
EnergoBit

EnergoBit Headquarters, Cluj-Napoca

Let's write a new
success story
together!

EnergoBit

Dear Reader,

It is our great pleasure to introduce you to EnergoBit: to our history, our people, our activity and our most notable achievements. The following pages provide a summary of our chosen path in supporting customers to attaining their goals and objectives, starting from the development of an initial idea through to the project becoming fully operational. You are about to witness how we succeed in building success stories, together.

We gather almost 30 years of experience and know-how, in which our business model has evolved, starting with consultancy for energy management and reselling of electrical equipment, continuing with sub-station fitting and re-fitting, product manufacturing and renewables project management. Then, we expanded further to provide energy efficiency and smart grid solutions. All this time the company took its strength from the EnergoBit people, the engine of this machinery. Our specialists and their passion are the ones that make the difference when compared with other companies.

This transformation now enables the company to offer end-to-end solutions, state-of-the-art technology, turnkey energy efficiency projects and, indirectly, support to our customers in attaining their key performance indicators. In this dynamic sector, EnergoBit has constantly adapted in order to, at all times, be in a position to offer our customers the means to keep pace with the latest and most innovative developments in electrical energy solutions. Our aim is to continue to be first among those who lay the foundations for the optimum success of all our customers, putting their needs above all other priorities.

EnergoBit operations, services and products are founded on professionalism, top level performance, passion and respect, and this is how we intend to continue. In the following pages you will see how our high standards are reflected in our activity and achievements. You will meet our highly qualified team of professionals, dedicated to satisfying the customers' demands, and you will go behind the scenes of some of the most spectacular energy projects in Romania and beyond.

We are looking forward to supporting you in becoming even more innovative, more efficient and to helping you fulfill the expectations of your ambitious projects.

Let's write a new success story together!

Management Team

Who is EnergoBit?

The proven path to converting a dream into a success story, this is what EnergoBit is and strives to achieve for our customers and partners. Our mission is the creation of an operationally better and environmentally friendlier electrical power future and we are committed to obtaining this for all of our partners.

We started out in 1990 and put all our trust in electrical power – ENERGY and BIT – data. This is how we named our company.

Our vision is to continue to be the main engineering and general contractor services provider of electrical power works in Romania, while also looking for sustainable routes into the surrounding international environment.

EnergoBit will continue to be one of the main providers of power end-to-end services for key national segments of industry: conventional generation, distributed generation, transmission and distribution, industrial and infrastructure. In overseas markets, the company plans growth to become one of the regional leaders of equipment and electrical installation constructions, a constant presence in Central and Southeastern Europe, the Middle East, Central Asia and Africa.

Our company is constantly looking to innovate and align its products to the latest efficiency requirements. The line of distribution transformers represents a testimony to these concerns, for the moment EnergoBit being the only Romanian manufacturer of ultra-low losses distribution transformers.

Our work is firmly based on professionalism, performance, passion, integrity, innovation and respect. These are the values that guide us and guarantee the high quality of our products and services.

The people we work with can always rely on us. We invariably forge our reputation through the trust and confidence we promote and in the relations we establish with our business partners and associates. We conduct ourselves respectfully, in an open and fair manner.

Our professionalism is reflected in the quality of our products and services. We are always prepared to deliver innovation and state-of-the-art technology with a continuous focus on the customers' needs. For us, professionalism is more than a value: it is our way of being and we stay true to ourselves in everything we achieve.

Top level performance is crucial in order to remain competitive on the global market. We pool our brightest ideas and commitment to success when it's time to deliver. We constantly blend the talents and skills of our employees and business partners to deliver success to our customers.

The passion for our work ties our people to each other and to those for whom we work. We understand and care about our customers' needs. We work according to the highest ethical principles, in a socially and environmentally responsible manner and within the highest standards set by regulation and governance.

The people behind EnergoBit are the most valuable asset of the company. We are a team of highly trained professionals, with an open-minded attitude and the will and desire to find the best solution for any type of problem. Several hundred engineers and electricians always sustain mind the best interest of our customers. Together we transform ideas into reality.

EnergoBit is one of the leading solution providers for MV and HV projects in Romania and one of the regional leaders in providing complex electrical works. We aim to be a key reference point in implementing energy efficiency projects, including energy management and quality solutions, industrial controls, IT augmented smart grid and LED type lighting, systems for intelligent buildings.

During our existence, we have continuously diversified and vertically integrated our products and services, accumulated a high degree of entrepreneurial experience and know-how in developing and producing new products including complex turnkey projects in renewables. Our experienced workforce enables us to offer the widest geographical coverage for our services and to have a high level of awareness in the business environment.

Brief History

Ștefan Gadola, Ioan Socea, Péter Pál
founders of EnergoBit and majority shareholders

1990 — Foundation of EnergoBit

1994 — Implementation of the first EnergoBit telemetering software "Zeus"

1994 — EnergoBit starts producing electrical and automation panels

1998 — Opening of the Jibou Factory, Salaj County – production of concrete transformer substations

2001 — Establishment as general contractor of power works

2003 — Developing entrepreneurship of power stations

2003 — Starting the first SCADA implementation

2003 — Initiating work using EDSA software – modeling, design, sizing and analysis of electrical networks

2004 — Producing the MOD 6 medium voltage cells – own intellectual property

2004 — Developing competences in electrical audit/ energy consulting

2007 — Opening a new headquarter in Cluj-Napoca

2008 — Getting involved in renewable energy projects – the first wind farm

2011 — Acquiring competences in execution of substations and high voltage electrical lines construction works

2013 — Introducing new shareholders INNOVA CAPITAL and European Bank for Reconstruction and Development

2013 — Starting production of insulated oil transformers

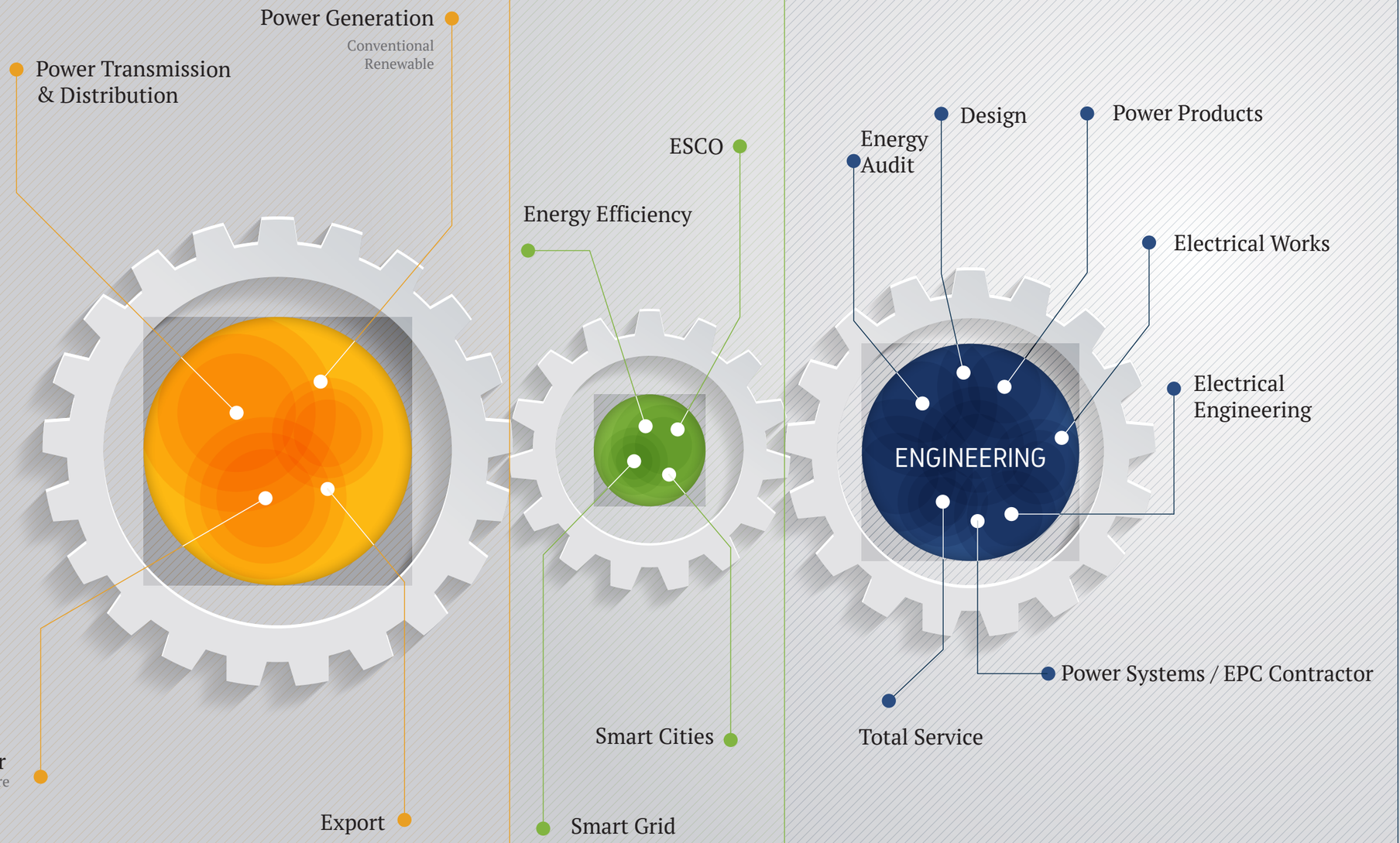
2015 — 25 years of EnergoBit

2017 — 2017 – capital injection from founders

Market Domains

Trends

Products & Services



market approach

EnergoBit

Trends
Energy Efficiency
ESCO
Smart Grid
Smart Cities

Market Domains
Power Transmission & Distribution
Power Generation
End User
Export

Products & Services
Energy Audit
Design
Power Products
Electrical Works
Electrical Engineering
Power Systems / EPC Contractor
Total Service

EnergoBit develops projects in the electrical power services market, in Romania and abroad, delivering the entire energy chain from generation, transmission and distribution to the end user, the consumer, with a voltage from 0.4kV to 400kV. We want our customers to consider us their only point of contact for electrical power as we can provide turnkey solutions customized entirely according to their needs.

To achieve this objective, EnergoBit's activities are integrated into several business lines which can develop turnkey projects if taken together, or can individually cover different aspects of them.

Power Products

The **Power Products** business line has a history of more than 20 years and offers quality, reliability and innovative products. It provides medium and low voltage electric equipment, which can easily be integrated with the equipment and products of other companies.

Power Systems

One of the most important business lines within the company is **Power Systems.** This includes general contracting activities for complex energy projects, improvement works for electric equipment and installation and execution of new power substations and networks. It offers customized solutions, tailored to the customers' needs regarding equipment for power substations, turnkey projects, technical and economic consultancy, as well as general management of the execution of larger projects.

Electrical Engineering

Electrical Engineering is one of EnergoBit's particular strengths and provides a complete range of products / systems and services for monitoring and analyzing the improvement of power quality for the operators of the distribution and transmission systems (DSOs and TSO). It includes services such as: Power Quality, SCADA, Smart Grid and Protection of Power Systems, Metering and Dispatching.

Total Services

The **Total Services** business line mainly integrates the maintenance work for electrical distribution and use, operating and dispatching activities of renewable power plants.

System Analysis Studies and Design

EnergoBit Control Systems is the business line handling the systems analysis, studies and design services. These translate into complete solutions for designing power substations, transformer substations and power lines of 400-220-110-20-0.4kV, both for new projects as well as the improvement of old ones.

Electromontaj

ELM Electromontaj Cluj was set up in 1949 and in 2011 EnergoBit became its majority shareholder. ELM acquired important patents in design and in construction-mounting works, specific to power operations. Currently it focuses on high and medium voltage work, specialized civil engineering work, electromechanical work and specialized work in wind farms.

Fântânele Wind Farm

customized turnkey solutions

In addition to the business lines and companies already presented, **EnergoBit** is also represented in several joint ventures which mainly serve the Romanian market but can be used in association with international projects too.

Energolux

With over 19 years of experience in interior lighting **Energolux,** a member of the EnergoBit group, provides solutions for any type of application in interior, stage and perimeter lighting. The complex solutions provided by the company comply with and promote the fundamental principles in lighting: functionality, aesthetics, harmony, efficiency, endurance, ergonomics and versatility.

EnergoBit Tavrida

EnergoBit Tavrida is a joint venture established with the Estonian company Tavrida Electric which focuses on selling vacuum switching medium voltage equipment. Tavrida equipment uses the new technology of the magnetic actuator, offering low power consumption. The technical features of these products, as well as the quality of the technical support provided to identify the optimum cost saving solutions, both contributed to the company's success in Romania.

Energy Efficiency

Today international preoccupations give rise to increased competition for reliable and affordable new energy forms to ensure economic development with sustainable and comfortable living conditions for the next generations.

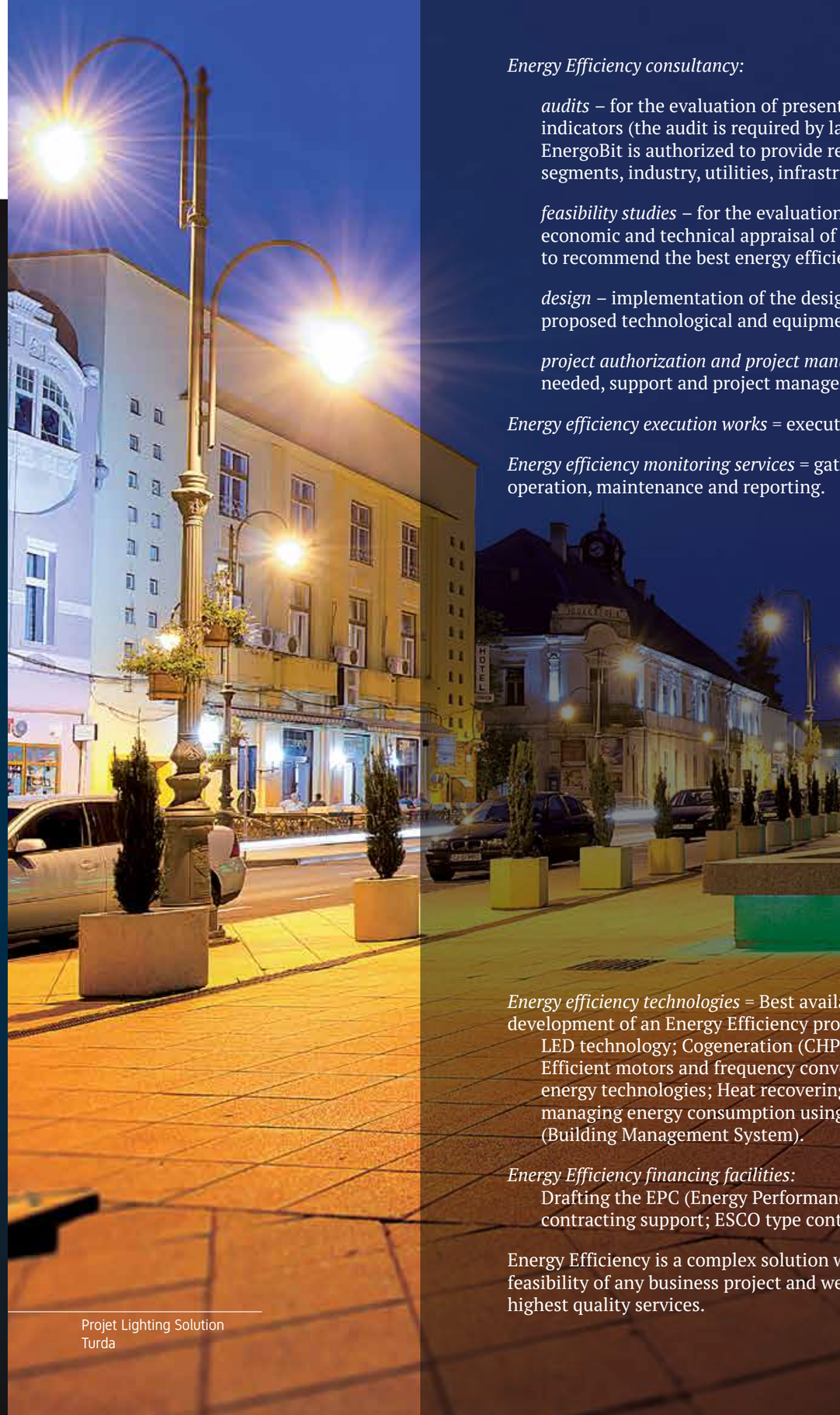
Renewable energy has been a top European priority in recent years with excellent results in terms of technological innovation, awareness and an increase in green energy generation. EnergoBit has been a leader in the development of renewable energy projects in Romania since the first local market initiatives; with the capability to provide turnkey projects in renewable energy including initiatives in wind, solar, hydro, biomass, biogas and geothermal generation. Continuously improving our offering with innovative and continuously updated energy solutions and services, EnergoBit is a supplier of complete energy solutions for local and regional markets.

If the use of renewable energy contributes to the securing of energy supplies, achieving a clean environment and obtaining comfortable living conditions for generations to come but these issues still remain to be addressed. Presently, worldwide top priorities target the reduction of greenhouse gas emissions and systems performance increase thus, energy efficiency through systems' performance has become a matter of crucial importance.

Based on EU legislation, energy efficiency projects are those that are capable of generating simultaneously, after implementation, savings from primary energy consumption, reductions in energy costs, increases in system performance and a significant reduction of their environmental impact. The EU 2020 strategy indicates as desirable energy efficiency projects, those generating 20% savings, but experience shows a potential up of 30-60% savings is possible in some cases.

In 2004 EnergoBit started the first energy efficiency projects in Romania, consolidating local expertise in energy efficiency. Since then EnergoBit has built a strong reputation in the implementation of energy efficiency projects, supplying solutions for industry, utilities, transportation, infrastructure and the construction market segments.

EnergoBit can identify energy efficiency opportunities following customer requests, but we are also proactive and highlight appropriate solutions during standard maintenance work. Thus, in terms of energy efficiency, we have the ability to address all phases of a project from origination, consultancy till operation, monitoring and maintenance for both private and public clients.



Projet Lighting Solution
Turda

Energy Efficiency consultancy:

audits – for the evaluation of present situations and the calculation of energy performance indicators (the audit is required by law every 4 years for any consumer exciding 1000 toe/year). EnergoBit is authorized to provide regulated complex energy audits for all the main market segments, industry, utilities, infrastructure and buildings.

feasibility studies – for the evaluation of possible solutions to increase system performance, economic and technical appraisal of the investment- generated savings and payback period in order to recommend the best energy efficiency implementation scenarios.

design – implementation of the design work based on feasibility studies and according to the proposed technological and equipment specifications.

project authorization and project management = support to obtain all the permits and authorizations needed, support and project management services for implementation.

Energy efficiency execution works = execution work for energy efficiency project implementation.

Energy efficiency monitoring services = gathering all services related to energy savings monitoring & operation, maintenance and reporting.

Energy efficiency technologies = Best available technologies (BAT) & innovative solutions used for the development of an Energy Efficiency project:

LED technology; Cogeneration (CHP) or Trigeneration; Automatization for industrial processes; Efficient motors and frequency converters; Smart metering; Ultimate technologies use of renewable energy technologies; Heat recovering; Power factor improvement; Monitoring, controlling and managing energy consumption using tele-management systems; Intelligent buildings using BMS (Building Management System).

Energy Efficiency financing facilities:

Drafting the EPC (Energy Performance Contract); Credit provider financing solution; Bank loan contracting support; ESCO type contracts.

Energy Efficiency is a complex solution which reduces energy related costs. It can also influence the feasibility of any business project and we, at EnergoBit, do our best to support our customers with the highest quality services.

Smart Grid

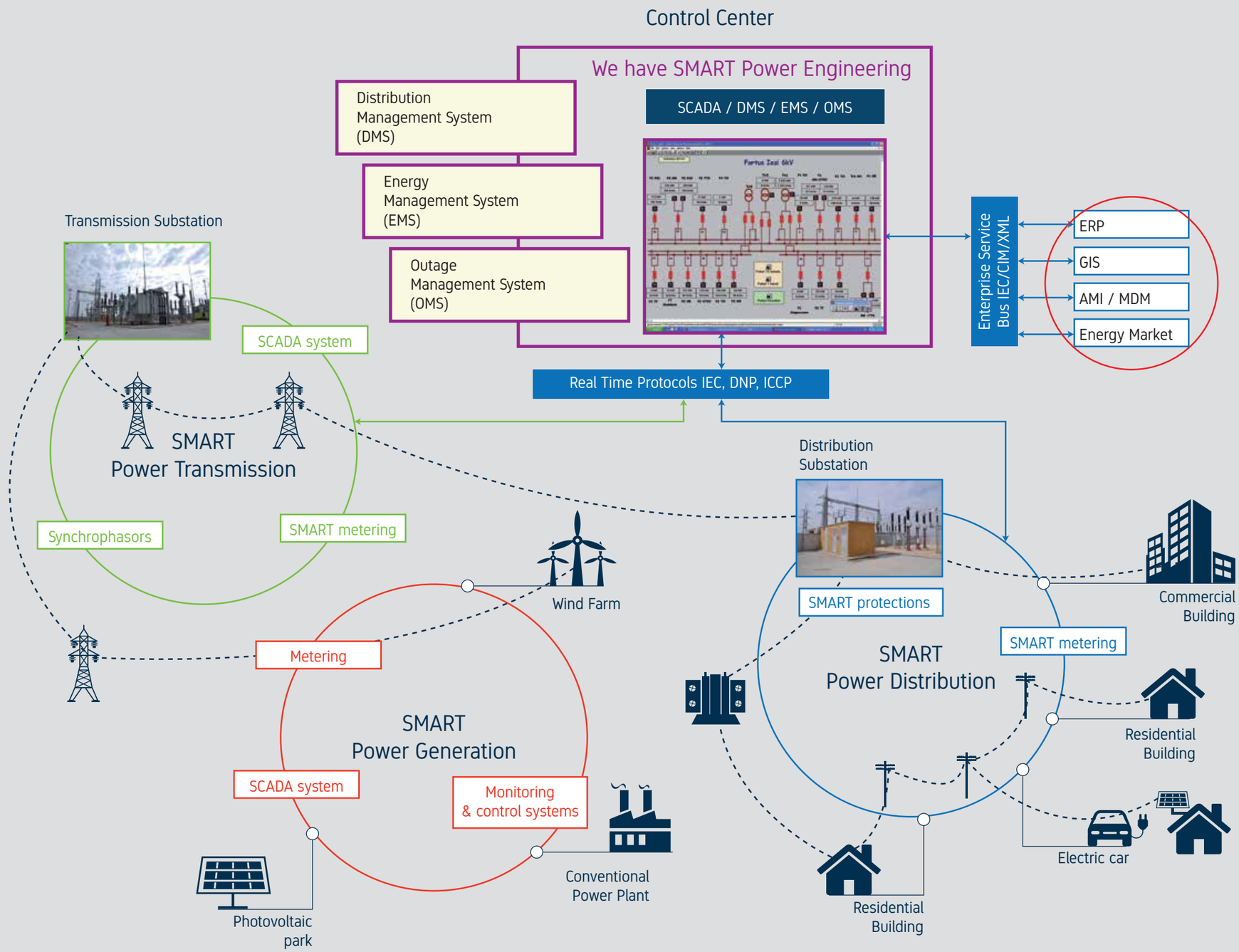
Technology developed quickly in recent years saw the "Smart" concept implemented everywhere around us, in phones, cars, houses and of course, grids. The Smart Grid concept is essential towards ensuring efficient operations.

As we know, SMART GRID is the system resulting from the combination of the Power Network, with SMART Equipment (IT, Control Systems, Devices) using Telecommunication Infrastructures.

With our significant experience in power engineering and network operation, both for power transport and distribution networks, EnergoBit has the necessary expertise to convert existing networks into automated, interconnected and fully controlled grids. The smart grid solution involves a set of tools which allows you to efficiently plan and design a network and reliably use it in the future.
EnergoBit offers the best technical solutions using latest technology available in the market so that we (through our experts) can construct SMART GRIDs through the application of:

- Telemetering Systems for Metering Operator and Distribution System Operators (DSO) using Smart meters and systems;
- Energy Consumption Monitoring Systems for industrial clients. EnergoBit integrates the newest IT technologies which increase energy efficiency in the industrial field;
- SCADA System in DSOs and Transmission System Operator (TSO). EnergoBit implemented its own solution, at a similar level with those of, other well-known suppliers;
- Control / Protection Integrated Systems. EnergoBit uses the digital protection relays and can integrate different devices in the control / protection systems;
- Power Quality Monitoring System (PQMS);
- Syncrophasors Measurements System. EnergoBit Solution represents a standard solution for TSO and DSO in the condition in which many Dispersed Generation Sources have to be connected to the grid;
- Automation and energy efficiency solutions for industrial clients (Ex Variable Frequency Drives, and Power Factor Correction in LV).

The Smart Grid concept applies to all phases of the generation, transmission and distribution of power, and we can provide our customers full support and equipment at each stage.



Smart City

Another interesting solution area is Smart Cities. As we all know, in a smart city the digital technologies or information and communication technologies (ICT) are used to enhance the quality and performance of urban services, to reduce both costs and resource consumption and to engage more effectively and actively with citizens. EnergoBit can contribute to the development of Smart City projects with components and systems such as: micro wind turbines, photovoltaics cells, energy storage systems, mobility hub eCharging, smart buildings, and smart houses.

SMART Cities must include SMART GRIDs which mainly ensure:

- Coexistence between centralized and distributed generation;
- Promotion of efficient technologies with lower carbon emission;
- Integration of new technologies in ICT;
- Optimization of the costs and new tariffs;
- New functionalities for the customers (end users);

European Union Legislation encourages the development of the Smart Grid and Smart City concepts.

The E.U. Directive CE 72/2009 related to common norms for electricity internal market underlines:

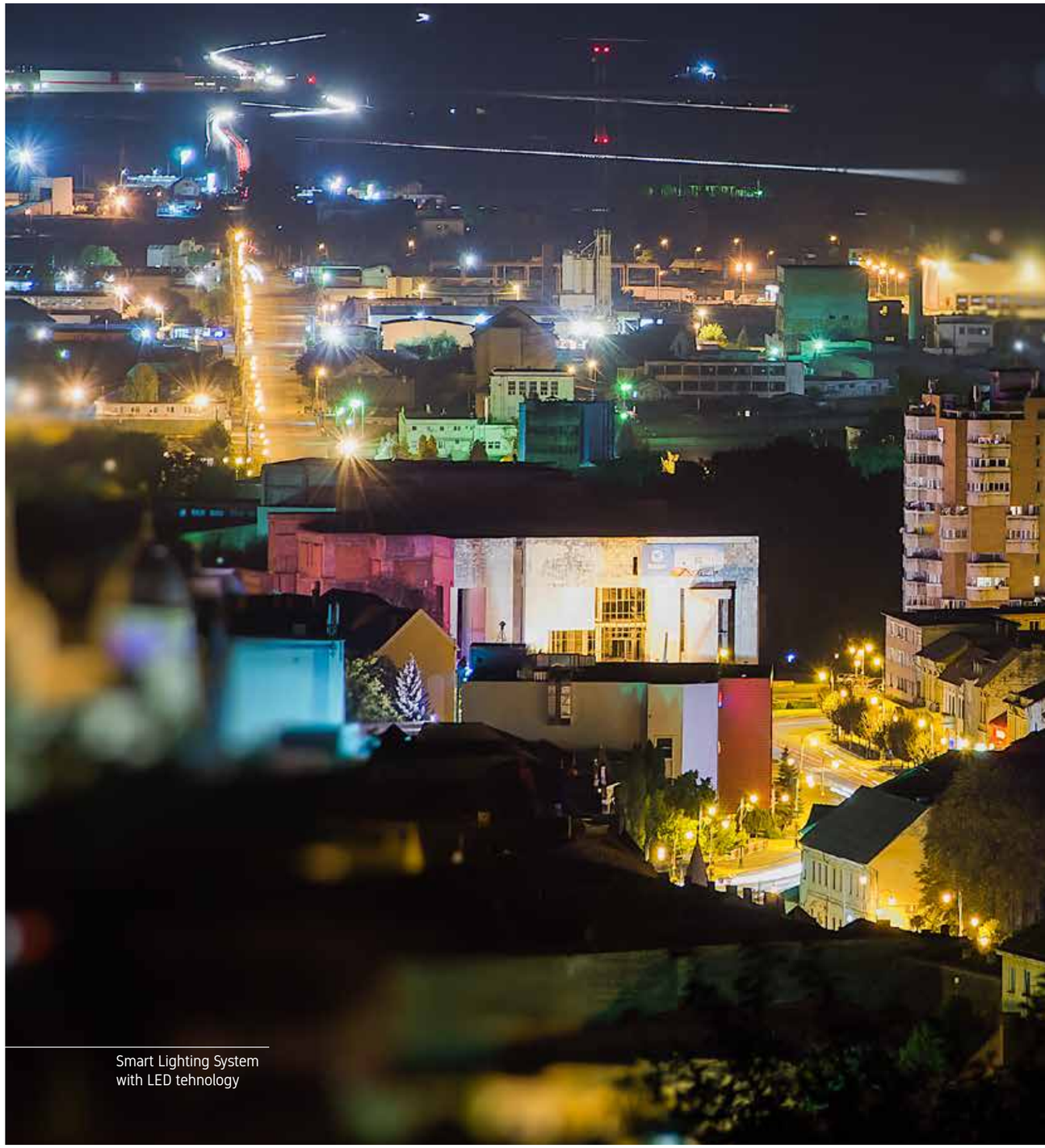
"...Member States should promote the modernization of distribution networks, for example the introduction of smart grids, which should be built in order to encourage decentralized generation and energy efficiency. It should be possible to introduce smart metering systems on the basis of an economic assessment...", based on which Member States shall prepare a timetable with a target of up to 10 years for the implementation of these systems.

- At least 80% of the customers should have SMART meters until 2020.

EnergoBit is involved in the first program of this type in Romania. Technical solutions and expertise of EnergoBit for Smart City include:

- Efficient lighting system (LED technology based) and its management;
- Smart metering system, a good solution for Metering Operator or DSO. EnergoBit is one of the first companies which have offered smart meters on the Romanian Market since1994;
- Water management and SCADA system, which gives the information to water operator about water consumption;
- SCADA systems for gas, which allow the gas operator to have an efficient management of the gas distribution network;
- Building Management System, an integrated solution for public buildings for health and education in the city.

Other Smart City solutions that can incorporate know-how and latest technological developments: waste management, intelligent transport solutions.
The integration of new technologies in EnergoBit's solutions represents a priority for our company.



Smart Lighting System
with LED tehnology

Energy Efficiency in cooperation with Energo ESCO

In order to meet the demands of our customers, EnergoBit developed the ESCO concept of energy performance which operates, together with other EnergoBit companies, as a full service provider for customers interested in energy efficiency projects, adding financial support to the design, construction and maintenance activities..

The ESCO concept of energy performance

The projects that are developed under ESCO concept benefit from full or partial financial support from the company. ESCO has a primary role in guaranteeing project performance and the projected savings. In case of an investment, ESCO recovers its funds exclusively from the client's savings obtained during project implementation.

This way the client is exempted from any investment, and can easily focus on developing the business. **Energo ESCO** deals with mainly large energy consumers (water consumers, gas consumers, steam consumers, heat consumers, electricity consumers, cold consumers), regardless of business sector, where the annual operating/functioning hours are very high and there is real potential for implementing an energy efficiency project.

The company also offers its services to public institutions for efficient public lighting, heating systems, electricity and lighting, thermal insulation for Health units, educational units and administrative sectors, district heating by upgrading the facilities of heat production.

The commercial and third parties sector are selected for upgrading the energy facilities for office buildings, hypermarkets, hotels, industrial parks. ESCO can also provide services for the rehabilitation of power plants with a high consumption of electricity or heat from the following industries: wood industry, food industry, cellulose industry, automotive industry, petrochemical industry, glass industry, metallurgy industry and the textile industry.

Global City
Office Building, Bucharest
Lighting Solution

Services that can be provided:

Energo ESCO delivers complete energy efficiency projects from identifying the energy saving measures required, to financing and implementing projects, installing preventive and corrective maintenance in the new facilities as well as periodic evaluation and monitoring of the new project savings.

After performing an energy audit, Energo ESCO easily identifies customer needs, and gives the client a holistic approach. So, after initial diagnoses on the basis of skills and products / services existing in EnergoBit Group and expertise accumulated in over 25 years of activity, Energo ESCO can offer the best overall energy solutions exactly fitting the needs of the client in an optimal economical and technical report.

Projects and technologies used

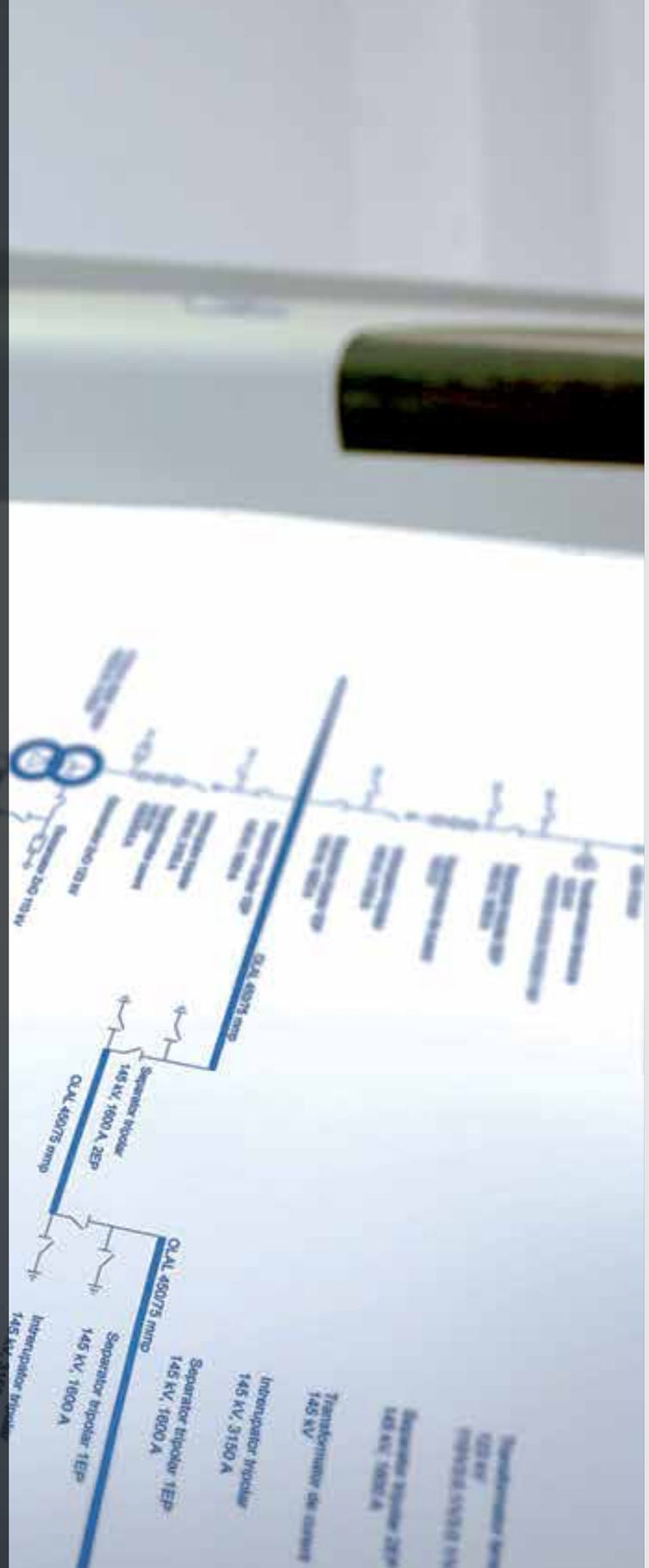
- Installation of efficient public or industrial lighting with LED technology
- Upgrading heat or steam plants by implementing Cogeneration (CHP) or Trigeneration solutions
- Automating industrial processes by using more efficient motors and frequency converters
- Recovering heat from flue gases for large industrial consumers
- Using petroleum gas (or associated fuel) for heat or electricity production in the petrochemical industry
- Improving the power factor with capacitor banks
- Improving power distribution networks in order to reduce their consumption - by using Ultra low loss transformers Ecotec EnergoBit
- Monitoring, controlling and managing the energy consumption using tele-management systems
- Managing power plants in intelligent buildings using BMS (Building Management System)

EnergoBit Control Systems

EnergoBit offers a complete solution for the design of power substations, transformer substations and power lines of 400-220-110-20-0.4 kV, both for new projects, as well as for the improvement of old ones. This is offered through the Control Systems division of the company which boasts the services of one of the most experienced professionals in the market.

We cover all phases in developing complex projects (I.E. wind farms, PV farms, hydroelectric power plants):

- Solution studies for integrating new power projects in the National Energy System;
- (Pre) Feasibility Studies with/without obtaining the legal permits specified in urban planning certificates;
- Technical Design and Technical Specifications;
- Technical Documentation for obtaining various permits (building permit, dismantling or organizational permits);
- Execution details;
- Technical Documentation for the post-completion period of the project (As Built);
- Technical support during execution, specialized consultancy, general project management, etc.



An important tool in modeling, analyzing and designing electrical systems is the Paladin Design Base software which provides excellent accuracy and guarantees the project's success. This software is renowned worldwide and we are the exclusive distributors for Romania.

The software has an extensive data base, containing information about electrical equipment from the leading manufacturers.

The most used Paladin Design Base Modules and methods of analysis are:

- Power flow analysis;
- Short-circuit analysis;
- Protection coordination;
- Power system optimization;
- Calculations of the reactive power requirements for wind and PV farms;
- Harmonics and transient stability analysis.

We, at EnergoBit, have designed electrical installations (LV, MV and HV) for main energy transport operators, for distribution operators and also for other private customers:

- Over 45 solution studies, the vast majority with complex system analysis, for renewable energy producers – approx. 400 MW in wind farm projects and approx. 200 MW in photovoltaic projects;
- Technical documentation in various phases of design for over 40 wind farms with a total power of approx. 4000 MW and for over 10 photovoltaic farms with a total power of approx. 200 MW;
- Calculations of reactive power requirements for over 30 wind and photovoltaic farms.

Power Products

"Power Products" is one of the oldest EnergoBit business lines, the company's operations being geared towards production since 1994.

From the very beginning, the company's cardinal principle was to offer high quality, reliable and innovative products. In an ever-changing world, we always stay with market trends.
Our key advantages are the professionalism and acquired technical experience, the investments we made in a modern infrastructure and our personnel's high level of qualification.
We continually invest to increase our production capacity and to improve the testing procedures of our equipment to meet the demands of the internal and external markets.

Today, EnergoBit has an extensive portfolio of electrical equipment for medium and low voltages, according to all client requirements:

- Complete technical solutions for photovoltaic parks: PV box range ROBUST SOLAR, string-box range DOMINO SOLAR;
- Containerized technical solutions for primary distribution: Concrete modules ROBUST MDP and ROBUST MCP;
- Medium voltage cells for secondary distribution: MOD6 range;
- Medium voltage cells for primary distribution: MOD24MC range;
- Prefabricated transformer substations: ROBUST range;
- Oil distribution transformers: ECO-T range;
- ENEL homologated products (prefabricated transformer substations, medium voltage cells for secondary distribution, low voltage distribution panels range and protection panels);
- Low voltage street distribution cabinets range DOMINO, low voltage distribution boxes for pole mounting;
- Protection panels, automation panels, internal services panels, ac and dc;
- Low voltage distribution panels and automation panels for industrial applications;
- Fixed and automated low voltage capacitor banks;
- Medium voltage capacitor banks range ROBUST MBC.

ECO-T
oil-insulated distribution transformers

Based on their extensive know-how and experience our engineers built one of the most efficient oil-insulated distribution transformers, the ECO-T range. These are manufactured in the newest and most modern transformer production facility in Romania.

The ECO-T oil- insulated distribution transformers feature the following advantage:

- Complete range of transformers, standard or custom-made, EnergoBit being the only local producer of amorphous core transformers (ultra-low losses)
- Top quality insured through the most modern production facility with the latest technology
- Short delivery time
- Warranty.

Constructive types:

- Distribution transformers with ultra-low losses (with amorphous cores)
- Distribution transformers with low losses according to ECO Design.
- Rated power ranges from 50 kVA to 2500 kVA

ROBUST, ROBUST MDP and ROBUST MCP
concrete transformer substations and container solution for primary distribution

ROBUST is the first and foremost precast concrete transformer substation on the Romanian market.

The product's quality and its customizing possibilities to suit the customers' needs have propelled the ROBUST transformer substation into the national leadership position, since 2002.

For the first time on the Romanian market, EnergoBit has developed a container solution for the MV section of electric stations, in order to provide time, space, cost and flexibility related advantages in on-going projects:

- Modules for Primary Distribution, fitted with medium voltage switchgears for primary distribution – range: ROBUST OPTIONAL MDP.

- Modules for Control and Protection, fitted with protection and control panels (transformer, line or coupler), AC and DC internal services panels, battery charger according to the requirements of every project – range: ROBUST OPTIONAL MCP.

The investments made in our manufacturing competence, as well as the skills and creativity of our designers have allowed us to provide you with the ROBUST range, both in standard and optional variants, in order to meet the market requirements.

We are at your disposal for technical support, assistance in design, safe carriage, assistance with installing the equipment, commissioning and operation, as well as post- warrantee services.

MOD 6 and MOD24MC medium voltage switchgears

EnergoBit started the production of secondary distribution medium voltage switchgears in 2001.

In 2004, the company put Its expertise to good use and released, under its own trademark, the MOD6 switchgears range in Romania

Now, our medium voltage switchgear range portfolio includes the MOD24 MC range for primary distribution medium voltage switchgears, in order to offer our customers a wider range of products, developed in its own production plants.

Thereby, EnergoBit is able to promptly address customers' requests, while maintaining our high standards of quality, safety and reliability.

Solutions for Low Voltage Distribution

EnergoBit is a full service provider for any power project that it undertakes, from identifying the most appropriate solutions to designing and building the equipment, regardless of its complexity.

The protection and control panels, as well as AC/ DC internal services panels come in both a standard version and in optional variants which can be adjusted to fit the specifications of every project. The low voltage distribution panels, dedicated to transformer substations and industrial applications represented the initial development of EnergoBit's production units. We now offer the entire range of low voltage distribution panels and industrial automation panels. Starting from the standardized variants for low voltage distribution, we have designed and built technical solutions for special applications: electricity distribution panels with withdrawable drawers. The street distribution boxes, distribution boxes for overhead transformer substations, measurement and protection blocks, public lighting switch points, which all compose the DOMINO product range, being both modular and adaptable, complete the EnergoBit solution for low voltage distribution.

Reactive Power Compensation

From the very beginning of its manufacturing operations, EnergoBit sought to provide reactive power compensation solutions. Currently, its portfolio includes low and medium voltage capacity banks, fixed or automatic, with a wide range of powers. EnergoBit also offers a complementary service pack, which facilitates the selection and installation of the capacity banks: network analysis and measurements, bank design and sizing, to achieve the best quality to cost ratio, technical assistance comes with installation.

Electrical Engineering

EnergoBit's service offer is completed by the Electrical Engineering business line, which provides the software and applications needed to control and monitor networks.

SCADA

With the help of control and data acquisition systems (SCADA), we produce world-class electrical dispatch centers which monitor everything that happens in electrical installations from the producer to the end user: main substations, power substations, supplier substations, MV transformer substations, reclosers and load break switches.

Our SCADA system is design by our EnergoBit specialist and allows us to integrate within it equipment and devices from various suppliers. This makes us one of the best SCADA implementers in Romania.

Our flexibility in choosing the precise type of equipment from the most appropriate suppliers allows us to develop customized, high-tech projects, at competitive prices.

Relays Protection Solutions

The safe operation and expanded life cycle of electrical networks are our main concern and the usage of digital protections relays is one of the elements that guarantee this. The Relay Protection Department ensures delivery, configuration, testing and support when commissioning the numerical protection equipment, as well as successful integration in either SCADA systems or distribution automation systems.

We have extensive experience in providing turnkey solutions, which include the installation and commissioning of various categories of fully equipped panels: protection, automation, SCADA and internal services panels. These panels are made and tested under the strictest designs controls in our own production plants.

The additional services mentioned include the following:

- Project scope and specification; preliminary designs to equipment parameters, protection and automation scheme design;
- Field testing and commissioning, on-site support testing, commissioning and training
- Electrical design for protection panels;
- Post-sale services, during or after the warranty period.

Metering Solutions

We have a wide range of meters, which allow customers to monitor power consumption in the residential, commercial or industrial sectors: electronic, electro mechanic, single-phase and tri-phase meters.

The latest generation of electronic (static) meters addresses the entire range of needs from the electricity producer to the end user (static meters for residential and commercial use; static meters with time-switches for residential and commercial use; static multifunctional meters for industrial, transmission and distribution use).

We also provide portable single-phase and poly-phase standard meters for on-field and in-laboratory testing of electricity meters

For industrial consumers who want to know and control their energy consumption, we offer our in-house developed software as well as integrated systems for dispatching and tele-control of power networks.

The accurate consumption information gathered will allow the consumer to undertake specific measures that will lead to a significant decrease in energy costs.

SCADA
Central Station

Tele-management Systems

We offer the complete range of products and services designed to monitor and analyze the improvement of power quality.

Our quality analyzers meet the standard performance requirements for the distribution service and provide the necessary reports for power parameters assessments.

EnergoBit's metrological laboratory, authorized by B.R.M.L., facilitates the periodical checking and maintenance of electricity meters.

Through its equipment and software, EnergoBit provides the complete solution for the protection, control and supervision of electrical equipment.

Whether it involves SCADA, digital protection, metering or tele-controlling, our specialists are qualified to transform this equipment from simple products into complex, fully automatic systems enabling the implementation of special solutions in every project undertaken.

Power Systems

Cernavodă Power Substation

Power Systems business line was established in 2001 as a provider of power supply works on low and medium voltage for industrial and domestic consumers. Nowadays, the department acts in the power systems market as an integrator of products and solutions in group's portfolio and external suppliers, providing the complete solution in electricity.

We deliver the design and execution required in the development of power systems investments:

- Feasibility pre-feasibility studies, including a technical-economical comparative analysis of the solutions;
- Solution studies for the connection to the National Power Grid;
- Technical documentation for building permit and approvals;
- Technical design and tender documents;
- Execution details and execution works;
- Project management
- Technical assistance during execution and commissioning, on-site consultancy.

Department activity is divided into three main areas:

- Industrial Solutions
- Transport & Distribution
- Power Generation

Sălaj Power Substation

Industrial Solutions

Building on the initial activities as power supply installations provider, we developed capabilities and skills to deliver complex solutions for today:

- Electrical power supply and distribution installations and electric drive systems for the industrial sector;
- Electrical power supply and distribution installations for commercial and office space projects;
- Electrical power supply and distribution installations for infrastructure (railways, roads, airports).
- Sport facilities, architectural and public lighting.

EnergoBit offers complete electrical solutions for any project that requires power supply.

From on-site assessment to the detailed design of power distribution networks, from acquiring permits to the final execution of the project, we are a reliable partner in any power project.

We ensure the execution of medium voltage and low voltage electrical connections, the execution or modernization of medium voltage and low voltage distribution installations, the execution of indoor electrical installations and public lighting installations.

Our specialists guarantee successful completion of every stage of the complex operations from initial consultancy throughout the execution and commissioning, assistance in the commissioning process, warranty and post-warranty services

Turda Salt Mine
Lighting System

Mociu
Public lighting system

Constanța
Maritimo Mall

Peștera Power Substation

Transport & Distribution (T&D)

The activity in the T&D field emerged as a natural development in power systems, started from „industrial solutions”.

- Execution of 20/110/220/400 kV power substations;
- Execution of overhead and underground lines of 20/110/220/400 kV.
- Refurbishment of existing power substation equipment 20/110/220/400 kV

We always seek to ensure our clients installation’s feasibility and flexibility by using primary and secondary last generation equipment, with modern operating solutions (SCADA) and also optimizing the necessary surface for the power substations.

Through the execution process, we fulfill the specific requirement of distribution and transport systems operators.

Once the construction phase is completed, we provide equipment’s and system’s set-up, technical assistance for the commissioning and training of client’s personnel in charge with substations operation.

In the case of refurbishment of existing power substations, the process is done in stages to allow plant operation at maximum capacity.

We are proud of our activity and results, especially when we go beyond limits and set new records in our field of activity.

EnergoBit is one of the few companies in Romania to have designed and executed indoor power substations.

Făcăieni
High Voltage Powerlines

Renewable Power Generation Projects

With a skilled and highly specialized team of power engineers EnergoBit is among the first companies in Romania to take over and complete wind farm projects.

EnergoBit joined the renewable energy market in 2008 as one of the "pioneers" of this field in Romania. We have been involved in renewable projects of more than 2000 MW, thus becoming one of the largest contractors in the local renewable energy market.

Our main competences as general contractor:

- Supply, installation and commissioning of electrical generation equipment;
- Execution of internal power network in wind and photovoltaic plants;
- Civil works for wind farms, solar and small hydro power projects;
- Communication networks for wind farms, solar parks and small hydro power projects;
- Power substations for collecting and converting the energy produced in the wind turbines or in the PV plant;
- Power networks (underground or overhead) for the connection to the distribution and transmission grid.

Maramureș Micro Hydro Plant

Babadag Wind Farm

Gălbinaș Photovoltaic Park

Biogas Cogeneration Station, Tulcea

The extensive number of contracts concluded for major wind farms and PV projects in Romania is the dynamic that built and continuously reconfirmed EnergoBit's reputation as an authority in this field.

The company has thus become the most important provider of design and execution services for electrical works in wind and photovoltaic farms across Romania

ELM Electromontaj Cluj

The services and commercial conditions offered by EnergoBit are completed with the expertise and experience of ELM Electromontaj Cluj, a company which entered the EnergoBit group in 2011. ELM is specialized in the field of energy operations, calling upon experience gained over 65 years of existence. Set up in 1949, with significant national and international experience in electrical works, the company played an important part in the construction of the National Power Grid in Romania and installed among the first high voltage power lines in the country, in the region of Transylvania.

ELM has implemented, maintained and continuously improved its integrated management system which meets very high standards of quality, environmental regulation and health and safety.

Best quality services are our major priority in dealing with domestic as well as foreign customers, ELM is certified by the Romanian Energy Regulatory Authority, Romanian Railway Authority, and agreed by the energy producers and power distributors.

ELM also operates its own production units for advanced technological equipment, covers most of our supply needs to meet customer requirements.

Today ELM Electromontaj Cluj can offer customized design and execution of:

- overhead power lines for power transport and distribution (0.4 kV – 750 kV);
- underground electric lines (0.4 – 110 kV);
- electric power stations and transformer stations (0.4 kV – 750 kV);
- indoor electric installation and connections;
- low power micro hydroelectric plants (up to 4MW);
- works related to railway and urban electric traction;
- telecommunication aerials;
- public lighting networks;
- optical fiber installation.

Products and supplies

- clamps and fittings for overhead and underground electric lines and transformer substations
- metal pols for overhead electric lines
- metal pols, gantry, supports for transformer substations
- precast concrete foundations for overhead electric lines

In addition to the wide portfolio of works carried out in Romania, ELM has also completed several projects abroad, in France, Serbia, Morocco, Nigeria, Lebanon, Jordan, Malaysia and Iraq.

In joining the EnergoBit expert team, ELM Electromontaj Cluj has managed to create important additional capacity in the provision of a total quality solution to customers and partners, thereby cementing EnergoBit's position as leader in the electric power field.


Fântânele-Cogealac Wind Farm

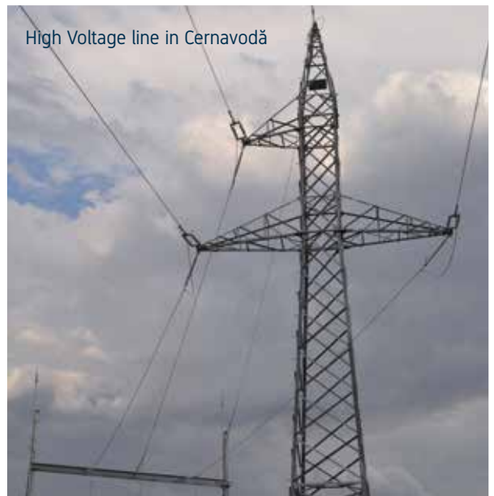

Pestiș Power Substation


OHL in Serbia


Gădălin Power Substation


Băltăgești Power Substation


Fântânele High Voltage line


High Voltage line in Cernavodă

Energobit Customer Benefits

Main advantages of Energobit when comparing to other companies:

- Offering complete, turnkey solutions, to meet customer requirements;
- Impressive flexibility (the ability to work with any internal or external provider, integrating several companies in the same project);
- The opportunity to work with an experienced, professional project management team.

The quality of every project, the experience and on-going assistance provided throughout the duration of the power projects guarantees EnergoBit as a trustworthy partner in any sustainable collaboration.

Whether referring to improvement works for electric equipment and installation, or to building new power substations and power networks, EnergoBit is a proven and trusted partner for power generation, transport and distribution companies as well as of all those searching for solutions in the power supply field.

We, at EnergoBit, offer customized solutions, tailored to our clients' needs in equipment delivery for power substations, turnkey projects, technical-economical consultancy and advice for the management of execution works.

The high degree of flexibility that we have, in choosing and incorporating equipment from various manufacturers, as well as the know-how and expertise of our specialists gives us exceptional competence to carry out complex projects, at competitive prices.


Gădălin Power Substation


Polus Center
Indoor Power Substation


Babadag Power Substation


Cogealac Power Substation


Satu Mare Power Substation


Cotroceni Mall
Indoor Power Substation

Maintenance and Operation of Power Installations

EnergoBit developed its unique power installation maintenance services in addition to its main activity of building turnkey electrical installations and systems. Thus, we can offer now the complete range of solutions for electrical power.

The expertise of over 25 years in electrical engineering and grid operations and the variety of projects managed and completed successfully recommend EnergoBit as being the most experienced and competent provider in the market, promising proficient management of the maintenance function, delivering modern and competitive solutions tailored to the client's specifications.

The maintenance operations carried out involve a complex and continuous activity, based on the following:

- electric power stations and transformer stations (0.4 kV – 750 kV)
- Regular works of technical supervision: controls, adjustments, measurements, trials, troubleshooting;
- Routine maintenance works, scheduled repair of worn out components appropriate to the technical state of the installations;

Repair works of increased complexity, which, without modifying the original technology, allow for the restoration of the installations' technical state and efficiency;

- Repair works on the power equipment, carried out in shops, in order to maintain or restore their availability, viability and safety during operation;
- Land clearing works, in order to keep clear the safety corridors required by the power installations;
- Corrective maintenance works, which have become necessary following certain incidents or malfunctions, in order to restore the functionality of the power installations and ensure the supply of electricity to the consumers;
- Non-scheduled maintenance works, of a wider scope, following out of the ordinary calamities or weather phenomena.

Maintenance Services for Distribution Operators

A point of reference in EnergoBit's activity is the Maintenance works performed for distribution operators, to restore the availability, viability and safety of use of the latter's power equipment and installations.

EnergoBit has specialized personnel and the specific assets to perform regular control works and minor routine maintenance for the 110/20 kV transformer stations.

Our customers attain both a significant reduction of costs and an increase in service quality, providing a higher degree of safety in their power installations.

Maintenance and Operation Services for Renewable power operators

The quality services we provide, our reliability in completing contracts as the main contractor in complex electrical installations in the renewable energy field enable EnergoBit to be the perfect partner even after the completion of the each project.
The experience we acquired in the construction of various electrical installations, our diversified range of electrical equipment utilized during operations from the best suppliers and our specifically trained personnel, are vital and necessary assets when taking over the electrical maintenance and operation services of electrical plants; for example, in the case of a number of wind farms in Dobrogea, regardless of whether or not they were built by EnergoBit.
We provide maintenance operations for main 400/110kV electrical plants, 110/33kV substations, 110/20kV substations, MV (medium-voltage) 33 kV or 20kV power grids, as well as MV cells in turbines.

We focus on predicting and preventing faults as well as avoiding material damage and the subsequent risk of personal injury to personnel.
Corrective maintenance involves ongoing repairs, interventions and the establishment of new controls that are carried out following events (damages) that may occur in electrical installations.
Our maintenance operators can determine the degree of wear and tear, spot excess load events, evaluate potential manufacture flaws that can occur only after certain periods of use, identify failures caused by improper construction or assembly and problems related to the sizing of particular equipment or components.
We can also execute of all the operations of use and service, based on written records, in compliance with the Management Regulation and with the General Operation Regulations.
These services are carried out entirely by our skilled personnel who are experienced in the field of electrical transformer plant operations.

References


Baia Power Substation

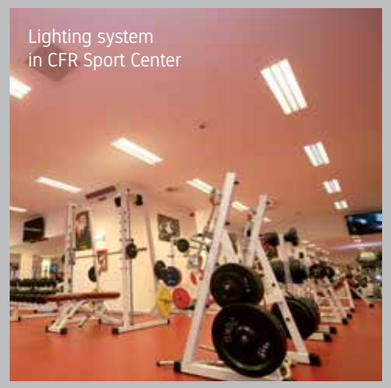

Mirăslava Photovoltaic Park


Târgoviște
Power Substation


Baltagesti Power Substation


Transilvania Highway
Lighting Solution


Cogeneration Units
City Plaza Hotel, Cluj-Napoca


Lighting system
in CFR Sport Center


Prefabicated
transformer substation


Dorobantu
Wind Farm


Ucea Photovoltaic Parc


Polus Center Cluj-Napoca
turnkey project

References


Rahman Power Substation


Carpați Power Substation
with Medium Voltage Cells


Topolog
Power Substation


Medium Voltage cells


Prefabricated Transformer Substation in Constanța


Sărulești Photovoltaic Park


Mamura
Power Substation


Pestis Power Substation


Production of
electrical equipment


Dragomirești București
Power Substation


Lighting system
in the German State Theatre, Timișoara


Automatic recloser


Tortomanu Power Substation


High Voltage Power Lines
in Dorobantu Wind Farm


SCADA system
in Cluj-Napoca

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