



Polish Green Technologies Awarded in the GreenEvo Programme

Ministry of Climate and Environment of the Republic of Poland

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Ministry of Climate and Environment
Republic of Poland



NATIONAL FUND
FOR ENVIRONMENTAL PROTECTION
AND WATER MANAGEMENT

Innovation is critical for a zero carbon sustainable future economy

GreenEvo

The Green Technology Accelerator is an innovative program run by Poland's Ministry of Climate and Environment designed to create friendly conditions to disseminate environmental technologies provided by Polish entrepreneurs. Its main purpose is to help Polish companies to enter into international contacts and also to provide them with necessary tools to enable their dynamic development. The actions taken under the program stimulate development in a comprehensive manner and strengthen the position of advanced green technologies in the process of building a circular economy.

Objectives

GreenEvo promotes the **sustainable development** of companies, green technologies and, in consequence, the economy itself. Proponents of only **proven, implemented and highly efficient technologies** join its Laureates, thus contributing to the building of Poland's positive image in the world. It can be said that **GreenEvo Laureates are credible business partners, willing to share their knowledge, experience and technologies** with countries which have to cope with the local environmental problems. GreenEvo Program not only consistently builds the environmental awareness of domestic technology buyers, but also educates potential foreign partners, in respect of technologies to reduce environmental impacts which are often quite simple to use. GreenEvo strengthens the business activity of companies at the international level. It changes the approach to a company and its management – from a traditional approach to a modern, effective one, focused on measures related to corporate social responsibility.

Benefits

The GreenEvo Program is one of the key tools used by the Polish Government to support the transition process towards a sustainable economy and to raise the awareness of companies as to how they can operate in a responsible manner. It is the best practice in the scope of cooperation between the central administration and business. From the very start it has been created and launched by the Government administration, which, in addition, has assumed the role of a guarantor of the quality of the technologies offered. Thanks to GreenEvo, the international transfer of green technologies is stimulated and the activities of Polish companies which provide environmental and energy efficient technologies are supported in real terms abroad. Furthermore, the Program demonstrates that Poland is able to become actively involved in international actions to **combat climate change, without a detriment to economic growth**.



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AGATA – CELLUGUARD



CELLUGUARD®

CelluGuard® – Dust Suppression Technology by P.P.H.U. AGATA

CelluGuard® is an innovative, biodegradable dust suppression solution designed to control secondary particulate emissions from spoil heaps, waste disposal sites, mines, power plants, industrial facilities, haul roads and other dust-generating surfaces.

The system is based on the hydrodynamic spraying of a specially formulated microcomposite liquid. Upon application, it forms a flexible, uniform and water-permeable coating that binds fine particles, stabilises the surface and prevents them from becoming airborne.

The protective layer acts as a temporary anti-erosion barrier, shielding material from wind dispersal and water erosion while significantly reducing dust and odour emissions — resulting in measurably improved air quality around industrial and operational sites.

CelluGuard® delivers high performance with substantially lower water consumption compared to conventional water spraying methods. It can be applied seasonally or year-round, with protection lasting from one month to over twelve months, depending on surface conditions and operational intensity.

The technology is straightforward to deploy, fully scalable for large industrial and mining areas, and safe for the natural environment — making it an effective and responsible tool for modern dust emission management and environmental protection.

ADVANTAGES OF THE SOLUTION

- Effective reduction of secondary dust and odour emissions at industrial sites
- Biodegradable and environmentally safe – free from harmful chemical substances
- Long-lasting surface protection: from one month up to twelve months per application
- Easy spray application – fully scalable for large mining and industrial areas

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AGATA – Zefir 500



Zefir 500

Zefir 500 is an advanced ventilation and destratification system built around a textile duct with precisely positioned 6 cm outlets. Powered by a single 320 W axial fan, it delivers uniform airflow across large areas – manufacturing halls, warehouses, greenhouses, and livestock facilities – with an airflow rate of 4,000 to 8,000 m³/h, serving multiple workstations simultaneously.

The system operates year-round: in summer it provides direct cooling to workstations, while in winter it exploits the destratification effect – forcing warm air accumulated near the ceiling down into the occupied zone, equalising room temperature by up to 6°C. This translates into heating cost savings of up to 30%, with the investment paying for itself within the very first heating season.

The duct is manufactured from durable PVC material (620–650 g/m²), resistant to UV radiation and moisture, certified to fire class B1 and featuring antifungal properties. The brushless motor with IP55 protection operates across a wide temperature range of -20°C to +80°C. The suspended design requires no floor space, and installation is completed within just a few hours.

ADVANTAGES OF THE SOLUTION

- Winter destratification & summer cooling – year-round performance, one device.
- Up to 30% heating cost savings – full return on investment within the first season.
- Airflow up to 8,000 m³/h – single unit serving multiple workstations at once.
- Installation in just a few hours – suspended design, no floor space required.

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APANET Green System



Smart Street Lighting Systems

The smartlighting control system enables:

- power adjustment of each lamp individually or in groups, within a range of at least 50-100%, via standard 1-10V or DALI interfaces,
- on-demand lighting control via a website,
- creating new or changing existing lighting zones (groups of luminaires controlled identically) without the need to invest in lighting infrastructure,
- independent control of each zone,
- detection and reporting of failures of each light source and cabinet,
- measurement of electricity consumption of individual luminaires at defined time intervals,
- implementation of automatic control algorithms focused on energy savings,
- cooperation with luminaire controllers from at least three independent manufacturers,
- connection of other electrical devices to the existing lighting power supply network, which will be permanently powered by 230V, regardless of lighting control, e.g. ticket machines, illuminated advertising, holiday lighting, etc.
- archiving events, alarms, and failures (e.g., switching lighting on/off, changing operating mode), and generating periodically defined reports with the option of exporting data to a CSV file for reports and analyses.

ADVANTAGES OF THE SOLUTION

- Outdoor lighting control – dimming, turning lamps on and off
- Automatic fault detection and reporting
- Significant reduction in electricity consumption, operating costs, and CO2 emissions
- Possibility to finance lighting modernization with savings – ESCO

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Emergency power supply system pulstar based on ecological fuel cells

For industrial and production facilities, health care centers, transport, telecommunications, and IT sector which need an uninterruptible power supply system that generates electrical energy, we offer an emergency power supply system PULSTAR based on ecological fuel cells. Unlike competing conventional solutions with classic batteries, we offer ready-made power supply systems with fuel cell working on electrical grid and long-lasting individual receivers, ensuring the continuity of power supply in the event of an outage without any problems during exploitation.

The PULSTAR backup power system is based on an ecological energy source – fuel cells. By delivering hydrogen and air, we receive electric energy and clean water as a by-product. The cell functions silently and is very small in comparison to an aggregator/battery. It can be installed in any chosen space. A standard large bottle with hydrogen ensures the system will operate at a power of 1kW for 8 hours. The fuel cells directly convert energy contained in chemical reactions into direct current energy. This transformation is highly efficient and has a very minor impact on the environment.

ADVANTAGES OF THE SOLUTION

- An innovative, ecological power source based on PEM-type fuel cell,
- Failure-proof system thanks to monitoring of the fuel cell's functioning, registering of the feeder's functioning and raising the alarm in case of an outage using the Automatic Management System (SAN 3),
- Safety is ensured by the use of redundant hydrogen anti-leaking safeguards and power surge protection, short circuit safeguards, etc. with the RS-232 interface,
- Modular construction,
- High stability of voltage and output current and low pulsation of output current.

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AQT WATER – ARGO



Non-electricity domestic wastewater treatment plant

Small wastewater treatment plants ARGO are used to treat domestic wastewater from single- and multi-family households, agricultural farms, summer and other recreation cottages and public utility buildings which are not or cannot be connected to combined wastewater collecting systems. In contrast to competing solutions, the ARGO wastewater treatment plant can operate in any terrain and climatic conditions, without using electricity, does not emit CO₂ into the atmosphere and ensures high wastewater treatment efficiency.

The non-electricity ARGO treatment plant demonstrates the experience of Nature – the best environmentalist in the world. In ordinary wastewater treatment plants, the air is injected by blowers and pneumatic systems. Due to its natural aeration system and bacterial flora growth, the ARGO technology combines high-efficiency treatment using activated sludge and natural treatment processes using a biological bed. In addition, the bacterial flora emerging in the ARGO treatment is much more diverse, ensuring its higher efficacy. The ARGO technology is unmanned and uses no electricity. Moreover, it ensures high long-term treatment efficiency (as much as 95%). The solution can be adapted to locally produced tanks. It can be scaled up after many years have elapsed from the time when the treatment plant was built by adding new necessary elements. The ARGO treatment plant includes no electrical or mechanical elements and for this reason the service period has been extended to 3 years.

ADVANTAGES OF THE SOLUTION

- The operating technology without using electricity and mechanical elements (the energy intensity of the process is 0.00 kWh/d)
- A completely unmanned and quiet biological treatment plant
- A short start-up period (up to 24 hours)
- High resilience to variable wastewater inflows and high long-term treatment efficiency (95%)
- Very low sludge production, sludge removal from the treatment plant every three years
- Safe operation, a technology certified in the European Union (CE)
- Odourless treated wastewater can be discharged into rivers or lakes or can be re-used to irrigate farmland or orchards

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AQT WATER – BDT



BDT – gray water treatment plant

BDT treatment plants (grey sewage treatment plants) are designed for gray utility water with single or multi-family buildings. "Grey wastewater is fecal-free water (according to the European Standard 12056-1). In practice, this is non-industrial wastewater produced during water treatment, including washing dishes, bathing or laundry, may be useful to a limited extent for reuse. In a household, 50-80% of waste water can be used as gray water. Almost all the water that is used at home, from the translation of water after flushing the toilet, is suitable for use.

The system consists of: a primary settling tank, equipped with filters limiting the penetration of solid elements, and a bioreactor – equipped with a biofiltration bed, the active part of the treatment, where the removal of factors takes place.

ADVANTAGES OF THE SOLUTION

- The BDT system is easy to install and use.
- Installation does not require the device to be connected to electricity.
- All physical, biological and hydraulic processes take place passively without the need for external stimuli.
- The operating costs of the treatment plant are minimal and are limited to annual inspections of the device and possible cleaning of mineral suspensions and a small amount of organic matter.
- The procedure is identical to the operation and maintenance of a traditional household sewage treatment plant.

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AQT WATER – QUMKAM SBR



QUMKAM® SBR adaptive set

QUMKAM® SBR set is a high quality adaptive system dedicated for septic tanks, drainage treatment plants and cesspools. The implementation of the system can lead to the creation of a fully biological wastewater treatment plant, which is compliant with the European standard EN 12566-3 for any tank – concrete or plastic. Depending on the SBR type the QUMKAM® system guarantees a cleaning performance of up to 97,7% (BOD5) as well as 95,5% (COD).

QUMKAM® SBR is an advanced wastewater treatment plant operating on the basis of a low-capacity activated sludge technology in the SBR system (Sequential Batch Reactor) with an additional stabilising system for sewage sludge. The entire cleaning process is controlled by an automatic controller, which manages all operations of the treatment plant, such as aeration or sewage pumping by mammoth pumps. Such a solution enables the transition from a septic tank, drainage wastewater treatment plant into a fully biological wastewater treatment plant operating in accordance with the SBR technology, which is compliant with the European standard EN 12566-3.

The system is composed of only three elements, which can be assembled and prepared for operations in the septic tank in less than 60 minutes:

- SBR Controller,
- Solenoid Valves,
- Diffuser, Blower, Mammoth Pumps.

ADVANTAGES OF THE SOLUTION

- Fully automatic controlling system (plug&play) run through a telephone application.
- Silent and economic operations of the device, energy consumption up to 0,49 kWh/d.
- Easy assembly of the set in already existing or newly constructed septic tanks.
- Reliable operations confirmed by its application at over 5,000 treatment plants.
- High efficiency of wastewater treatment.
- Low costs of purchase and assembly.

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ASKET



Biomasser® – technology for briquetting moist agrobiomass

The Biomasser® technology is a proven solution dedicated to rural and agricultural areas, enabling local processing of annually renewable non-woody agrobiomass such as straw, hay, reed and other grassy plants. The system allows briquetting of raw materials with up to 30% moisture in a simple two-stage process - shredding and briquetting - without the need for prior drying. This reduces energy consumption and feedstock preparation costs, and the entire process runs without any additives or binders.

The result is natural briquettes with a calorific value of approx. 16 MJ/kg and a density of up to 600 kg/m³. A central hole improves airflow and ensures efficient combustion in boilers and stoves. The briquettes are uniform, compact, easy to transport and can be stored safely for many years.

Biomasser® technology supports a local circular economy: agrobiomass is processed on-site into briquettes used as fuel, feedstock for biogas plants, and as a product for animals - both for bedding and as a natural component of their diet. Ash remaining after combustion serves as a natural fertiliser, and briquettes used by animals can be composted or used in biogas production. In this way, organic matter returns to the soil, closing the nutrient loop within the local ecosystem.

Biomasser® machines are available in stationary and mobile versions, and their modular design allows increasing capacity by adding additional briquetting units. The technology contributes to reducing CO₂ emissions, conserving natural resources and limiting the use of firewood or coal. Its performance is confirmed by the EU Environmental Technology Verification (ETV) certificate.

ADVANTAGES OF THE SOLUTION

- Briquetting agri-biomass up to 30% moisture in a simple process.
- Stable briquettes, 16 MJ/kg, easy to transport and handle.
- Circular local resources – briquettes for fuel, bedding, and feed.
- Stationary and mobile lines with ETV-verified parameters.

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AUTORUN



Smart Energy Management System

Smart Energy Management System: an intelligent electrical energy management system. The technology is applicable to buildings and concerns the harmonized control of the flow of electricity between devices that produce, store and consume electricity. Electrical energy flow is managed with definable priorities aimed at increasing the ecology and comfort of the building's users. In the case of overproduction of electricity from PV installations, the surplus energy is first used to recharge energy storage or the battery of an electric car. A further priority with excess energy production is to use the energy to heat domestic hot water or to produce heat to warm the facility. When controlling energy flow (e.g. consumption), the system takes into account: the level of energy production, the presence of the building's occupants and the related current energy requirements for lighting and heating, as well as the current electricity tariff.

ADVANTAGES OF THE SOLUTION

- Management of energy flow between producers, consumers, and storage systems
- Increased user comfort
- Surplus energy management
- Consideration of multiple factors

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BIOCONTROL



SyEnergy

Satellite Platform as an Online Tool Supporting Origin Monitoring

SYeENERGY is a platform that uses satellite data to assess biomass (temporal analysis) and to estimate distances (spatial analysis).

SYeENERGY is a platform that uses satellite data to:

- determine the location of the initial acquisition of biomass/crops,
- determine the distance of biomass from the biomass production unit,
- identify the type of biomass,
- determine the status of the biomass – the condition of fruit trees, energy crops, and others,
- provide information on whether the biomass has been harvested and what the harvesting yield is (Mg/ha).

The aim of the SyENERGY project is to create a tool that supports the biomass origin control system, based on reliable data and providing significant savings in the level of internal resource involvement.

ADVANTAGES OF THE SOLUTION

- Significant reduction of field inspection costs
- Optimization of work processes and human resources
- Access to reliable, objective satellite data
- Reduced risk of abuses and fraud

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Biovalley

BIOVALLEY

r e s e a r c h

Clinibox

BioValley Research Venture Builder designs its own innovative technologies and products to solve real-world social and environmental problems. It develops applied projects for whole world. It commercializes projects through technology transfer to local partners or license sales, or through its own spin-offs. Interdisciplinary knowledge, organizational experience, and access to the latest scientific research allow development interdisciplinary projects in areas: med-tech, bio-tech, health-tech, defense, dual-use, food-tech, clean-tech, deep-tech and others. More can be found on website www.biovalley.org.pl To achieve its goals, the organization cooperates with universities, research centers and industry partners using the laboratories and other resources available there.

Re-vending machine for dual use application.

One application: two in one: Retail point of sale of plastic protective clothing for visitors in hospitals and point of return after use. This system improve hospitals' textile management and disposal, reduce the risk of patient infections in hospitals and reduce of solid waste in environment.

Second application: Retail point of sale of one day hygienic sets patients (women and man) of emergency wards. – ready for implementation.

ADVANTAGES OF THE SOLUTION

- Increase the quality of services in the hospital industry
- Decreased risk of diseases.

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BRAMY-SERWIS

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EkoMaster – eco-friendly high-speed doors

These are the first high-speed doors in Europe based on professionally refurbished controllers and drives, covered by a 24-month warranty – twice as long as the market standard.

The technology, developed by BRAMY-SERWIS, was designed in the spirit of the Circular Economy, combining longevity, reliability, and the ability to refurbish key components multiple times. The refurbishment process includes a complete replacement of all parts subject to degradation and mechanical wear, restoring the devices to their original performance and service life. Each controller is tested together with a refurbished drive, ensuring full compatibility, safety, and reliability.

EkoMaster doors were created as a result of over a decade of experience in servicing industrial doors. Knowing the strengths and weaknesses of most market solutions, the company set out to design a product free of typical operational problems, maintaining proven structural advantages while introducing its own innovations – such as integrated LED light columns built into the guides, which signal door movement. This feature enhances workplace safety and significantly reduces the risk of accidents in industrial environments.

EkoMaster has documented environmental benefits, developed through a research project in cooperation with a scientific institution. The analysis confirmed a significant reduction in CO₂ emissions and electronic waste thanks to the reuse of components and the extension of product life cycles.

Additionally, the design and technical documentation of the doors have been optimized to allow users to diagnose and fix minor issues on their own, minimizing downtime and reducing thermal energy losses in facilities.

ADVANTAGES OF THE SOLUTION

- 2× longer warranty on the controller and drive than the market standard.
- Renowned automation after refurbishment – same quality, lower cost.
- Design engineered for years of trouble-free operation.
- Innovative integrated warning lights – available only in EkoMaster doors.

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BTI GUMOWSKI



Rotary burner with special focus – ROTARY Plus burner with a rotary combustion chamber with an exhaust fan

This innovative burner with a rotating combustion chamber revolutionised the biomass market. Thanks to patented technologies, it solves key problems faced when operating pellet-powered heating devices and is almost maintenance-free, extremely economic and ecological. Our ROTARY burner is the first burner of this type on the market. This technology is protected by a patent of the Patent Office of the Republic of Poland. Currently, our range includes burner models from 3 to 300kW power. KIPI pellet burners are the ideal solution for anyone looking for an alternative heating method that is both ecological and economical. They are used both in new pellet boilers and for the modernization of existing oil-fired, solid-fuel coal and fine-coal boilers, as well as gasification boilers of class 3 and 4. It is a simple, efficient, and relatively inexpensive way to breathe new, eco-friendly life into a building's heating system.

ADVANTAGES OF THE SOLUTION

- Verification of sustainability criteria for biomass sourcing for energy purposes in accordance with the RED II Directive guidelines
- Use of renewable energy sources
- User convenience thanks to the self-cleaning mechanism
- Energy efficiency, easy burner control, and safe operation of the device

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Chef



Energy-efficient modular houses with heat recovery, heat pump and temperature control system “FreeNest”

There are several modular construction technologies available on the Polish market that are direct equivalents of ours, although they differ in key aspects such as construction materials, energy efficiency, and the ability to construct multi-story buildings. The advantage of our technology lies in the fact that most competing technologies rely on wooden or steel structures, which have limited durability and load-bearing capacity. Our technology, using prefabricated reinforced concrete modules, allows for the construction of multi-story buildings with full structural strength, which sets us apart from other available solutions.

ADVANTAGES OF THE SOLUTION

- Multi-story structures can be constructed thanks to their high structural load-bearing capacity.
- Greater durability compared to wood and steel structures.
- Weather resistance and longer building life.
- Structural stability allows for use in residential and commercial construction.
- Better insulation and acoustic performance compared to lightweight structures.
- Prefabrication technology shortens construction time and increases precision.

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Pyrolysis of tires using molten salt technology

We are pioneers in processing end-of-life tires through pyrolysis in a fully closed-loop system, making our technology unique on a global scale. Our process transforms used tires into refined carbon black and pyrolytic oil, which can be reused – for example, in the production of new tires – thus closing the material cycle.

A key element of our technology is an innovative heating system that uses molten salt as a heat transfer medium. The salt, melted in a dedicated tank, is circulated through the system, distributing heat evenly across the reactor before returning to the tank via a specially designed reheater. This approach ensures stable thermal conditions throughout the pyrolysis process, eliminating thermal stress and increasing operational safety. Precise temperature control guarantees consistent product quality, while the process itself enables the efficient recovery of valuable raw materials, reducing dependence on fossil fuels and supporting a circular economy.

Additionally, the technology used allows the use of pyrolysis products as an energy source in the process, which is why it is a closed process and is characterized by high energy savings. The carbon footprint of rCB is over 80% lower than its traditional counterpart.

ADVANTAGES OF THE SOLUTION

- Closed-loop system – full recirculation of raw materials: carbon black and pyrolysis oil can be reused, for example, in the production of new tires.
- Innovative liquid salt heating system – ensures stable thermal conditions, eliminates thermal stresses, and increases operational safety.
- Precise temperature control – guarantees consistent product quality and process efficiency.
- High resource recovery efficiency – reduces fossil fuel consumption and promotes a circular economy.
- Energy-efficient process – pyrolysis products can power the process itself, reducing the need for external energy sources.
- Significantly lower carbon footprint – pyrolysis carbon black has a carbon footprint over 80% lower than its traditional counterpart.
- Safe operation – thanks to stable thermal conditions and a closed energy cycle.
- Sustainability – reduces waste, emissions, and the use of recycled materials.
- Globally unique technology – a pioneering solution on a global scale in the field of tire pyrolysis in a fully closed loop.

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DAGAS – REDUXCO



REDUXCO

Dagas Sp. z o.o. is a manufacturer of the innovative REDUXCO catalytic activator, designed to optimize hydrocarbon fuel combustion processes. REDUXCO has been successfully tested in industrial conditions, including in combined heat and power plants and cement plants in Poland, Ukraine, Vietnam, Romania, Russia, and Indonesia, and has numerous references.

ADVANTAGES OF THE SOLUTION

- Increased thermal efficiency of equipment thanks to reduced excess air in the combustion process.
- Improved efficiency of boiler systems – no sintering on the heat exchange surface, better heat transfer, and lower maintenance costs.
- Reduced operating costs.

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DAGAS – DAGAS BIO



Biological Wastewater treatment plant DAGAS BIO

The biological deep wastewater treatment technology we offer uses the so-called “GPI biological carrier,” is based on polybiocenosis, and can be used in plants with a diverse range of activities, e.g., municipal, chemical, oil processing, paint, coke chemical, printing, food, yeast, etc. The biological wastewater treatment process developed by our company replaces traditional systems based on activated sludge or microorganisms immobilized on various types of beds with a developed surface area, e.g., rotating beds. The process can be used in the treatment of industrial, agricultural, municipal, domestic wastewater, as well as rainwater.

ADVANTAGES OF THE SOLUTION

- Fast implementation and commissioning
- Maximum flow rate - according to the customer's needs
- Minimization of losses and operating costs, high stability and reliability of the system
- Reactors are many times more durable compared to other solutions

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Ecopolplast

e'copolplast

Ecoplastomer®

Ecopolplast offers a novel solution called Ecoplastomer®, a fully circular thermoplastic material made from 100% post-consumer recycled plastic and recycled rubber crumb. This material significantly reduces environmental impact and CO₂ emissions – its production generates up to 69% less CO₂ compared to conventional plastomers, which is confirmed by Life Cycle Assessment analysis.

Ecoplastomer® eliminates the need for virgin fossil-based polymers, ensuring independence from crude oil, while delivering physical properties on par with traditional plastics. In practice, it allows manufacturers to replace standard plastic or rubber components with a high-performance recycled alternative, thereby cutting carbon footprint and waste.

Any product made from Ecoplastomer® can be recycled at least 5 times – this way, the recycled content we use does not go back to the landfill and stays in the closed loop.

Industries can integrate Ecoplastomer® into existing processes seamlessly, as it can be processed with the same machinery and techniques used for conventional thermoplastics. The material is compatible with standard injection moulding, FDM, welding, thermoforming, pressing and 3D printing, so no special equipment or process changes are required.

Ecoplastomer® products exhibit excellent bonding with paints and overmoulded parts, eliminating the need for any special surface pre-treatment before coating or assembly. This means manufacturers can adopt the material within their current production lines without disruption, leveraging it just like traditional thermoplastic material.

Furthermore, we provide digital product passports, allowing our clients to trace and calculate their CO₂ emissions.

ADVANTAGES OF THE SOLUTION

- Ecoplastomers production emits up to 69% less CO₂ than virgin plastomers.
- Reduction in injection cycle time provides up to 30% production cost savings.
- Digital product passports enable our clients to track and calculate their CO₂ emissions.
- Density and hardness are similar to traditional thermoplastics

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Bioreactors (CTBB) - innovative and economical air purification

Ekoinwentyka is a dynamically developing technology-consulting company that offers innovative solutions for environmental protection in particular the bio-elimination of volatile organic compounds (VOC), odors (including H₂S, NH₃), methane from exhaust gases generated in industry.

We offer individual turn-key installations with a Compact Trickle Bed Bioreactor (CTBB) using gas bioelimination processes, which guarantees the required reduction of pollutant resulting in the production processes.

Conducting the process in CTBB bioreactor at a low temperature (30°C) and under the atmospheric pressure results in many positive effects:

1. Low operating cost of the processes
 - a) low energy consumption
 - b) no need to use catalysts
 - c) small failure rate
 - d) lack of CO₂ and NO_x emission charges
2. Long plant life
3. Lack of explosion risks
4. High degree of pollution reduction
5. High ecological efficiency

We offer an innovative solution, characterized by a high degree of ecological efficiency and lower operating costs several times as compared with previously used technologies.

ADVANTAGES OF THE SOLUTION

- Lower energy consumption and operating costs compared to conventional technologies
- High purification efficiency of 90-99%
- High ecological efficiency - no secondary pollutants (e.g., CO₂ and NO_x emissions)
- No explosion hazard

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EKOTOP



Hybrid Sludge Dryers

Solar and hybrid sludge dryers are currently among the most sought-after and in-demand solutions for modifying the physical properties of sludge before final disposal. The principle of constructing solar dryers is based on the use of horticultural greenhouses, which have been in use for many years and are adapted in size to the technical equipment of the hall. The halls are galvanised steel structures covered with solar-permeable material: polycarbonate, polyethene film or glass. They usually have pitched roofs with hinged roof windows. Such dryers function by taking advantage of the greenhouse effect created inside the hall and, in the case of a hybrid, also of additional heat from non-conventional sources.

Free energy is all around us, whether it is the sun above us, the wind ruffling our hair, ground water, murmuring streams and rushing rivers or sewage flowing through the sewer pipe system. Guided by sustainability, efficiency and ecological operating principles, our dryers use only renewable and waste energy sources, taking into account location and economic considerations. Thanks to the systems used to support drying, such as heat pumps, the process can be carried out independently of weather conditions, throughout the calendar year.

ADVANTAGES OF THE SOLUTION

- The evaporation of 1 tonne of water requires only 20-30 kWh.
- The final product – dried sludge – takes the form of a granulate.
- Granulated sludge can be used agriculturally and energetically.
- Operation independent of weather conditions.

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EPP Pneumatic Pumping Station

Discover a Polish device for pumping sewage with compressed air, compliant with the PN-EN 12050-1 standard.

EPP is a reliable and durable alternative to traditional sewage pumping stations equipped with submersible pumps. EPP units are designed for conveying municipal wastewater in pressure sewer systems. They are not part of a vacuum sewer system, which operates in the opposite manner to the pneumatic sewage transport system. The pumping process takes place without the use of traditional pumps - only compressed air is used, allowing the system to achieve very high efficiency. The EPP system consists of a retention tank, a concrete dry chamber, and a technological container. The individual components of the system are not submerged in sewage, and the concrete tank itself does not come into contact with it. This design effectively protects the installation from degradation and significantly extends its service life. In traditional sewage pumping stations, failures most often involve the pump impeller. The EPP pneumatic pumping station eliminates the use of pumps, which greatly reduces the risk of breakdowns and lowers operating costs. Moreover, EPP offers odor-free operation and easier maintenance. Regular flushing of the pipeline with compressed air prevents sewage stagnation and the resulting release of unpleasant odors. In addition, locating the technological components in a container and a dry chamber allows operators to avoid direct contact with sewage during maintenance work.

ADVANTAGES OF THE SOLUTION

- Eliminate residents' complaints about odors by preventing sewage from rotting
- Reduce investment costs thanks to higher efficiency
- Cut service costs thanks to lower failure rates and easier maintenance
- Choose an eco-friendly solution that solves several problems at once

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ENALPHA



PWR Ability

The proprietary PWR Ability system brings together customers with potential producers of green energy. The PWR Ability solution allows increasing energy efficiency and reducing the costs of running your business.

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Enerko Energy – Archimedean screw



Archimedean screw

For owners of small hydro plants and other investors planning a construction or a modernization of small hydro plants, we offer individually designed Archimedean screw with an active fish-ladder. : The uniqueness of the adopted solution consists in the use of a system of two Archimedean screws, in which one (descending line) produces electrical energy and the second (ascending line) transports the ichthyofauna up the river course. The descending line produces a few times more energy than it is needed for the operation of the ascending line. As a result, the system has a positive energy balance, and the excess green energy may be commercialized and constitute a source of income.

The Archimedean screw manufactured by the company Enerko Energy Sp. z o.o. with an active fish-ladder is dedicated to micro and small water power plants. It may be used with very low waterflow. Such features as: open structure, large operational space filled with water, open no-pressure system, low turbulence level or low rotational speed make it a silent and environmentally sound technology. As a result, the technology can be used in protected natural areas, because it satisfies rigorous environmental requirements. The structure of the screw enables the reduction of costs related to the construction of foundations for the hydroelectric generating set during the assembly works and later operation. Moreover, such type of fish-ladder reduces significantly the area it occupies and the consumption of materials.

ADVANTAGES OF THE SOLUTION

- Individual solution for rivers with variable water courses and low waterfalls
- Can be used in protected natural areas, including rivers with protected fish species
- Easy operation, low maintenance costs
- High energy efficiency of the water trail

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Enerko Energy – IOZE Rivus



IOZE Rivus

The innovative turbine from IOZE hydro has been designed to make the use of hydro potential more widespread in locations that were previously considered uneconomic or difficult to develop. Unlike traditional generation systems, which require a significant amount of costly civil works, our compact submersible hydropower technology – IOZE Rivus offers exceptional simplicity of installation and minimal interference with existing infrastructure. This makes the investment much more cost-effective and efficient.

ADVANTAGES OF THE SOLUTION

- Lower construction costs due to fully submersible design
- High efficiency even at very low hydraulic heads
- Flexible installation across diverse site conditions
- Automated SCADA control with minimal maintenance needs

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ViaZone – Mobile Traffic Management System

ViaZone is an intelligent mobile traffic management system designed to enhance safety and traffic flow in roadwork zones and temporary traffic arrangements. It integrates radar sensors, cameras, meteorological stations, and wireless communication modules (Bluetooth/Wi-Fi) to collect and analyze real-time data on traffic volume, speed, queue length, travel time, and weather conditions.

Using advanced algorithms, ViaZone dynamically displays warnings, speed limits, congestion information, and lane recommendations on Variable Message Signs (VMS). This real-time guidance improves driver awareness, reduces the risk of collisions, and minimizes traffic delays.

The system features a modular and flexible architecture, allowing integration with various ITS devices and adaptation to diverse road environments. Its portable and energy-efficient design ensures full autonomy and fast deployment without the need for permanent infrastructure. The system can be relocated within minutes, minimizing risks for installation crews and reducing operational costs.

ViaZone delivers a measurable improvement in road efficiency — enhancing traffic harmonization and flow by up to 40%. It helps road operators, municipalities, and contractors maintain safety and continuity of transport during construction and maintenance works, while contributing to lower emissions and better mobility management.

ADVANTAGES OF THE SOLUTION

- Dynamic traffic management for roadwork and temporary zones
- Real-time data integration from radar, cameras, and weather sensors
- Fully mobile, modular, and energy-efficient design
- Up to 40% improvement in traffic harmonization and flow

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FARDATA – Enviro Station



Enviro Station – Comprehensive Environmental Monitoring Station

Enviro Station is an advanced environmental monitoring system designed to measure air quality, noise, and meteorological parameters. It combines multiple sensing technologies within a single compact housing, providing a complete picture of environmental conditions in real time.

The system includes gas sensors (e.g., CO, NO₂, SO₂, O₃, H₂S), particulate matter sensors for PM₁₀, PM_{2.5}, and PM₁, and weather modules for temperature, humidity, pressure, wind speed, and wind direction. Enviro Station automatically maintains optimal operating conditions for its sensors, ensuring accuracy and long-term stability even under changing weather conditions.

Positioned in the near-reference class, it offers an ideal balance between cost and measurement quality—delivering performance close to reference-grade systems at significantly lower installation and maintenance costs.

Its modular and flexible architecture allows seamless adaptation to different applications, from Smart City and transport infrastructure to industrial sites, agriculture, and research. Data is transmitted to the cloud and visualized in real time, enabling advanced analytics, alerts, and integration with ITS and environmental management platforms.

With over 20 years of experience in precision measurement technologies, we have created a system that combines reliability, simplicity, and professional-grade performance—supporting cities, industries, and institutions in achieving cleaner, more sustainable environments.

ADVANTAGES OF THE SOLUTION

- Comprehensive monitoring of air quality, noise, and weather parameters
- Near-reference accuracy with significantly lower operating costs
- Modular and flexible design for diverse applications
- Over 20 years of expertise in environmental measurement systems

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Pocket Air Filters in Galvanized Steel Frames with Replaceable Media – Durability, Efficiency, Circularity

This technology consists of pocket air filters mounted in galvanized steel frames with replaceable filter media, offering a durable, energy-efficient and circular solution for HVAC systems. The robust steel frame replaces traditional plastic or thin aluminum housings, allowing multiple reuses during media replacement and significantly reducing waste generation. This extends the product lifecycle, lowers operating costs, and supports sustainable resource management.

The replaceable pocket media are easy to remove and install, shortening maintenance time and minimizing system downtime. The optimized pocket geometry ensures low pressure drop, improving energy efficiency and reducing the load on fans. At the same time, the filter maintains high efficiency in capturing dust and airborne contaminants, contributing to healthier and safer indoor environments.

The steel frame is fully recyclable, and the filter media can be easily separated during disposal, aligning the solution with circular-economy principles. The reduced consumption of single-use materials lowers environmental impact, carbon footprint, and waste streams associated with HVAC filtration.

The technology is suitable for commercial buildings, public facilities, paint shops, logistics centers, laboratories, hospitals, and any spaces requiring reliable air purification. It provides a practical, cost-effective innovation that combines durability, energy performance, and environmental responsibility without compromising filtration quality.

ADVANTAGES OF THE SOLUTION

- Reusable steel frame – reduced waste and lower lifecycle costs.
- Replaceable media – faster servicing and minimal downtime.
- Low pressure drop – improved energy efficiency in HVAC systems.
- High durability and full recyclability of core components.

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FortiFuits



Fruit elicitation in the production of fruit juices, extracts and purees

Fruit elicitation is a natural method that allows for better use of local fruit and relies on natural resources. The new technology increases fruit utilization through natural processes, which supports biodiversity conservation. Furthermore, the new technology eliminates chemicals used in food production and E additives. The new technology will reduce greenhouse gas emissions from rotting fruit by extending the shelf life of fresh fruit. The new technology is energy-efficient – energy consumption is 60% lower, yet the effect is the same. We offer equipment for eliciting fresh fruit and vegetables. Our equipment operates in the orchard, near the cold room. The equipment is used for the production of organic and conventional fruit and vegetables. The elicitation process takes 30 minutes. One device is sufficient to elicit 50 tons of fresh fruit on pallets per day. The fruit is then used to produce juices. The juice has a very intense color. The pomace from the juices is rich in polyphenols, which significantly improves the quality of fruit purees. One improvement in orchard juice processing is improving the quality of fruit juices and purees.

ADVANTAGES OF THE SOLUTION

- It allows you to obtain 61% more anthocyanins per 1 kg of elicited fruit instead of 1.6 kg of raspberries.
- Increase the polyphenol content in fruit purees by 60%, which were previously wasted.
- Extracts from elicited fruit eliminate 100% of E additives from food.
- Reduces energy consumption by 60% in the technological process.

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IDEALBIN



Idealbin – an intelligent system supporting selective waste collection

Idealbin – a comprehensive smart system for selective waste collection, delivering efficient and sustainable waste management through cutting-edge technology. The intelligent bins, combined with a dedicated mobile app, provide an effective tool for residents, waste collection companies, property managers, and municipalities.

Access is restricted to authorised users via RFID card or app (paperless solution), completely preventing illegal dumping and enhancing urban aesthetics. Based on the KAYT (Know-As-You-Throw) principle, the system weighs every deposit, monitors waste quantity and type, and verifies correct segregation. Real-time feedback motivates users to sort properly and significantly boosts recycling rates. A built-in compactor reduces waste volume, allowing far more efficient bin utilisation and reducing the space needed for collection points. IoT technology continuously tracks fill levels and instantly transmits data to operators, enabling optimised collection schedules and routes. Idealbin bins feature a modern design and full accessibility thanks to an innovative low-level insertion chute tailored for people with disabilities. They can be solar-powered or equipped with living green roofs, making them a striking element of eco-friendly architecture in housing estates, corporate campuses, and shopping centres.

ADVANTAGES OF THE SOLUTION

- Waste compression – up to 4× reduction in volume
- 20–35% savings on transport costs thanks to dynamic emptying
- Significant increase in waste sorting and users' environmental awareness
- Full accessibility for people with disabilities

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The Institute of Power Engineering - National Research Institute



Stack of solid oxide cells (SOC) designed to generate hydrogen or electricity

Depending on the end user's needs, the SOC stack can operate as an electricity and heat generator — in fuel cell mode (SOFC) — or as a hydrogen generator in electrolyzer mode (SOE). Moreover, the developed technology can function in a reversible mode, meaning it is possible to switch between SOFC and SOE operation (rSOC), which enables the use of the SOC stack system as an energy storage device.

SOC stacks operate at high temperatures in the range of 650–750 °C, which results in high efficiency, allows for thermal and process integration with various industrial facilities or production lines, and enables the use of not only hydrogen but also other fuels — such as methane or ammonia — during operation in SOFC mode.

One of the distinguishing features of this technology is its modular design — the stack consists of repeatable units that, when combined and multiplied, allow for higher power output (in SOFC mode) or increased hydrogen production (in SOE mode). The modularity of the solution provides virtually unlimited scalability of SOC-based systems, enabling adaptation to specific market applications and desired functionalities.

It should also be emphasized that the SOC stack developed by the Institute of Power Engineering is manufactured using innovative and zero-waste techniques for forming its components. The developed technology represents an attractive alternative to foreign solutions of this type, offering comparable performance parameters while featuring a more compact design and lower production costs — the latter achieved through the implementation of automated manufacturing processes. Competing solutions do not employ ceramic injection molding or 3D printing methods.

ADVANTAGES OF THE SOLUTION

- High efficiency compared to analogous low-temperature solutions
- Multifunctionality – ability to operate in fuel cell or electrolyzer mode
- Modular design (system power scalability – power increases with the number of stacks)
- Use of zero-waste methods in the preparation of SOC stack components

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The Institute of New Technologies in Environmental Engineering – Climate Garden



Climate Garden

Climate Garden is an innovative nature-based engineering solution that combines the functions of a rain garden, pocket park, and biofilter within a single multifunctional system. It represents a model example of modern blue-green infrastructure (BGI) that supports local adaptation and mitigation strategies in response to climate change.

At its core lies an advanced infiltration-retention system consisting of a carefully designed soil profile, filtration and drainage layers, and hydrophytic vegetation. This system enables effective stormwater retention, infiltration into the ground, and pollutant removal while reducing surface runoff and pressure on sewer systems.

Climate Garden also functions as an active microclimate regulator — it cools the surrounding area through evapotranspiration, improves air quality by capturing dust and gases, reduces noise, and enhances overall thermal comfort. The solution supports the circular economy by enabling on-site rainwater reuse for irrigation and converting biodegradable waste into compost that enriches the soil.

By integrating ecological and engineering processes, Climate Garden enhances biodiversity, provides habitats for pollinators, and creates attractive, educational, and recreational spaces. This Polish innovation demonstrates how sustainable design can simultaneously improve water management, environmental quality, and community resilience to the impacts of climate change.

ADVANTAGES OF THE SOLUTION

- Efficient stormwater management and local water retention.
- Improved air quality, microclimate, and urban comfort.
- Nature-Based Solution (NBS) integrating ecology and engineering.
- Closed organic matter cycle and reduced CO₂ emissions.

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The Institute of New Technologies in Environmental Engineering – Hydrophytic Bioreactor



Hydrophytic Bioreactor

The Hydrophytic Bioreactor is an innovative Polish environmental biotechnology designed for the treatment of wastewater and stormwater through natural bio- and phytoremediation processes. The system utilizes aquatic plants, microorganisms, and optimized filter media to form a self-sustaining ecosystem that effectively removes pollutants while maintaining low operational costs and minimal environmental impact.

Depending on configuration and local conditions, the bioreactor operates in low-energy or fully passive mode. Its modular design allows flexible adaptation to diverse scales, climates, and land-use conditions, supporting municipalities and industries in achieving sustainable water management.

The technology aligns with the principles of the circular economy, climate change adaptation, and biodiversity protection, making it a valuable component of long-term environmental strategies. When integrated into public or industrial areas, it serves as part of blue-green infrastructure, providing additional retention capacity, aesthetic enhancement, and educational opportunities.

Developed through years of scientific research and extensive field implementation, the Hydrophytic Bioreactor represents a proven synergy of nature and technology. Originating from Polish innovation, it demonstrates how biotechnology can effectively contribute to cleaner water, resilient ecosystems, and sustainable urban development.

ADVANTAGES OF THE SOLUTION

- High purification efficiency – removes over 95% of pollutants.
- Low construction and maintenance costs, fast implementation.
- Eco-innovation based on five patented solutions.
- Over 10 years of operation and nearly 7,000 installations.

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IZODOM



IZODOM technology

Izodom manufactures and supplies solutions for the construction of modern, highly energy-efficient and passive houses. Initially, the company's production was based on a system of basic polystyrene shapes used for constructing structural walls. In subsequent years, it expanded its product range, introducing various thicknesses of wall elements. It also introduced a foundation slab and a roof insulation. The company currently offers its clients a comprehensive system for building houses using IZODOM technology.

The company's mission is to provide technologies and products that enable the faster construction of durable, healthy, and environmentally friendly homes and buildings, with the lowest maintenance costs. The globally unique energy-efficient construction system developed and promoted by Izodom 2000 Polska is based on the permanent formwork method, while the innovative solutions adopted by the company are based on construction speed, exceptional durability, and the ability to reduce heating energy demand to virtually zero. Construction allows for exceptionally fast construction thanks to the simplicity of construction, reminiscent of LEGO bricks. Thanks to this business concept, the company is currently the undisputed leader among European suppliers of advanced technologies for passive construction. It is worth noting that it has become the only manufacturer of complete passive house construction technology in Europe.

ADVANTAGES OF THE SOLUTION

- IZODOM technology significantly reduces heating bills by up to 80%
- Building construction is three times faster than with traditional technology
- A house built with IZODOM technology reduces CO2 emissions by up to half
- The durability of a building constructed with IZODOM is estimated at 150 years!

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KGWE



Mining Hydrogenerator delivery system

The technology for delivering a hydrogenerator to the Boże Dary Mine. The device was installed at a level of -400 meters below ground level. It is the world's first underground high-head hydroelectric power plant. It generates approximately 180 kW of energy year-round using water discharged from an underground reservoir from a level of -200m to -400m. The device is the first solution for recovering water energy in mines.

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KSK Developments – Smart Dual-Sensor Parking Management System



Smart Dual-Sensor Parking Management System

A parking space management system based on magnetic sensors with radar confirmation is an advanced IoT solution designed to monitor parking spaces in indoor and outdoor parking lots. Each sensor integrates two independent detection modules: a magnetic field sensor, which responds to disturbances caused by the presence of a vehicle, and a miniature Doppler radar, which confirms space occupancy, eliminating false positives resulting from environmental interference. The dual measurement path significantly increases detection reliability and enables operation in diverse weather conditions.

The devices communicate wirelessly using LoRa technology, utilizing long-range modulation with minimal power consumption, allowing for years of battery-powered operation. Transmission occurs in an unlicensed band, enabling broad system scalability without the need for costly telecommunications infrastructure. Data from the sensors is sent to an IoT server, where it is aggregated and analyzed, and then made available to operators via APIs or dedicated applications. The technology enables real-time occupancy monitoring, dynamic traffic management, optimization of paid parking zones, and generation of precise statistical data supporting urban planning. The system can be integrated with Smart City platforms, information boards, mobile applications, and payment systems. Thanks to its modular architecture and high reliability, it is an effective tool for managing parking infrastructure in cities, airports, shopping malls, and other facilities with high vehicle turnover.

ADVANTAGES OF THE SOLUTION

- Highly accurate thanks to dual magnetic and radar detection.
- Long-lasting battery life thanks to long-range LoRa transmission.
- Quick installation without any infrastructure disruption or cabling.
- Precise, real-time data supports traffic management.

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KSK Developments – IoT system for monitoring biochemical processes in compost heaps



IoT system for monitoring biochemical processes in compost heaps

An IoT system for monitoring exothermic biochemical processes in compost piles was designed to automate composting supervision at waste treatment plants. The technology is based on cableless environmental sensors that measure key process parameters: temperature, humidity, and oxygen content. The sensors are resistant to harsh operating conditions and can be installed directly in the piles, providing precise data from various depths and stages of composting.

The sensors communicate using LoRa technology, which enables data transmission over many kilometers with minimal power consumption. This solution eliminates the need for cabling, allowing for complete flexibility in sensor placement and long-term battery operation. Data is transmitted to an IoT platform, where it is analyzed, visualized, and archived. The system enables the creation of alarms for critical values, the detection of process deviations, and the generation of automatic reports compliant with environmental requirements.

The technology ensures continuous monitoring, increases the safety of the composting process, and supports the maintenance of stable thermal conditions essential for the proper functioning of biochemical reactions. It enables optimized pile management, faster response to irregularities, and reduced operating costs by reducing the need for manual measurements. The system is a modern tool supporting the ecological, efficient, and fully controlled processing of organic waste.

ADVANTAGES OF THE SOLUTION

- Continuous measurement of key composting process parameters.
- Stable LoRa connectivity enables long-range monitoring.
- Eliminates cabling and provides long-term battery operation for sensors.
- Early detection of irregularities and automatic alerts.

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Sultech® - technology for the neutralization of solid industrial waste

Marbet Wil offers innovative technical solutions protected by patents that facilitate the recovery of hazardous industrial waste. This is achieved by stabilizing the waste with Sulstar® sulfur polymer and solidifying it into products suitable for railway, road, and hydraulic engineering.

Sultech® technology converts industrial waste such as: slag, dust, and ash, into valuable and safe products, aligning with the principles of a circular economy. The waste-based Sultech® composite is a thermoplastic material that boasts high mechanical strength and is fully resistant to corrosion in harsh environments, including concentrated acids, seawater, sewage, and brine. Its impressive performance parameters make it suitable for various applications in hydrotechnical construction and road and railway projects, such as counterweights, drainage systems, sea defenses, curbs, road barriers, and road slabs.

The Sultech® technology effectively addresses the issue of solid waste, including dust, ash, sand, and slag, thus eliminating the need for landfill disposal. The process of stabilizing and economically utilizing hazardous industrial waste within Sultech® polymer concrete is particularly valuable for managing waste that contains heavy metals, which are chemically transformed into water-insoluble sulfides. Other materials are integrated into the final matrix and encapsulated in a non-absorbent, airtight substance.

Benefits of this solution include:

- Eliminating the costs and technical challenges associated with storing hazardous waste
- Freeing up land designated for landfills
- Transforming waste into safe and useful products
- Achieving 100% product recycling
- Maintaining a low carbon footprint
- Ensuring a low water footprint.

ADVANTAGES OF THE SOLUTION

- The production process does not involve any water or cement,
- Features a low carbon footprint and low water footprint,
- Offers high mechanical strength, corrosion resistance, no water absorption, and excellent frost resistance.
- Offers 100% recyclability of the material.

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MetalERG



Ekopal Boilers – Ecological boilers fired by whole straw bales

Ekopal RM and RS are batch-fired straw boilers with outputs from 100 to 2000 kW, with the option to connect units in series. They provide fast, high-efficiency combustion. The burn rate is controlled by a processor that maintains optimal combustion conditions. Excess heat not absorbed by the system is stored in an accumulation tank.

The boilers feature a high-pressure fan with an automatic damper and a microprocessor control system that regulates straw combustion according to preset parameters. The lower part of the combustion chamber is refractory-lined, enabling controlled gasification with limited oxygen. The produced gases pass into a second refractory-lined chamber, where they mix with secondary air before entering the heat exchanger. This patented counter-flow combustion system ensures proper gasification, complete combustion, and low CO emissions.

Ekopal boilers operate only in open systems and must be installed with an accumulation tank. Boiler selection should be based on maximum heat-exchange surface rather than nominal output. A correctly sized unit typically requires 2–3 straw loads per day.

Straw-fired systems offer strong economic benefits. Straw burns completely, and the generated heat is stored for later use. Heating a typical 200 m² single-family house requires about 8 t of straw per season.

ADVANTAGES OF THE SOLUTION:

- Cheap and local fuel: can be obtained anywhere. It is fully renewable.
- Easy to use: no special licenses or skills required.
- Energy independence: we are not dependent on coal or gas prices; fuel is always cheap.
- Quick return on investment: compared to coal, gas, or heating oil.

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PETROSTER



TANK CONTROL – centralised risk management system for explosive and dangerous liquids

2AK Tank Control enables you to monitor the storage of liquid explosives. It is a convenient and reliable tool dedicated for Environment Protection Departments. The data readings from the control systems have been supplemented with their recordings and reporting. Its greatest advantage is a constant, remote and safe monitoring of tank tightness in order to prevent a potential leak of dangerous substances. It helps you to create environment safety management policy.

ADVANTAGES OF THE SOLUTION

- Intuitive and simple reading of the amount of liquid inside the tank
- Cloud-based scalable solution
- Management of explosion-proof protection
- Reduction of dangerous, flammable and toxic liquids vapour emissions to the atmosphere

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PETROVISION



GPS Tracking System; GPS Container Tracking

GPS Tracking System is high quality technology based on the highest quality components. Top-quality technology and materials are used in design and production (no sneaky savings). GPS TRACKING SYSTEM uses of a sufficiently long battery backup and a large memory for the best and accurate operation of the device with saving 100% of the acquired route data and vehicle parameters (no data loss).

ADVANTAGES OF THE SOLUTION

- Unprecedented accuracy of 0.5-1.0 m,
- API for each application,
- very low operation costs and costs of system use by the customer,
- dividing log for settlements with the tax office,
- customer-friendly interface.

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PHOTO SURVEY



Power Maize Collector - clean energy technology from biomass

The technology of green energy obtained from agro biomass, i.e. agricultural residues.

The system for obtaining an innovative fuel – corn cob cores – Power Maize Collector – works in tandem with an ordinary corn harvester – like a trailer, but with a special system for selecting and collecting corn cob cores.

We are a supplier of a comprehensive system: a fuel collector and a cogeneration power plant.

A mini power plant based on the gasification process – gasification is a reactive process that uses the energy of organic matter (biomass) and converts it into syngas, the so-called syngas. This syngas is a kind of fuel for the generator - ultimately we get electricity and heat.

The installation works continuously and is easy to adjust. Installation power: from 100 kW to 50 MW.

The side effect is biochar – a valuable substance that improves soil properties and contains a large amount of CO₂ from the atmosphere. Biochar improves soil properties, and supports water and air management, especially in degraded soils.

Our process is zero-emission and even negative-emission. One ton of biochar contains 3 tons of atmospheric CO₂.

ADVANTAGES OF THE SOLUTION:

- energy from agricultural residues
- zero-emission process
- locality and independence from external energy sources – the fast rate of return on investment

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Smol Power Iron LTO

Smol Power Iron LTO is a modular energy storage system using advanced lithium-titanate (LTO) batteries, known for exceptional durability and safety. Each module includes two 3.4 kWh battery packs and an automation control unit. LTO batteries offer up to 30,000 charge-discharge cycles, far exceeding traditional batteries. Thanks to the unique lithium titanate anode structure, the system operates reliably in extreme temperatures and supports high currents up to 10C, enabling fast charging and discharging. Our proprietary active cell balancing (2A per cell) ensures voltage stability and high efficiency. The robust 10 mm aluminum housing effectively dissipates heat, preventing overheating.

The system supports up to 10 units connected in parallel via an inverter, allowing scalable installations tailored to user needs. It can store energy for later use and provide network services such as frequency regulation (e.g., aFRR), helping maintain grid stability. Designed for prosumers, small businesses, and public institutions, Smol Power Iron LTO offers an eco-friendly, safe, and efficient solution for cost optimization and energy independence.

ADVANTAGES OF THE SOLUTION

- Durability up to 30,000 cycles,
- Resistance to extreme temperatures,
- Fast charging up to 10C,
- Active cell balancing at 2A per cell,
- The ability to connect up to 10 sets, allowing flexible system scaling,
- The product is eco-friendly and safe.

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PROMAR



imperius®

imperius® is designed for institutions implementing Smart City and IoT projects. In addition to reducing energy and water consumption, it ensures the safety and improvement of the operation of building installations and supply area.

Advantages of the technology

- imperius® is a IoT cloud solution that integrates various technical installations, including measure devices, sensors and controllers responsible for control of buildings.
- imperius® also supports advanced data analysis, that leads to optimization and effective management of energy and water consumption in buildings.
- Remote access from any place at any time to all supervised facilities, buildings and installations.

Users of the technology

- Local governments
- Public institutions
- Universities
- Department stores and retail chains
- Industrial factories

ADVANTAGES OF THE SOLUTION

- imperius® is designed for institutions implementing Smart City and IoT projects.
- In addition to reducing energy and water consumption, it ensures the safety and improvement of the operation of building installations and supply area.

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PROMONT



Installation for thermal treatment of medical, industrial, veterinary and hazardous waste with heat recovery and electric energy production

The installation for the thermal treatment of medical, industrial and veterinary waste is based on rotary kiln technology with an afterburning chamber, connected to recovery boilers for heat recovery and an exhaust gas treatment system.

The rotary kiln, known as the gasification chamber, is where the gasification (combustion) of waste takes place. During the gasification (combustion) process, the waste breaks down into solid and gaseous products. The gas produced in the gasification chamber passes into the afterburner chamber. Behind the afterburner chamber, energy is recovered in the form of steam. This steam can be used to produce heat for industry or district heating networks, electricity and cooling. In the next stage, the exhaust gases are purified in an exhaust gas purification system. The installation meets the highest European requirements for emissions into the atmosphere. After purification, clean gases are released into the atmosphere through a chimney.

ADVANTAGES OF THE SOLUTION

- The most effective method of hazardous waste disposal
- Generation of energy, heat and cooling combined with waste disposal
- The most stringent emission standards
- The user earns money by accepting fuel for the installation and does not have to pay for it

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PROTE – PROTE-MOS



Technologies for our Environment LLC

Sludge minimization PROTE-MOS

The proprietary PROTE-MOS technology is designed to control the wastewater treatment process at existing facilities. It creates optimal conditions for the plant's activated sludge, increasing microbiological diversity in its ecosystem and facilitating dominance of stronger organisms that adapt more easily to the conditions created with PROTE-MOS. The measurable effects are: reduction of the amount of excess sludge produced, improvement of the quality of treated wastewater (especially with regard to nutrient elements) using a purely biological stimulation, reduction of the consumption of chemical reagents, including the possible complete cessation of dosing coagulants, and increasing the stability of the treatment plant's operation – increasing the resistance of the facility to variable pollution loads. The PROTE-MOS technology can be easily implemented at existing facilities, bringing immediate economic and environmental benefits.

ADVANTAGES OF THE SOLUTION

- PROTE-MOS limits sludge formation by 20%-73%.
- It optimizes the process of wastewater treatment, which leads to measurable environmental and economic benefits.
- This technology improves the quality of effluent, reduces electricity consumption and carbon footprint, as well as chemical reagent use.

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PROTE – PROTE-FOS



Technologies for our Environment LLC

Lake research and reclamation PROTE-FOS

The patented PROTE-FOS technology has been designed to permanently solve the problem of algal blooms in water reservoirs. It is a comprehensive service dedicated to private and public entities that own or manage water reservoirs affected by progressive eutrophication. The reclamation process is carried out using the dedicated, innovative 2-module vessel PROTEUS, engineered by PROTE. The PROTE-FOS technology halts cyanobacteria-related phytoplankton blooms, improving water transparency. PROTE's proprietary solution stimulates natural processes occurring in the aquatic ecosystem, facilitating restoration of its previous biological balance, provided there is no inflow of nutrients from external sources. Technology involves phosphorus blockage in the reservoir's bottom sediment during its controlled resuspension, followed by its permanent consolidation. Inactivation of phosphorus in the sediment prevents the re-bloom of the water.

ADVANTAGES OF THE SOLUTION

- PROTE-FOS restores the natural balance of aquatic ecosystems.
- Its efficiency has been scientifically proven and field-verified.
- PROTE-FOS can be implemented over lakes and overseas areas.
- PROTE-FOS, unlike alternative invasive methods, does not affect ecological processes naturally occurring in the aquatic ecosystem.

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PROTE – SYMBIO

PROTE

Technologies for our Environment LLC

Water biomonitoring SYMBIO

The SYMBIO biomonitoring system from PROTE is an early warning system for detecting contamination of drinking water. It combines a natural, reliable method of bioindication, based on the reaction of living organisms called bioindicators, with modern technology that enables automatic water monitoring and data recording. SYMBIO sets the current standards for water safety. The system works based on bioindication. Eight specimens of the species *Unio tumidus*, placed in the SYMBIO flow-through tank, are equipped with a measuring probe that records every movement of each mussel's shell. The natural biorhythm of a mussel is comparable to a human ECG. Any change in the mussels' behavior is recorded and visualized, and in the event of a water contamination hazard, the system automatically generates an alarm and sends it directly to the personnel operating the critical infrastructure, according to the facility's crisis management procedures.

ADVANTAGES OF THE SOLUTION

- SYMBIO protects critical infrastructure.
- It increases the sense of security of the potable water users.
- It is maintenance-free for its operators.

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SEEDiA



jCharge – autonomous charging station

jCharge is an innovative, modular, and autonomous charging station for electric scooters and bicycles, designed for modern cities developing micro-e-mobility systems. The solution integrates charging functionality, secure storage, and intelligent energy management, responding to the needs of rapidly growing Smart City infrastructure.

The station has been engineered to operate in both off-grid and on-grid modes, enabling installation in almost any location — without the need for connection to an external power network. Its high energy autonomy is ensured by efficient photovoltaic panels and dedicated control electronics that optimize energy collection and distribution depending on weather conditions and station load.

In its standard configuration, jCharge offers 4 charging points, though its modular architecture allows easy scaling to a larger number of stations depending on the needs of the operator, municipality, or private investor. Each charging point is integrated into an individual post equipped with a secure locker, allowing users to safely store their scooter or bike during charging or rental.

The stations are managed through the Incity.io platform, which enables monitoring of battery charge levels, correct locker operation, number of plug-ins and charging sessions, user activity, and overall energy consumption. This gives clients and operators full control over the station's performance and operation. The UrbMap application allows users to reserve available charging posts, scan QR codes, and unlock lockers once the charging session is complete.

ADVANTAGES OF THE SOLUTION

- Modular design enabling easy expansion.
- Off-grid mode allowing installation anywhere.
- Secure lockers for storage during charging.
- Integrated management and reservations via Incity.io and UrbMap.

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Segregate



Municipal waste selective collection system

Segregate is a technology designed to support selective municipal waste collection in multi-family buildings. It leverages remote monitoring and identification systems to improve segregation efficiency and accurately assign waste to specific apartments.

The system operates using RFID access cards — residents use them to enter the waste enclosure. This allows the system to identify which household is disposing of waste at a given moment and then automatically assign the used bags to the correct apartment. Additionally, Segregate bags have unique identifiers, enabling automatic linkage to both waste fractions and specific units.

The offering includes a modular structure. Depending on the needs, the basic version can be deployed or expanded with additional features such as video monitoring (minimum two cameras), automatic waste-fraction assignment, fill-level sensors, or a scale.

The system is also integrated with an online application, giving residents access to their individual ecological impact and enabling municipalities to monitor segregation performance in real time.

Segregate is relatively cost-efficient compared to competing solutions, and the bags are priced at market level. A nationwide service network facilitates implementation in various locations — housing associations, developers, and municipalities.

The benefits of implementing Segregate are multidimensional: municipalities can better meet recycling targets, housing communities gain a solution that eliminates collective responsibility, and residents benefit from transparency and a sense of environmental contribution. The system effectively supports an eco-friendly, responsible waste-management process in multi-family housing environments.

ADVANTAGES OF THE SOLUTION

- Use of existing infrastructure – no need to replace containers or build new waste enclosures, which reduces implementation costs.
- Precise assignment of waste to individual users.
- Sealed and controlled process – the system ensures full transparency and oversight of waste disposal.
- Ease of use - for users and waste services co.

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Solcraft



Solverter®

Solverter® is a roof heat pump system based on the proprietary Thexpan® sandwich panel. The integration of coil pipes with the exterior metal sheet creates a heat exchanger that allows connection to heat storage tanks and a heat pump. In practice, this means that on sunny days Solverter® provides the energy needed to heat domestic hot water and support central heating—without the need to run the heat pump. On days without sunlight, Solverter® draws on the thermal energy in the air. This heat, transferred by the glycol circulating in the exchanger, supplies the heat pump as its low-temperature source. Unlike ground heat sources, this source does not freeze, because it is surrounded by air rather than soil. Solverter® also offers a unique advantage: it significantly reduces energy consumption and labor—both in relation to the cost of implementing the system itself and in the broader context of constructing the entire building. Installing a roof with an absorber is no different from installing any other roof, meaning the heat source is created at virtually no additional cost. Solverter® does not require any extra permits, reports, geological studies, or ultimately drilling or excavation. As a result, the construction time of a building equipped with this ecological heating system can be reduced to the absolute minimum. Above all, Solverter® makes it possible to eliminate cumbersome heating systems based on burning coal or wood—even in areas without access to gas—without increasing heating costs. All it needs is electricity, air, and sunlight.

ADVANTAGES OF THE SOLUTION

- The use of renewable energy and high energy efficiency,
- Low investment and operating costs,
- No impact on the building's surroundings or the natural environment,
- No interference with the building's external infrastructure

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Solcraft



H-Block®

H-Block® is a patent-protected structural insulated panel (SIP), made of closed-cell polyurethane foam encased in a box-type structure and permanently bonded with OSB wood-based sheathing. It serves as a structural material for load-bearing and/or non-load-bearing walls, floors, roofs, and ceilings in single- and multi-family residential buildings as well as public-use facilities. Although primarily used as a load-bearing component, it can also be applied as an infill for timber, steel, or reinforced-concrete structures. At the same time, the H-Block® structural insulated panel is a top-class thermal insulator, making it an excellent material for constructing energy-efficient and passive buildings. The closed-cell polyurethane foam forming the core of H-Block® provides the highest thermal resistance among all industrially available building insulation materials. Moreover, it is resistant to most organic solvents, acids, alkalis, insects, rodents, fungi, mold, water, and temperatures up to 230°C. It does not age, does not absorb moisture, and maintains its insulating properties over time. Combined with OSB sheathing and the box-type structure, it forms a very strong composite material capable of transferring loads in buildings up to four storeys high, enabling beamless floor systems and the construction of self-supporting roofs or roof structures with minimal truss requirements. H-Block® is manufactured on a production line under strictly controlled factory conditions, ensuring high quality, compatibility with individual architectural designs, and independence from weather conditions during construction.

ADVANTAGES OF THE SOLUTION

- Design flexibility
- Fast, clean and error-free construction
- Durability and resistance
- High insulation performance with minimal thickness

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SYMBIONA – AnoxyMem



AnoxyMem© – Anaerobic MBR

AnoxyMem® – AnMBR is a proprietary Anaerobic Membrane Bioreactor that embodies the Circular Economy at its finest. By integrating advanced anaerobic digestion with precision membrane separation, this system transforms burdensome wastewater and waste into three valuable resources: green energy, clean water, and nutrients.

The AnoxyMem® system sets new efficiency standards, enabling record-breaking biogas yields—up to 30% more compared to conventional anaerobic reactors. Thanks to its unique design and extended sludge age (SRT), every unit of organic load is processed with maximum efficiency. This solution transforms a treatment plant into a local power hub, providing the facility with energy independence.

The use of barrier membranes allows for an ultra-clean effluent, virtually free of suspended solids. A COD reduction of up to 99.7% means the permeate requires only minimal polishing or can be recirculated back into production processes. The system seamlessly processes wastewater with high fat concentrations (up to 10% dry matter), eliminating the need for costly and energy-intensive pre-treatment.

Nutrient Recovery – Circular Economy at Scale

AnoxyMem® is a future-ready technology that enables the efficient recovery of nutrients (nitrogen and phosphorus) from the digestate. Through membrane separation, these components can be precisely recovered and returned to the economy as high-value fertilizer raw materials. The entire modular installation occupies up to 4 times less space than traditional solutions, making it ideal for modern, sustainable production plants. By choosing AnoxyMem®, you invest in zero-emissions, energy security, and full resource recovery.

ADVANTAGES OF THE SOLUTION

- Maximum biogas yield: up to 30% more green energy from wastewater and waste.
- Ultra-clean effluent: up to 99.7% COD reduction and lower discharge polishing costs.
- Full Circular Economy: direct nutrient and resource recovery from the process.
- Compact design: up to 4x smaller footprint than conventional anaerobic reactors.

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SYMBIONA – AnoxyBed



AnoxyBed™ EGSB

AnoxyBed EGSB (Expanded Granular Sludge Bed) technology represents a pinnacle in anaerobic industrial wastewater treatment, specifically designed for high-load organic streams. Utilizing anaerobic granular sludge, the system achieves significantly higher performance than conventional reactors. Its standout feature is operation at high upflow velocities, resulting in an exceptionally compact footprint: ideal for facilities with limited space.

The process efficiently removes organic pollutants (COD 2,500 to 20,000 mg/l) while converting them into a renewable energy source: biogas. This allows producers in the food, beverage, pulp and paper, and chemical sectors to reduce operational costs and achieve energy independence. The core of the system is the proprietary AnoxyBed™ separator, engineered to precisely partition biogas and treated effluent from the biomass. Its advanced design minimizes sludge washout, ensuring process stability even during significant fluctuations in flow and concentration.

A key advantage is the system's flexibility and small footprint. It is suitable for both new installations and the modernization of existing ones. With the option of an external separator, facilities can be upgraded without the need for time-consuming civil engineering modifications. The technology is delivered as a comprehensive solution, including high-quality granular sludge for commissioning, pumps, heat exchangers, and integrated process control. It is a proven method for balancing strict environmental compliance with economic optimization, perfectly aligning with modern low-emission and CE strategies. It provides reliability, scalability, and a rapid return on investment by transforming wastewater into a valuable resource.

ADVANTAGES OF THE SOLUTION

- Maximum process efficiency with a minimal installation footprint.
- Energy recovery through biogas significantly reducing plant costs.
- High resilience to sudden load spikes and variable flow rates.
- Innovative AnoxyBed™ separator effectively protecting anaerobic granular sludge.

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SYMBIONA – ROVAPO



ROVAPO® - Zero Liquid Discharge

Developed by Symbiona, ROVAPO® is an advanced, multi-stage Zero Liquid Discharge (ZLD) system engineered for maximum efficiency and minimal environmental impact. It is specifically designed to treat the most demanding industrial wastewater, including high-salinity streams, by maximizing water recovery to process-grade quality (up to 99%) while drastically reducing waste volume.

The system's exceptional modularity allows for various technical configurations

An integrated physicochemical unit with a REVOS-RO membrane section and evaporation stage, a hybrid setup combining membranes with high-efficiency EVAPO™ low-temperature evaporators.

This architecture ensures precise alignment with specific industrial requirements. The core of its efficiency is Symbiona's proprietary autonomous control system, which analyzes and responds to raw wastewater fluctuations in real-time. This ensures process safety and a stable supply of water with quality comparable to distilled water.

ROVAPO® significantly lowers the Total Cost of Ownership (TCO). Savings are achieved through reduced discharge fees, lower disposal costs, high energy efficiency, and minimized chemical reagent requirements. As a key component of the Circular Economy (CE), this technology enables enterprises to meet ambitious environmental goals while maintaining profitability and independence from external water resources.

ADVANTAGES OF THE SOLUTION

- Up to 98% water recovery & Circular Economy strategy.
- Drastic TCO and energy reduction.
- Autonomous control for stable quality despite inlet fluctuations.
- Minimized waste volume.

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SYMBIONA – EVAPO



EVAPO low-temperature evaporators

EVAPO® is a series of low-temperature vacuum evaporators with a submerged heat exchanger and an electric heat pump. Unlike traditional evaporators, which use a horizontal external heat exchanger or a vertical internal heat exchanger, the evaporator eliminates the need for circulating the liquid being evaporated. The evaporation process is conducted under a vacuum of approximately 30-60 mbar and a temperature of approximately 35°C. The vacuum is generated by a vacuum pump. The necessary heat and cooling are supplied by an integrated compressor heat pump. The compressor compresses the refrigerant gas to a temperature of approximately 70°C. This is pumped to a coil located in the evaporator section, where the liquid boils. The concentrate concentration level is determined by time or by measuring the liquid's density. After the concentration process is complete, the concentrate is automatically discharged by a pump. Wastewater is collected automatically without the use of pumps. The evaporator has no circulation pumps or tubular heat exchangers that could clog. Systems using EVAPO “learn”—maintaining optimal desalination levels or other preset permeate parameters by automatically responding to changing input and output conditions. This maximizes water recovery and ensures the highest efficiency and operational stability of the entire process.

ADVANTAGES OF THE SOLUTION

- A simplified process without pumps and heat exchangers, minimizing the risk of clogging.
- Increased heat exchange efficiency.
- Evaporation at low temperatures (approx. 35°C) reduces energy consumption.
- Provides both heat and cooling, increasing the system's energy efficiency.
- Concentrate is automatically discharged, and the concentration level is determined by time or density measurement.
- The system “learns” and automatically adjusts parameters (e.g., desalination, permeate quality) to changing conditions.
- Maximizes the amount of water recovered while maintaining process stability.

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SYSTEM 3E



SYSTEM 3E

SYSTEM 3E is a groundbreaking solution, based on 3E elements made of natural raw material – perlite. The innovation of 3E results from the combination of a unique formulation, precise shape and simplicity of application, which makes it possible to erect building walls quickly without mortar and insulation. Ecologically, economically and energy efficient.

The heart of SYSTEM 3E technology is perlite – a volcanic rock, commonly found around the world. It is lightweight, fireproof, chemically and biologically inert, and has excellent thermal insulation properties – thanks to perlite 3E walls do not require insulation such as petroleum-based Styrofoam, and during the summer it's pleasantly cool inside the building. Reduced water absorption by 3E elements increases the durability of the material and combined with vapor permeability, eliminates the risk of moisture and the development of mold or mildew on the wall. This means a healthy and safe home.

3E technology is dedicated to projects with a higher standard of energy efficiency – single-family houses, commercial and service buildings, it will also be perfect as an infill of high frame structures. 3E elements are a material with excellent thermal insulation parameters ($U=0.198$), which results in lower building operating costs during the heating period (up to 60% lower bills).

ADVANTAGES OF THE SOLUTION

- SYSTEM 3E offers the thinnest single-layer structural wall while maintaining the heat transfer coefficient parameter. For customers, this means more usable living space and savings on building materials
- 3E walls can be erected 365 days a year, in all weather conditions. 3E technology saves time on the construction site by eliminating technological breaks thanks to the click-click method
- the exact number of elements is delivered to the construction site so there are no cutoffs – these speeds up the work, but also significantly reduces environmental pollution
- a specially composed mixture minimizes water absorption by 3E elements, so the walls remain dry throughout their life
- element 3E is made of natural perlite, a volcanic rock that is resistant to mold and fungus. This is ideal for allergy sufferers and asthmatics
- the elements are 100% recyclable, and the lack of use of mortar and insulation means that the amount of waste generated at the construction site is reduced
- the production process of the elements is ecological: water consumption has been reduced by three times and CO₂ emissions into the atmosphere by 54%

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T4B



Water Resource Management Systems and Energy Quality Management Systems

Integrated Water and Energy Management Systems – the key to efficient, safe and sustainable infrastructure.

Integrated water and energy management is crucial for effective monitoring and optimization of technical infrastructure, especially in the face of climate change and growing sustainability requirements.

Water Resource Management

T4B Sp. z o.o. designs and integrates advanced systems for monitoring water levels, flows and the condition of hydrotechnical structures such as dams, weirs and locks. Using modern sensors, GPS, telemetry and data analytics, our solutions enable real-time monitoring, hydrological forecasting and early flood warnings. They support infrastructure modernization and enhance the safety of water facilities.

Energy Quality Management

In the energy sector, we focus on ensuring power stability, particularly for renewable sources such as solar and wind. Our systems monitor energy quality, compensate voltage fluctuations and stabilize supply. Integrated Energy Management Systems (EMS) enable consumption optimization, demand forecasting and intelligent real-time control. The use of energy storage balances renewable generation and improves grid reliability.

Comprehensive Solutions

With long-standing experience, T4B Sp. z o.o. delivers complete, cutting-edge technologies that combine water and energy management into one coherent ecosystem. Our solutions enhance efficiency, safety and stability — supporting sustainable infrastructure development worldwide.

ADVANTAGES OF THE SOLUTION

- Tailored Solutions – systems designed to meet specific needs.
- Cost Reduction – remote monitoring minimizes operational costs and losses.
- Efficiency and Stability – optimized use of energy and water resources.
- Versatility and Scalability – adaptable for various conditions and markets.

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T-Master



Individual Waste Segregation System

The Individual Waste Segregation System (SISO) by T-Master is an innovative solution for residential developments that eliminates collective responsibility for improper waste segregation. The system enables individual and fair billing of residents based on the quantity and type of waste they generate, ensuring full transparency and encouraging proper segregation. SISO operates in conjunction with Drop&Go and Drop&Go Waste House devices, equipped with automatic lids that open after scanning a QR code placed on the waste bag. Each bag is weighed and assigned to the respective household account, with all data accessible through the LessWaste app. The system is fully prepared for the implementation of the Pay-As-You-Throw model -charging residents according to the actual amount of waste they dispose of. T-Master devices are energy-efficient (approx. 0.19 kWh/day), made of recyclable materials, highly durable, and covered by a long-term warranty. Automatic lids make operation simple and ensure accessibility for seniors and people with disabilities. The modular design allows the installation of containers both indoors and outdoors, using standard 1100 L and 2×360 L bins. Data from LessWaste show that within just three months of using SISO, the percentage of households segregating waste increases from 10% to 90%. The collected data allow property managers and residents to analyze the amount of waste generated, assess segregation performance, and compare results with other households in the community - supporting environmental education and positive behavioral change. The SISO system increases recycling rates, reduces CO₂ emissions, supports cities in effective waste management, and contributes to building a responsible society.

ADVANTAGES OF THE SOLUTION

- Individual and fair waste billing, up to 90% segregation efficiency, and eco-friendly digital devices that reduce CO₂ emissions.
- Precise data supports cities in waste management.
- The system also enables high-quality clothing collection, giving garments a second life.

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VERSATILEX



A system for counting micromobility users and their impact on urban traffic jams based on AI and working offgrid

Mobile, hybrid system for detecting hazardous events in road traffic zones is an advanced solution combining video analytics, infrared technology, and modern energy management. Specially trained algorithms analyze road lanes, sidewalks, and bike paths, identifying potential threats such as pedestrian intrusions, collisions, or other safety-critical situations.

The system operates using Edge Computing, enabling local image processing and significantly reducing energy consumption. As a result, the device can be battery-powered or operate off-grid, e.g., using solar panels. Its energy efficiency allows installation in diverse locations—from lighting poles and traffic signals to bus shelters and mobile units such as police cars or municipal vehicles. The system can send statistical data at defined intervals or immediately trigger alerts when a dangerous event is detected.

The uniqueness of our solution lies in the fact that the technology was designed and trained from the ground up to operate in low-emission conditions. Existing market systems typically require constant 230V power supply, limiting deployment options. We focused on minimizing energy use while accounting for varied lighting and power conditions. Local image analysis and the elimination of large data transfers to the cloud further reduce energy demand. As a result, our system provides high detection accuracy, flexible installation, and reliable performance at exceptionally low energy consumption—its key competitive advantage.

ADVANTAGES OF THE SOLUTION

- Local detection with Edge technology – fast and energy-efficient.
- Off-grid operation enabled by ultra-low power consumption.
- Effective day-and-night analysis using an IR camera.
- Flexible installation: poles, shelters, traffic signals, mobile vehicles.

CONTACT INFORMATION

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Waste24



Waste24 eMarkets Technology

Waste24 eMarket technology is a digital ecosystem enabling online ordering of waste management services such as container rental, portable toilets, temporary fencing and construction waste removal. Smieci.eu works as a marketplace integrated with a dedicated SaaS software for waste companies, automating order handling, logistics, invoicing and communication. Partner companies can also install the embedded widget on their websites to sell services online without building their own IT systems. The solution integrates with IoT sensors (fill-level, geo-tracking) and blockchain technology, increasing data transparency and operational efficiency. The eMarket is fully scalable across Poland, enabling remote and fast delivery of municipal services — without calls, paperwork or manual bookings.

ADVANTAGES OF THE SOLUTION

- Fully online ordering
- Automated processes & operations
- Scalable nationwide service
- SaaS + IoT + widget integration

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Waterly



Waterly – real-time AI-powered water quality monitoring system

Waterly is an innovative cleantech solution for real-time water quality monitoring, combining advanced sensor-equipped buoys with a scalable cloud platform powered by AI. The system autonomously measures multiple parameters—temperature, dissolved oxygen, pH, turbidity, nitrate, ammonium, BOD, COD, and hydrocarbons—transmitting the data in real-time via LTE to an intuitive web dashboard and mobile app.

Designed as a plug-and-play solution, Waterly buoys are solar-powered, RS-485/Modbus compatible, and suitable for both remote natural water bodies and industrial retention tanks. Alerts and anomaly detection help users proactively respond to water threats, protecting ecosystems and meeting compliance requirements.

The system is currently operational in Poland, including the Odra River (PGWiR S.A.), Lake Białe (British American Tobacco), Wigry National Park, MPWiK Wrocław, and aquaculture sites like AntoniusCaviar – the largest caviar producer in Europe.

Waterly's mission is to democratize access to reliable environmental data and support sustainable water stewardship globally. The product is ready for scaling across Europe, UK, and beyond.

ADVANTAGES OF THE SOLUTION

- Real-time AI-powered water quality monitoring with instant alerts
- Plug-and-play installation – no cables, fully solar-powered system
- Once-a-year maintenance only – low operational costs
- Easy online access to data via app and web dashboard

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WaterSense



WaterSense – Inland Water Quality Data Intelligence. Real Time. Guarded.

WaterSense is Europe's first provider of inland water quality data intelligence, powered by a network of autonomous floating laboratories WaterStations, that deliver real-time insights into the condition of all water bodies.

Autonomous WaterStations collect water samples into dedicated analytical modules, where more than 25 physicochemical parameters can be examined. Thanks to an innovative sampling system and proprietary electrochemical sensors, all measurements are performed with laboratory grade precision.

The collected data is transmitted to the cloud, where it is analyzed by a proprietary multilayer artificial intelligence system that forecasts changes in water quality parameters up to 72h in advance, enabling early detection of contamination, algal blooms, and biological threats. In parallel, the system processes satellite data, calibrating it with readings from WaterStations to generate precise water quality maps and provide a broader spatial perspective.

At the core of the analytical platform operates the AI Assistant, an intelligent virtual analyst that processes datasets, identifies anomalies, detects trends, and generates automated reports. This transforms raw data into understandable, intuitive insights that can be used instantly for data-driven decision-making.

All results are displayed on the www.watermap.pl platform, offering free access to the last 7 days of measurements.

WaterSense operates under an innovative Data-as-a-Service (DaaS) model, providing access to high-quality data while completely eliminating investment and maintenance costs. If a desired measurement site does not yet exist or does not cover all required parameters, WaterSense installs or upgrades the station within 14 days.

ADVANTAGES OF THE SOLUTION:

- Access to water quality data with no investment, service, or maintenance costs.
- Real-time 24/7 measurement of 25+ parameters with laboratory grade precision.
- AI Assistant automatically analyzes data, detects anomalies, and does reports.
- Integration with calibrated satellite data and 72-hour water quality forecasts.

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WindTAK



5GVG by WindTAK

Our flagship product, the 5GVG system, combines aerodynamic improvements with IoT technology to maximise turbine performance. It uses smart vortex generators - small, 3D-printed components mounted on turbine blades - to increase energy efficiency while collecting performance data. Equipped with wireless IoT devices, these generators continuously monitor the turbine's operation. Machine learning algorithms analyse this data to provide actionable insights, helping operators detect problems early and plan maintenance efficiently, ensuring smoother, more profitable operations.

With our experience in creating virtual turbine models, developing reusable products for offshore environments, and utilising sensors and measurement systems, we offer valuable expertise and advanced resources. Our efforts are focused on improving the efficiency and reliability of wind turbines through innovative solutions. By integrating aerodynamic advances, advanced materials and IoT technologies, we are contributing to a cleaner, more sustainable energy future.

ADVANTAGES OF THE SOLUTION

- Up to 5% increase in turbine energy efficiency
- Continuous smart monitoring via IoT and AI
- Predictive maintenance cuts costs by up to 7%
- Innovative Polish solutions for clean energy

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WOFIL



Ozone Water & Sewage Treatment Systems

WOFIL offers technologically advanced water treatment systems using ozone technology and free radicals, without the need to apply artificial chemical substances such as chlorine, coagulants or potassium permanganate. The technology is completely safe, environmentally friendly and based fully on processes occurring in nature. The only difference is that ozonation processes take place much faster and can be fully controlled.

The universality of the technological solutions allows the technology to be used in many branches of industry, such as in drinking water production for municipal water systems or for bottled water and beverages. The ozone technology is also used in washing and disinfection of bottles and packaging, as well as in the washing and disinfection of fruits, vegetables and meat, and also in pools and spas.

By dividing the installation into modules of technological sequences, the manufacturer guarantees a high reliability of the installation as well as uninterrupted operation during service inspections and repairs. Multi-block ozone generators used in the solution enable the alternating functioning of individual blocks, as well as the possibility of their expansion.

ADVANTAGES OF THE SOLUTION

- Eco-friendly, containerized systems for water and wastewater disinfection
- Highly effective and versatile solutions
- Compact dimensions, simple design, and easy expansion
- Dual-use systems

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Zero Waste Design



ESG Asset Expert

Our flagship product, ESG Asset Expert, is an innovative platform that helps organizations manage office furniture and equipment in line with circular economy principles. The application enables fast inventory via QR/RFID, centralized digital asset storage, and process management for relocation, refurbishment, resale, and disposal. A unique feature is the built-in carbon footprint calculation algorithm, developed over two years of research on 30,000+ furniture items, confirming that reuse and revitalization reduce emissions by up to 97.7% compared to buying new. ESG Asset Expert not only lowers purchasing and disposal costs but also provides verified ESG data compliant with the CSRD directive.

Our app has been recognized as one of the top twenty green technologies. Our circular economy management approach received an award in a competition for the best circular economy solutions organized by the Polish Agency for Enterprise Development, even before the app was created. Our app ESG Asset Expert is a platform for managing corporate fixed assets following circular economy principles. It uses QR/RFID tags for a quick digital inventory and centralizes asset tracking, including relocation, refurbishment, resale, and disposal. A key feature is its integrated carbon footprint calculator, which quantifies CO₂ savings from asset reuse and revitalization. The platform helps large organizations, large corporations reduce costs, optimize resource use, and comply with EU CSRD and other ESG reporting requirements.

ADVANTAGES OF THE SOLUTION

- Unique technology - ESG Asset Expert, proven environmental impact - thanks to our algorithm,
- Cost efficiency thanks to a platform,
- End-to-end circular economy model

CONTACT INFORMATION

Zero Waste Design Sp. z o.o.

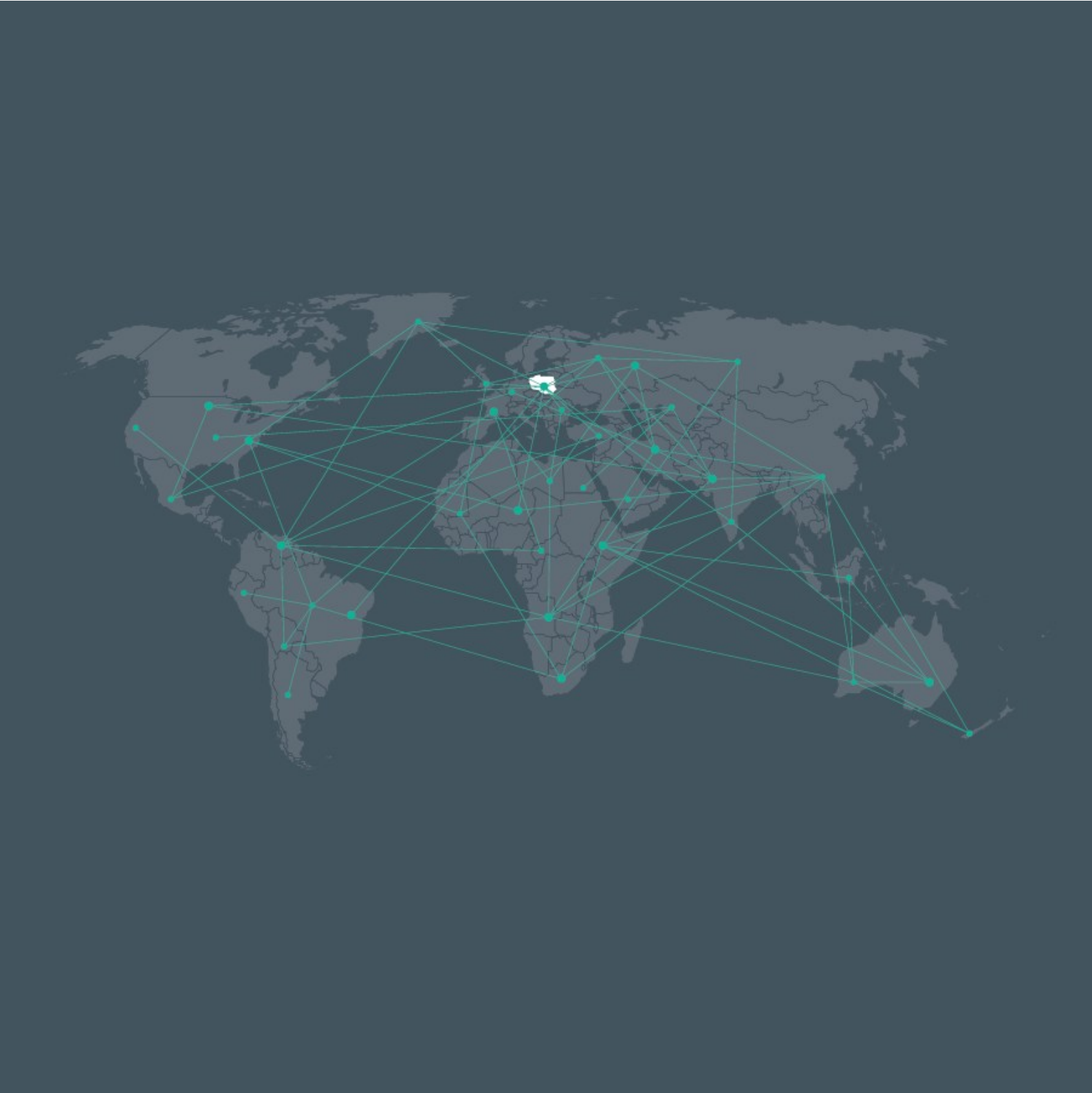
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[More information](#)

