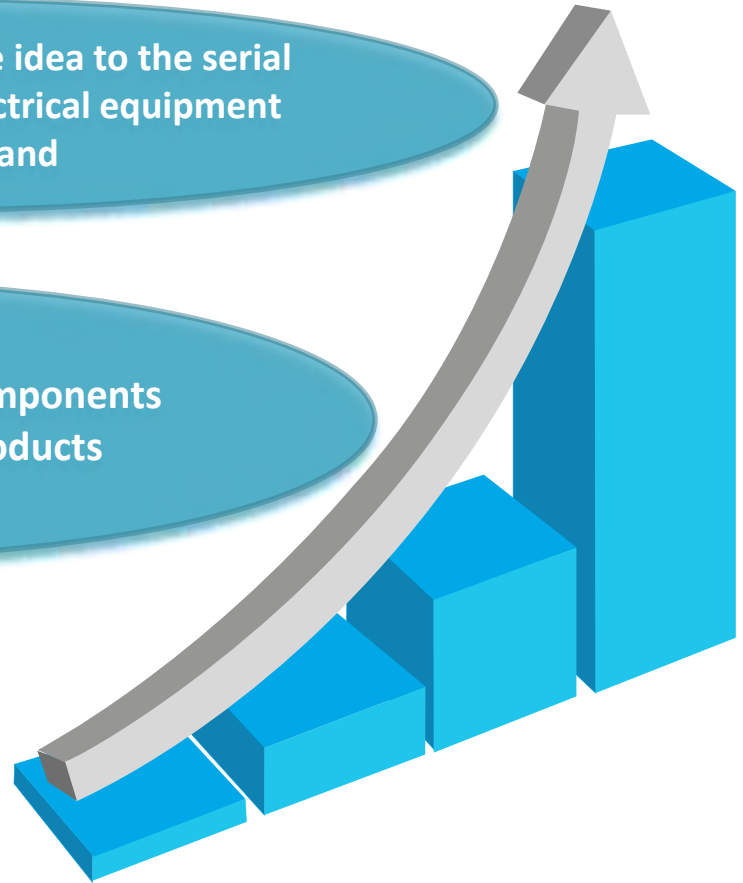


Creation of profitable, high-quality power and digital electronics products for trade and manufacturing companies.

A full cycle of work from the idea to the serial production of exclusive electrical equipment under your brand

Design and manufacture of components for your mass-produced products

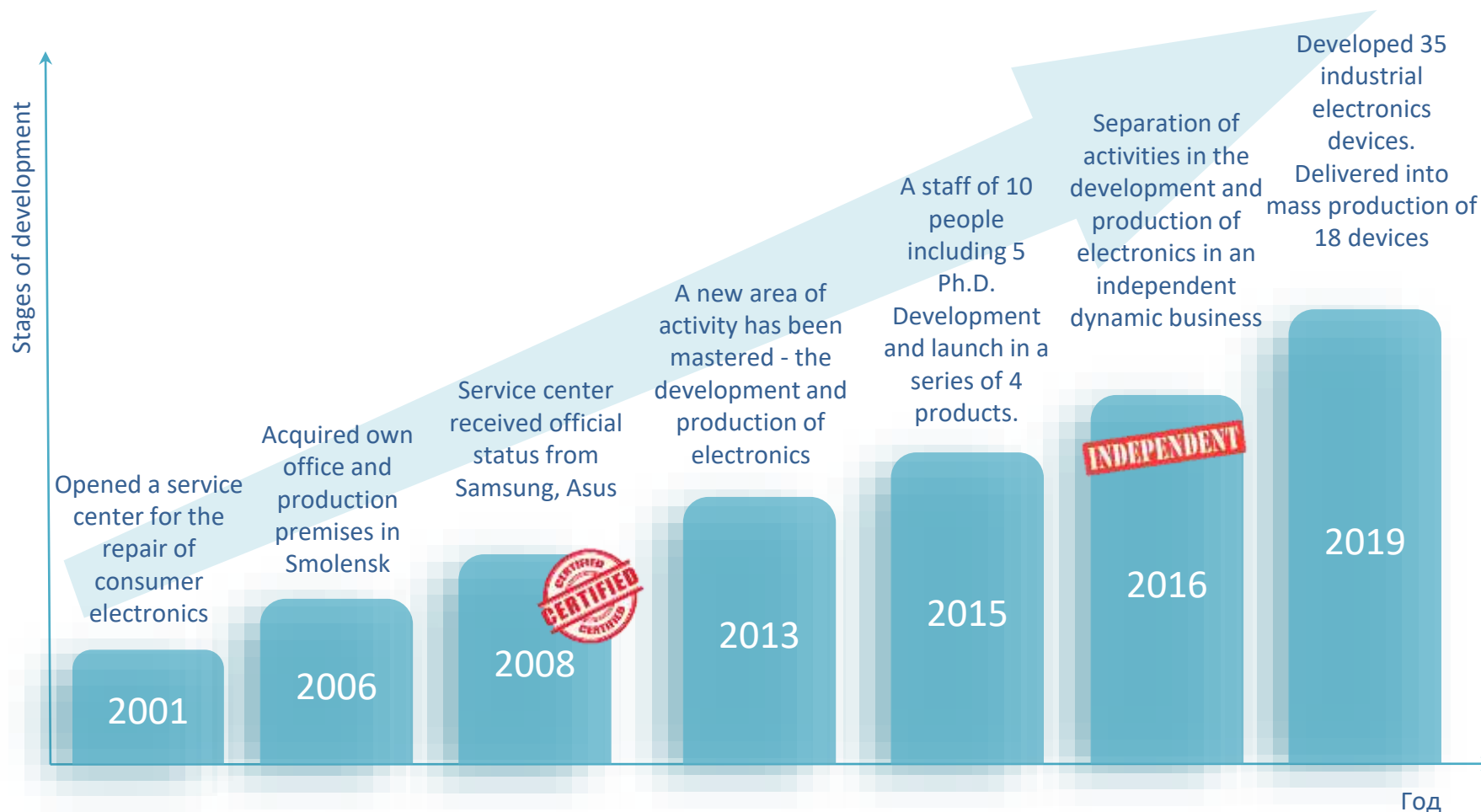
Analysis and optimization of the electronic part of your mass-produced products



Our history



Elmank – is a family business founded in 2004



We can be useful to you



You need exclusive technical solutions

- The scientific potential and experience of our employees makes it possible to develop effective, exclusive technical solutions specifically for your needs!

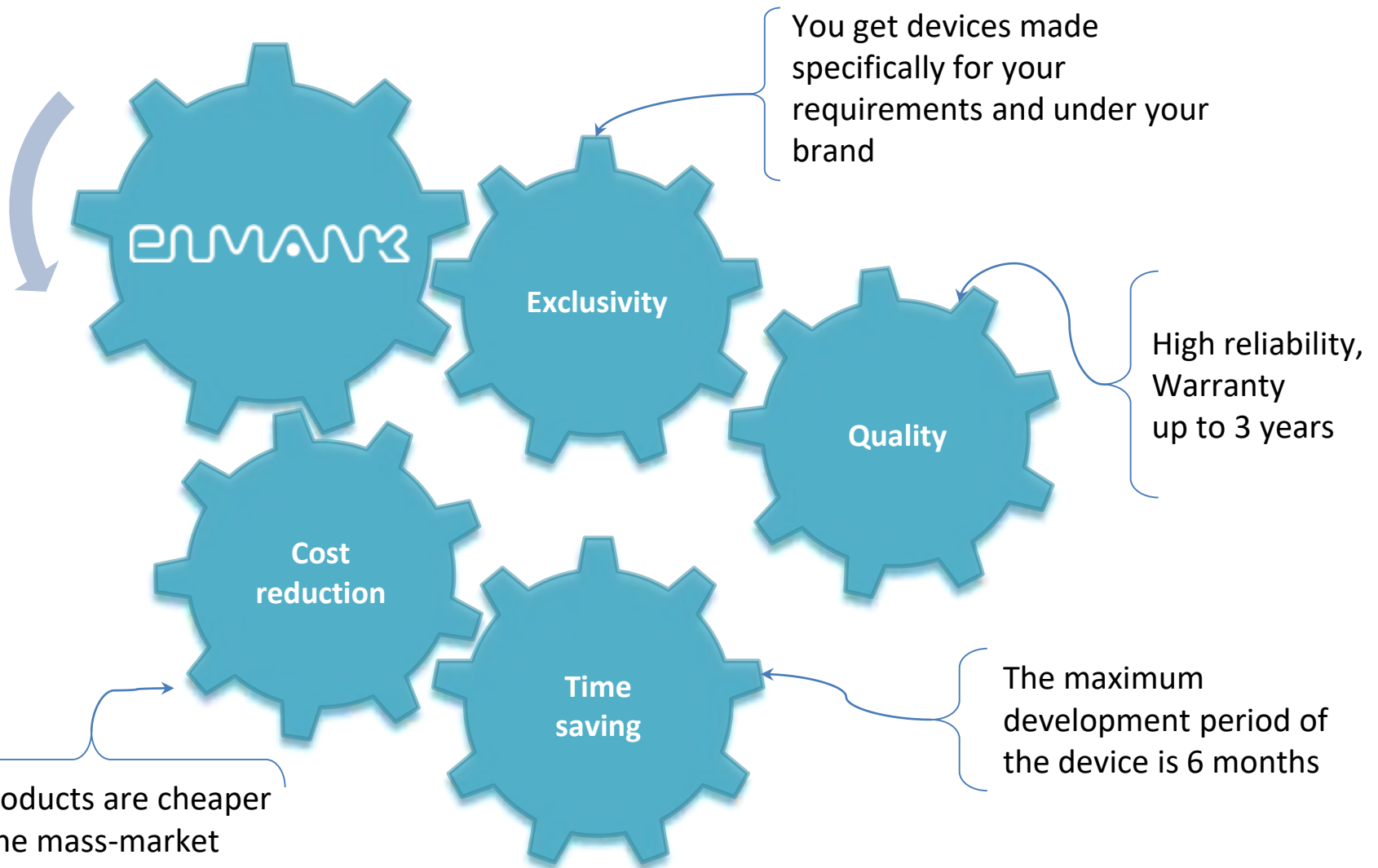
You need to reduce production costs

- According to statistics, the cost of our products designed according to your requirements is 30% lower than the cost of similar products in the mass market!
- Our customers separately note the low cost of developing electronic devices by our forces compared to competitors!

You are planning to enter the market in an adjacent niche

- The results of our work can be released by Elmank under your brand, which allows trading organizations to become manufacturers, and manufacturers to expand the range of their own products!

Our advantages



Our customers



And many others...

Our offer for manufactures



We will be happy to do the following work for you **absolutely free**:



- 1) We will analyze the applied components of your products by technical and economic parameters

- 2) We will formulate a technical proposal for you to replace the components of your products with equipment of our production



- 3) We will conduct an economic assessment of the use of products of our production based on your needs
- 4) We will conduct an economic analysis of the possibility of expanding the line of your products and your entry into the electrical equipment market!

Many companies have already used our services!

An example of the development of exclusive technical solutions



Project name: 52-channel power supply system for drivers of power devices with a potential isolation of 10kV and higher.

Main parameters:

Input voltage: ~ 380V 50Hz

52 DC output channels: 12V \pm 0.4V

Total rated power: 604W

Feature: Providing potential isolation between the primary and secondary side of the converter, as well as between the output channels of the converter at a level of more than 10kV



Results of work: Within 3 months, an experimental model of the device was developed, **three samples of the device** necessary for the customer **were made**, technical documentation was developed in the amount necessary for installation and commissioning of the system, a **patent application was filed with the copyright holder in the person of the customer!**

An example of expanding the product range and reducing costs



Customer Main Product: **Lithium-ion traction batteries.**

Complete with rechargeable batteries, the customer supplies special chargers made in Italy.

The cost of the charger with nominal output parameters of 48V 160A was about **1100 Euro** (excluding shipping costs and customs payments)



Elmank has developed battery chargers for the customer with rated output parameters 48V / 160A and successfully produces them under the customer's trademark.

The cost of the charger of our development is **650 Euros**.



As a result of mutually beneficial cooperation, the Customer reduced the cost of the main products and expanded the range of goods.

An example of entering an adjacent niche and reducing costs

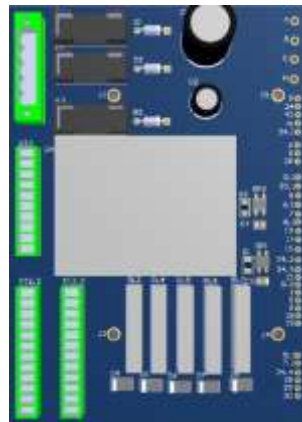
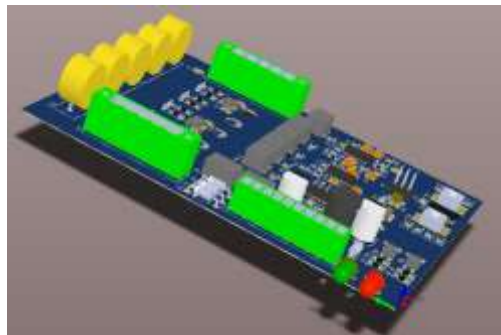


Main products manufactured by the customer: **Shut-off valves with electric drive.**

The valve control system included **10 relays for matching signal levels** of limit switches and other signals, a **three-phase triac electric actuator starter**, and an **auxiliary power supply** with installation on a DIN rail. All elements were connected with screw connections.



The cost of electrical equipment before the start of cooperation with ELMANK was 43,000 RUR. Plus, during the installation of the equipment a large number of errors arose, which brought a lot of problems when setting up and manufacturing customer goods.



As a result of the work, two boards have been developed that replace 90% of all electrical equipment of the control system for the drive of shut-off valves.

Due to the use of detachable joints and the production of connecting harnesses, the number of errors during the assembly of equipment has significantly decreased!

The cost of a set of equipment after processing is 16,500 RUR.

Triac starter is sold by the customer as a separate device manufactured under the brand of the Customer.

As a result of mutually beneficial cooperation, the Customer reduced the prime cost of the main products, significantly reduced the number of errors in the assembly of equipment, expanded the product range, entered the market in an adjacent niche - electrical equipment and electric drive control systems!

An example of new business



A team of people with experience in installing and configuring control and accounting systems for visitors to establishments decided to open their own business for the production and implementation of these systems.

Elmank took up the development and production of an access card reader module.

The main parameters of the device:

- Read access cards in Mifire 1k formats 4 and 7 bytes, Mifire plus, etc.
- Communication with the ACS server via Ethernet: UTP, UDP protocols
- Display data on an OLED monitor
- Powered by both Ethernet (POE) and external DC power supplies
- Recording information about past events in the internal non-volatile memory of the device



The cost of ELMANK equipment was 30% lower than the existing solutions on the market, which turned out to be one of the customer's competitive advantages.

A Product example

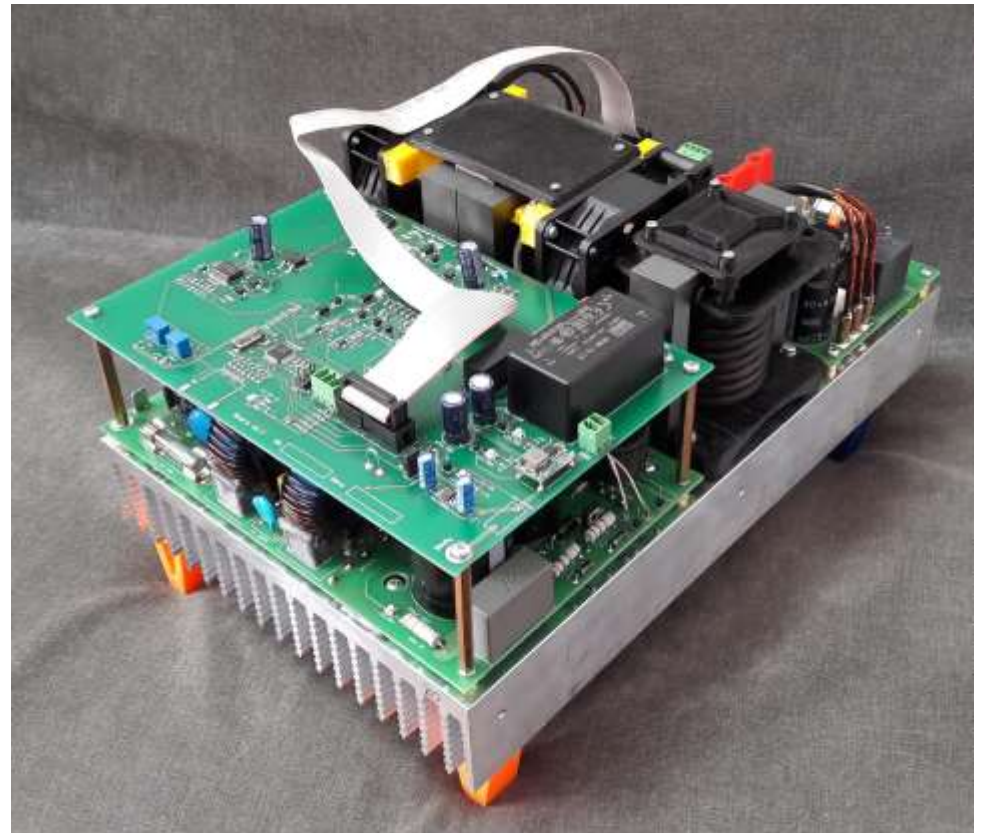
Battery charger for warehouse equipment



The main application is the charge of storage batteries of warehouse equipment with different chemical composition:

Li-ion with a capacity of 180Ah and
Pb/Gel – 650Ah

- Power supply - single-phase 220V 50Hz
- Battery rated voltage 24V (18-30V)
- Rated charge current 60A
- Maximum efficiency 92%
- Cooling - Active
- Ability to customize the charging curve (CC / CV / CP, pulse mode)
- Built-in event memory
- Possibility of external charge mode control via modbus protocols



A product example

Battery charger

for warehouse equipment



The main application is the charge of storage batteries of warehouse equipment with different chemical composition:

Li-ion with a capacity of 200Ah and
Pb/Gel – 1000Ah

- Power supply - single-phase 220V 50Hz
- Battery rated voltage 24V (18-30V)
- Nominal charge current 85A
- Maximum efficiency 92%
- Cooling - Active
- Ability to customize the charging curve (CC / CV / CP, pulse mode)



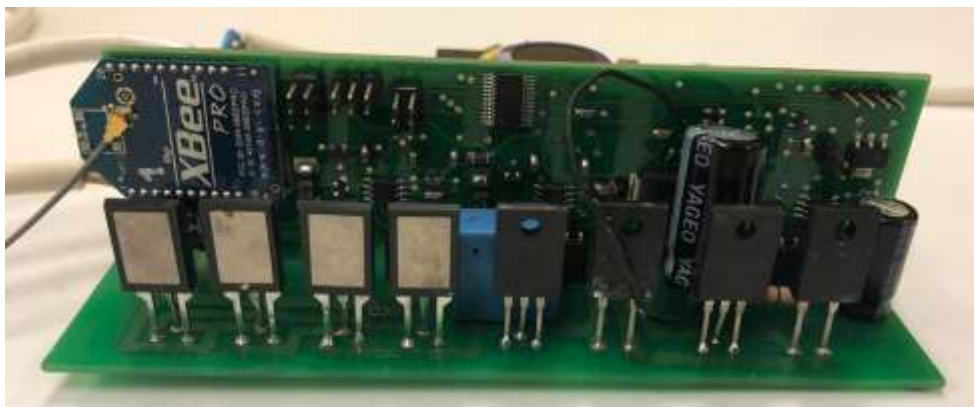
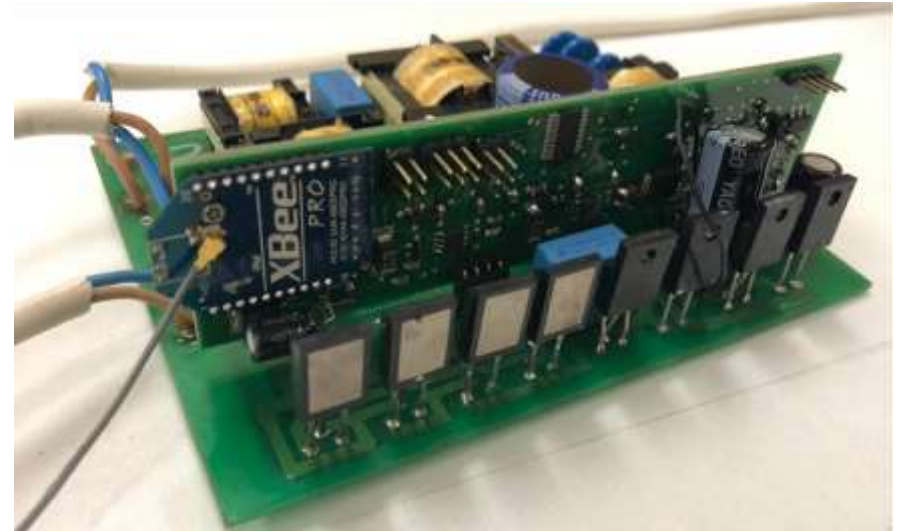


A Product example

Combined lighting power supply

Two-channel power supply for lighting devices:
MHL lamp (200W) + LED lamp (100W)

- ZigBee Communication
- Power factor corrector
- Two control channels: a current inverter for controlling the MHL and a constant current source for powering the LED lamp
- Built-in diagnostics with counting the number of failed LEDs



A Product example

AC voltage regulator

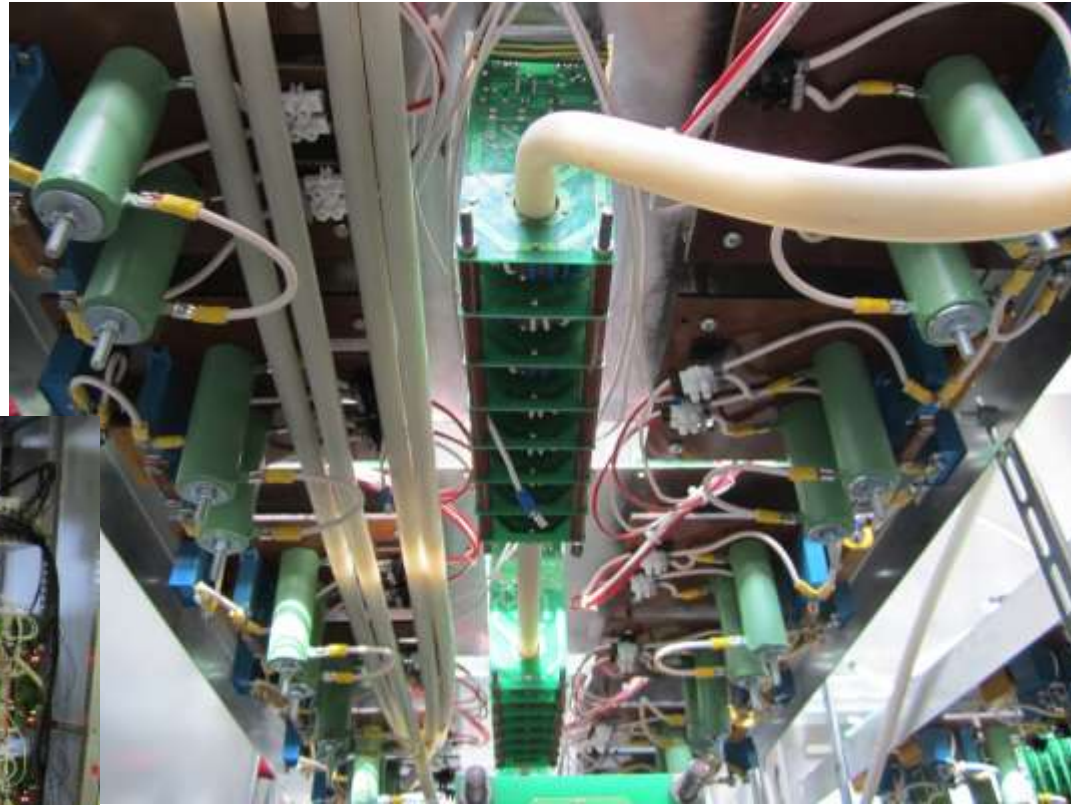
- Power Stabilizer 3x220V 50Hz
- Thyristor switching of the windings of the boost transformer
- Power throughput of the device 50kVA
- Voltage regulation starting from 160V phase voltage
- Control accuracy $\pm 10V$
- Auto stabilization or external control
- Sending diagnostic information using GSM communication
- Design with dirty and clean compartment



A Product example

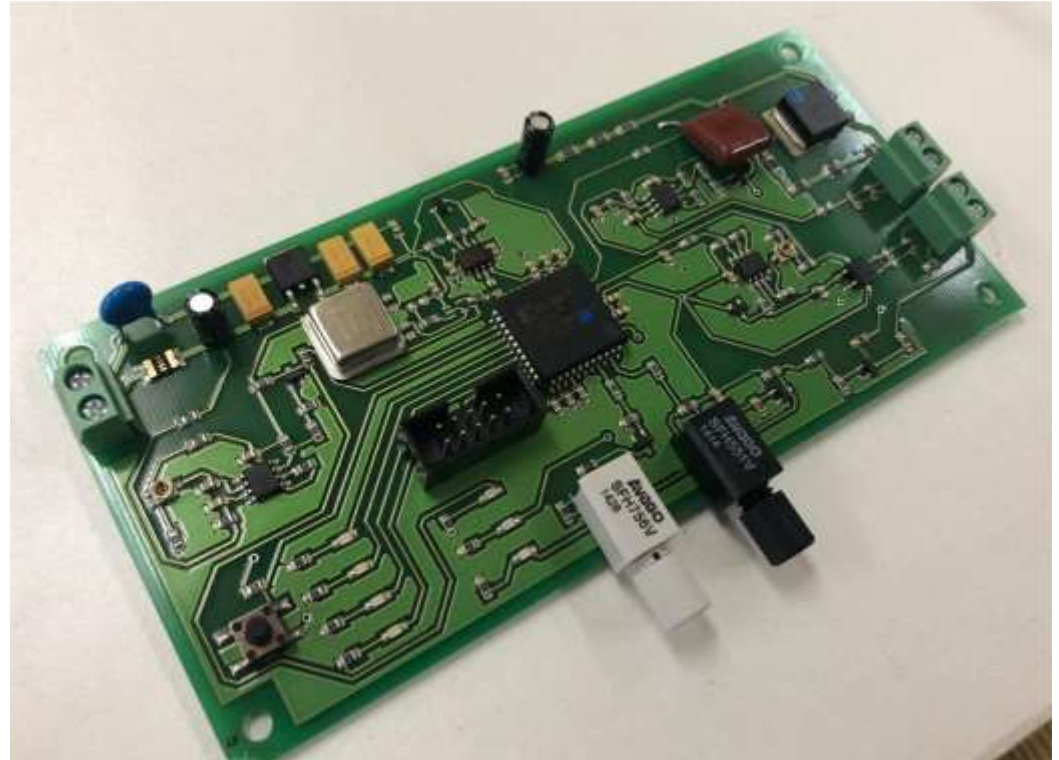
24-channel power supply for thyristor converter drivers

- Power transmission to thyristor drivers for a potential of more than 10kV
- 24 channels of 10W each
- Cable-transformer high-frequency power transmission line
- Self-diagnosis of the status of the power source with connection to the central control system of the converter



Power thyristor control and diagnostics driver

- Optical thyristor control at 10kV potential
- The formation of constant current pulses for the long-term inclusion of thyristors
- Current level control for use with various thyristors
- Diagnostics of thyristor state with reaction time less than 1ms
- Thyristor status coding with an optical signal
- Management is based on FPGA CPLD Xilinx XC9572





A Product example

Modular DC-AC Converter

Main parameters:

- Input voltage: DC voltage 350V + -10%
- Output voltage: alternating 230V 50Hz;
- Rated Power 2000VA;
- Maximum power (starting currents up to 7s) 3000 VA (when exceeding the maximum power 3000 VA for more than 7 sec - smooth limitation of the output voltage);
- The output voltage waveform is sinusoidal;
- Harmonic level, no more than 2%;
- Weight 1200g;
- Number of modules working in parallel on a single load - up to 10;



Additional features and functions of the inverter:

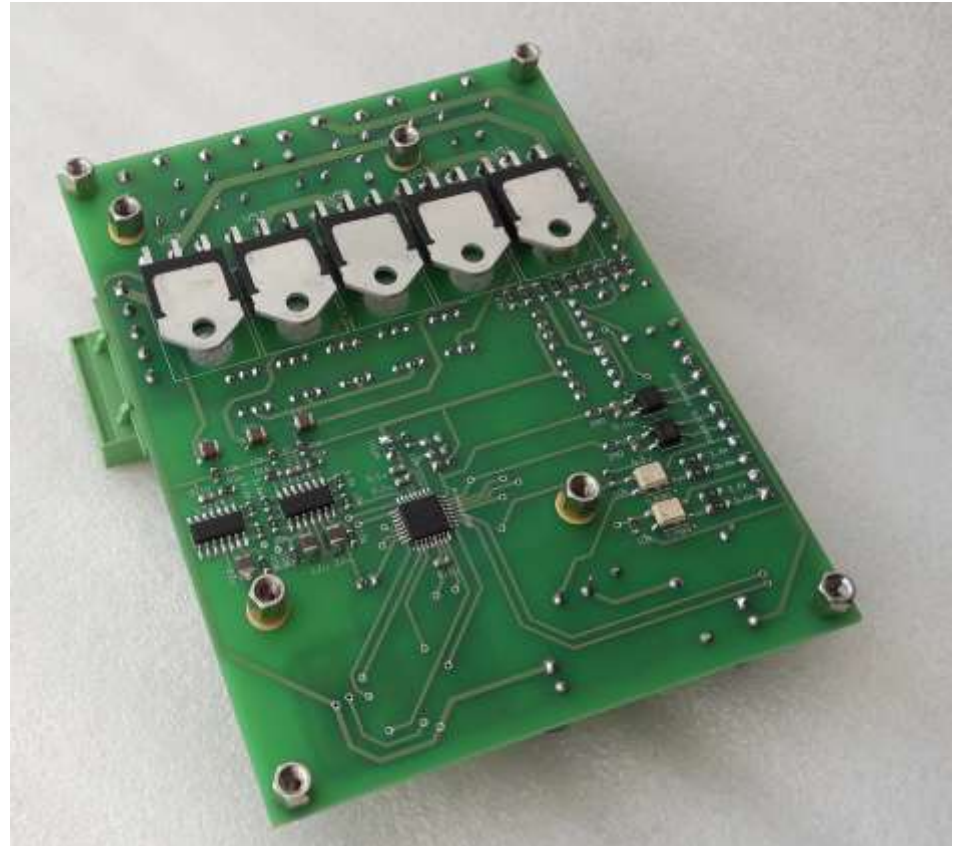
- The device automatically syncs when connected in parallel;
- Monitoring and control by a personal computer is carried out via the RS232-TTL interface;
- When energy is supplied to the external circuit, the absence of a constant component is controlled by the device
- Inverter shutdown in the absence of synchronization, reduced
- input voltage, overload, or if the unit malfunctions.

A Product example

Triac starter

The main parameters of the device:

- inclusion, shutdown and reverse of three-phase asynchronous motors with power up to 2 kW 380V 50Hz
- control of phases of supply voltage and current level
- Limit switch inputs and external status signals
- Signal control 4-20mA, 0-5V, RS-485 (modbus)
- profibus control



A Product example

Battery Logger

- Monitoring the physical parameters of the battery (current, voltage and temperature)
 - Sending data via GSM channel to the server
 - Analysis of operating modes of equipment
 - battery charge control
 - Battery rated voltage: 24 V, 48 V, 80 V
 - Current range: 0 to 600 A
 - The ability to control the effectiveness of the use of equipment (for example, floor cleaning machines or electric cars for warehouse equipment)
 - Notifications by mail or in the form of SMS about the wrong battery charge, or about the operation of equipment not on schedule, including simple
 - Determining the location of the equipment on which the logger is installed.
- and much more





Specialists in the field of industrial and consumer electronics