

MIA 2024 Finalists

- **Product of the Year 2024**
(5 Finalists)
- **Service of the Year 2024**
(5 Finalists)



1. AgroBiogel GmbH



Company Description:

AgroBiogel (AGB) is a University of Natural Resources and Life Sciences, Vienna spin-off company producing the first organic certified novel lignin-based super water absorbent hydrogels for agriculture applications to increase water holding capacity soils and act as a plant nutrient carrier. Hydrogels (super-absorbents) are polymeric materials that absorb and store huge amounts of water. When applied to the soil, they act as small water and nutrient reservoirs at the plant's roots, enabling plants to survive erratic rainfall patterns and droughts, saving irrigation by reducing irrigation frequency, and enabling the efficient release of nutrients to plants.

Product Name: Agrobiogel



Product Description:

Agrobiogel is the first long-lasting (> five years) bio-based hydrogel made from 100% lignin. It uniquely mimics humus and eventually degrades into humus (important soil fertility increasing organic matter). The first organic certified soil water, plant nutrient storage, and slow-release product increases the soil water holding capacity. It captures and stores fertilizers and nutrients and slowly releases them to plants. It protects plants and crops from drought. It converts non-agriculture fertile soils, including sand and degraded soils, into productive soils, prevents the leaching of fertilizers & environmental pollution, and helps reduce water, fertilizer, irrigation & labor costs. It is approved for conventional and organic farming without restrictions.

Product Differentiation:

Most existing hydrogels are based on toxic and non-biodegradable synthetic molecules (acrylic acid, acrylamide), including some organic-based hydrogels such as cellulose and starch, and therefore are not approved for agriculture applications. Agrobiogel is 100% wood-based and approved for conventional and organic farming. Therefore, Agrobiogel is unique and fills an existing market gap and provides a unique solution with the EU Green Deal Farm to Fork policy and many United Nations Millennium development goals (SDGs).

Place, client, and respective year the product was implemented and tested successfully:

Austria and Germany (home, garden, and forestry); Spain, Almeria region (tomato greenhouse and orchids).

Country: Austria

2. Agua de Sol



Company Description:

Agua de Sol transforms Air into Water, thanks to the Sun.

Agua de Sol was established in France and is developing businesses in Greece, Morocco, Tunis, Ghana, the UAE and other countries.

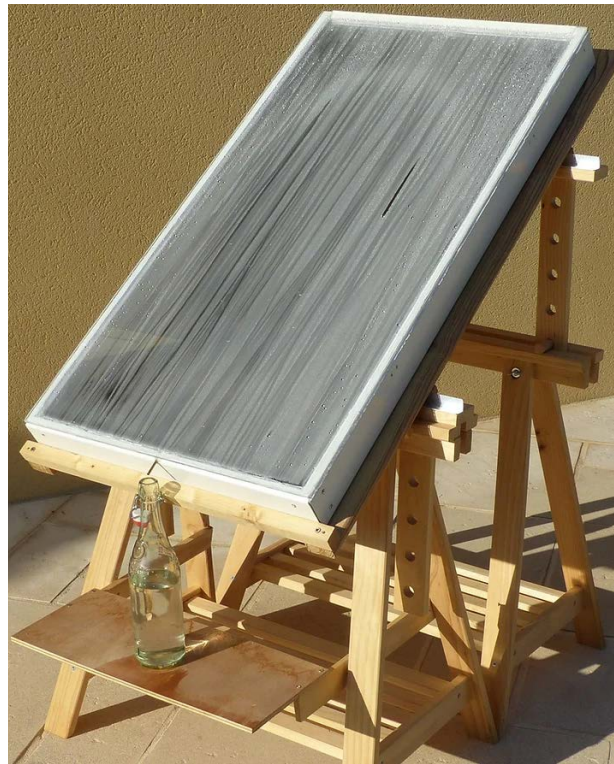
We sell panels as well as offer panels “as a service.”

Panels are “Low Tech” by design. They are based on the laws of physics and Mother Nature.

Panels can be produced in almost any country worldwide, saving transport and CO2.

They offer carbon-free water to people without access to fresh water and people who don’t/can’t drink tap water and, consequently, drink plastic bottled water, which is expensive and polluting.

Product Name: SunAir Fountain



Product Description:

The SunAir Fountain is always composed of several panels, ex/ 10 to thousands, which are installed on roofs or ground, facing south and with a tilt of 30 to 45 degrees (depending on the country).

The SunAir Fountain operates in two phases:

At night, water vapor in the air is sucked into the panels, and the water molecules are captured in an adsorbent.

During the day, the sun “hits” the panel, and the indoor temperature rises to more than 120 degrees, transforming the water molecules into water vapor. The latter rises and condenses under the panel’s glass (which is colder than the inside of the panel). The condensation forms droplets that will run under the glass by gravity (cf. 30 to 45-degree tilt of the panel), and water is collected at the bottom of the panel.

Product Differentiation:

Low Tech, robustness, lifespan of over 20 years, simplicity, scalability, low cost, and flexibility can be produced in any country, and it is sustainable atmospheric carbon-free water for all.

Place, client, and respective year the product was implemented and tested successfully:

Morocco, Olosurf & Nature (ecolodge) - July 2023

Country: France

3. Fishheart Ltd.



Company Description:

Fishheart Ltd. is an independent, eco-focused company based in Rovaniemi, Lapland. Fishheart's goal is to enable fish movement in built rivers with its water, money, and fish-saving innovation Fishheart-fishway. Ensuring the ecological continuum of the migratory fish by restoring river areas is also a significant part of Fishheart's mission to revive the migratory fish stocks globally. After a river restoration is accomplished, Fishheart strengthens the ecological continuum in the river system through egg stockings with its unique product, the Eco egg box, which is the first 100% biodegradable box designed for fish eggs.

Product Name: Fishheart-fishway



Product Description:

The floating Fishheart unit is designed to be installed on the downstream side of a dam. As the unit is floating, it can be moved and adjusted so the fish can easily find it. The floating unit connects to a flexible inlet, outlet, and attraction flow tubing passing over the dam, and the whole fishway runs with siphoned water. Furthermore, there is also an underwater attraction flow to help guide the fish into the system. Due to the siphon effect, Fishheart's water usage is less than 0,2 m³/s. Fishheart-fishway can be run remotely. Fishheart-fishway utilizes AI to photograph, identify, and measure all the fish using the fishway. Fishheart's advanced AI system can be used for several purposes: scientific monitoring, removing invasive fish, and collecting and reporting data. By designing the pipelines and adjusting the rise velocity of the fish, the Fishheart can be adapted to meet the demands of even the highest dams.

Product Differentiation:

Conventional fish ladders and lifts are expensive. The construction of these traditional solutions can cost up to tens of millions of euros. More cost for these conventional solutions comes from the amount of water (2-10 m³ per sec) needed for them to function properly. Compared to these solutions, Fishheart-fishway is cost-efficient and water-saving, costing around 2,7 M €. Unlike the traditional fish ladders often designed to meet the needs of salmonids, Fishheart works with all fish species, even the weak swimmers.

Place, client, and respective year the product was implemented and tested successfully:

2019, Taivalkoski hydropower station, Kemijoki Oy, Finland.

Country: Finland

4. Idro Group Srl



Company Description:

Idro Group is an Italian Company highly specialized in designing and constructing water treatment plants and clean energy production. By applying innovative technologies, Idro Group develops mobile and compact plants for emergencies, systems for water purification for primary water and potabilization, civil and industrial wastewater treatment, and reuse.

Product Name: ELEKTROPLANT



Product Description:

ELEKTROPLANT: A physical-chemical purification plant with electrolytic and electro-oxidative processes for domestic wastewater. It is an innovative electroflotation system that can treat surface water and wastewater. The system uses an advanced oxidation system and high-efficiency micro-nano bubble flotation. It does not consume standard flat sheets of virgin aluminum but instead recycled granular aluminum. It does not require process activation time, has a fast start-up and no interruption problems. Elektroplant does not consume dangerous or toxic chemical reagents. The plant can be used in cold areas. It has a yield comparable to biological processes and has a discharge that complies with legal limits. It does not require additional refinement stages.

Product Differentiation:

Main differences compared to traditional DAF (dissolved air flotation units):

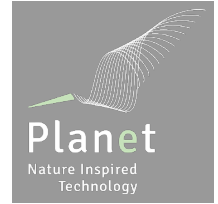
- No chemical reagents: compared to normal DAFs, where flocculants such as aluminum sulfate or ferric chloride are added, our system uses only recycled aluminum chips recoverable from separate waste collection and electricity.
- Nanobubble system: compared to the normal microbubbles used, the nanobubble system, which uses the cavitation principle, guarantees high performance in the flotation of suspended solids. There is also an optimization of the air used and, therefore, a reduction in energy.
- Recycled material: An important innovation is to replace the normal virgin aluminum plates with aluminum chips derived from separate waste collection. This leads to a double beneficial impact: environmental and economic.

Place, client, and respective year the product was implemented and tested successfully:

Tested pilot plant (Milan area, Italy)

Country: Italy

5. Planet Srl



Company Description:

Planet Srl is an Italian SME dedicated to developing innovative products for environmental protection. Planet's vision is "no green without blue," namely, no reforestation and ecosystem restoration without fresh water. The journey began between 2012 and 2014 with the study of mangroves as part of the Certified Biomimicry Program (Biomimicry Institute, USA). Recognizing the urgent need for innovative approaches to address environmental challenges, the team was motivated to replicate the multifaceted functionalities observed in mangroves (e.g., saltwater desalination, biological ecosystem restoration, and significant CO2 sequestration). This led to the development of the Mangrove Technology Platform (MTP). This modular system tackles water scarcity and contributes to ecosystem restoration and climate change mitigation, kick-starting and supporting reforestation in water-scarce areas. The MTP is the core of Planet's mission: "We keep the Earth habitable: we provide freshwater, regenerate soil, save biodiversity and clean air." Planet has gained substantial traction through impactful partnerships and commercial relationships. Partnerships within EU-funded projects such as HYDROUSA (EUR 380,000) and INNO4CFIs (EUR 610,000) have significantly propelled our solution, enriching our collaborative ecosystem with strategic alliances with international technological, business, and research partners.

Product Name: Mangrove Technology Platform (MTP)



Product Description:

Planet has engineered a modular system named Mangrove Technology Platform (MTP). The MTP is a smart system designed to facilitate the planting and growth of trees in arid and semi-arid regions without exacerbating the depletion of freshwater sources. The MTP integrates two key technologies: firstly, a desalination system that harnesses solar irradiation to passively convert saltwater into freshwater, also producing edible salt as a byproduct; and secondly, an efficient water-saving irrigation system tailored for effectively watering the deep root apparatus of the plants. The overall system is bolstered by a dedicated IoT infrastructure, allowing for the accurate monitoring and management of water flows. This approach promotes plant growth, avoiding competition with the agricultural sector for fertile soil and freshwater resources, and ensures successful tree establishment post-transplant.

The primary goal of the MTP is to offer a novel and sustainable carbon farming approach by facilitating small-medium scale agro-reforestation in dryland environments as a strategy for addressing the impacts of climate change and striving towards carbon neutrality.

Product Differentiation:

The primary competitive sector for the Mangrove Technology Platform (MTP) is in Reverse Osmosis for farming, where Elemental Water, Winture, and Hatenboer-Water operate, among others. The MTP stands out primarily due to its operating principle, as it is based on the basic physical principles of evaporation and condensation triggered by sun irradiation. This characteristic renders it inherently passive at its core. Another significant advantage is its ability to treat saltwater across various concentrations without replacing or adding dedicated components or membranes. Moreover, unlike traditional desalination processes that typically discharge brine directly into the ocean, causing environmental and economic impacts, the MTP incorporates a Zero Brine Discharge system, producing edible salt as a byproduct.

Place, client, and respective year the product was implemented and tested successfully:

In 2018, Planet's initial Mangrove Technology Platform installation was in Nicosia, Cyprus. The second MTP facility, operational since 2020 in Tinos island (GR).

Country: Italy

1. Aquaponics Iberia



Company Description:

Aquaponics Iberia is a specialized startup in aquaponics that provides consultancy, engineering, systems design, implementation, and training. Our team has developed a technology for aquaponics called SWIMS (Solid Waste Integrated Management System) that turns aquaponics simultaneously truly sustainable, organic, highly productive, and low maintenance demanding, compared to the current state-of-the-art aquaponic. We have hacked aquaponics systems into a truly circular solution that takes advantage of our expertise and efficient technology to expand sustainable and local healthy food security in densely populated European regions. As such, our Fish n' Greens project was designed to use our technologies combining nature and innovation and bring the production of the best fresh fish and vegetables to large cities, close to people, in a sustainable, ecological, and transparent way, favouring not only freshness and healthy eating but also integration with local communities through initiatives that raise awareness of environmental education, in particular through guided tours for local schools. This project allows the growth of food with virtually no water waste/consumption and no wastewater, without effluent, and supplying local food without long-distance transportation, contributing to a low-carbon circular economy.

Service Name: Fish n' Greens



Service Description:

Through our SWIMS (Solid Waste Integrated Management System) technology, we have hacked the closed-loop balanced aquaponics systems, making them long-term productive, cost-efficient, and highly sustainable while growing tasty fresh food, following current consumer trends and the European policies regarding the Blue Economy and Green Deal, by:

- being organic and healthy (no pesticides, no herbicides, no synthetic fertilizers, no GMOs, no medication, no heavy metals, no microplastics), including fish with high fatty acids and omega-3 content;
- being sustainably produced (ASC, Friend of the Sea, Friend of the Earth certifications, no water waste, no effluent discharges, highly reduced carbon emissions, wild fish-friendly with no fishmeal input, renewable energy operated, recycling of byproducts);
- and being locally grown (close to urban markets, increasing freshness, reducing transportation, food waste, and carbon emissions, contributing to the local economy, and increasing trust through openness for scheduled consumer visits to the production site).

Each Fish n' Green's productive system can generate 120 tons per year of sustainably certified fresh fish and 400 tons per year of certified ultra-organic vegetables. By growing and supplying local, fresh, tasty, ultra-organic, and sustainable food, the ideal target end customer is a growing market: the healthy and sustainable-conscious urban consumer.

Service Differentiation:

Through our SWIMS technology, we are turning aquaponics – a circular and organic food production technique – into an efficient and economically viable option to sustainably and locally grown fresh certified fish and vegetables. Nowadays, making recirculating aquaculture systems profitable involves large-scale production and huge amounts of investment. Unlike our competitors, Fish n' Greens does not require such extensive infrastructure and investment. We make it local and close to consumers, avoiding transportation and loss of freshness. Combining it with crop farming makes it profitable, highly flexible, and scalable to be deployed in every city. Our technology is nature-based. We combine smart farming with symbiotic natural ecosystem processes in a controlled environment. We grow pure food, partner with local municipalities to educate the young through guided tours to the production unit, and supply food to local school canteens. Families will follow, engaging with our food, mainly our “vegetarian” super sustainable fish with high omega-3 fatty acids content and fantastic taste.

Place, client, and respective year the service was implemented and tested successfully:

Portugal, Oliveira de Frades, Verd'agua, 2018-2019.
Jamaica, Portland, CASE, 2019-2020

Country: Portugal

2. SEADS Sea Defence Solutions



Company Description:

SEADS's mission is to protect the Oceans by cleaning rivers. Our vision is to stop 1 million tons of plastic from entering the Ocean by 2035, creating 10.000 jobs for the sorting, transportation, and management of the collected materials through a fully circular self-funding model that both protects the environment and supports higher quality of life standards for local communities around the world.

Service Name: River Waste Collection and Valorization - The Blue Barriers



Service Description:

We offer an award-winning solution to collect plastic in rivers. The company also provides proprietary guidance that enables extracting the maximum value from the collected waste by creating waterways plastic credits and upcycling the plastic into high-end design items like chairs, tables, or furniture, creating a Blueprint to transform Ocean Plastic into Wealth. Benefits are holistic: cities get improved recycling rates, less waste ends up in landfills or in the ocean, vital industries like tourism, real estate, and fisheries are protected, and new jobs are created. Our BlueBarriers were tested by the University of Florence in the Tiber and Lamone rivers, and long-term installations are active on the Aniene and Sarno rivers. SEADS is one of The Economist's top 10 OceanChangeMakers.

Service Differentiation:

The BLUE BARRIERS are the only patented solution (Approved: #WO2019215584A1) designed for plastic collection in rivers that stop plastic also below the surface (up to 1m), resists flooding conditions, allows navigation, and reduces maintenance. Bubble barriers, Superficial Barriers, and Nets are all technologies designed for different purposes and are, therefore, ineffective in collecting riverine plastic. When we combine our Blue Barriers with clear guidelines to extract value from the collected waste, we enable Public administrations to cover waste management costs, offering a self-funding circular solution that every public administration will be attracted to adopt.

Place, client, and respective year the service was implemented and tested successfully:

Aniene River 2022 - ongoing. The client is the Regional Authority of Lazio, Italy.

Country: Italy

3. Waterjade-MobyGIS



Company Description:

MobyGIS S.r.l. operates in the hydro-meteorological sector, specialising in the monitoring and forecasting of water resources. Through the brand Waterjade®, MobyGIS offers public and private companies solutions for water monitoring and water supply optimization.

The experience gained working with Hydropower companies, Water Utilities, and Public Authorities in Italy and abroad gives the company a well-rounded vision of water supply issues and a pragmatic approach to suggesting the best solution. The team, made up of professional figures with expertise in hydrology, meteorology, and hydraulics, boasts visibility in Europe through awards in the context of Big Data, Satellite Data, and Climate Change.

Service Name: Waterjade



Service Description:

Waterjade is a Decision Support System that monitors water availability at the catchment scale. Using satellite data, physical models, and AI, it digitizes the water cycle in the catchment. It provides forecasts of water recharge on the point of abstraction, like wells, springs, and rivers. In this way, the Utility can plan and optimize water abstraction and predict the occurrence of flood and drought to support the business continuity.

Service Differentiation:

We can identify three clusters: 1) GIS-satellite companies; 2) Meteo-Hydrology companies; 3) Consultancy companies in specific verticals like hydropower or Water Utility. Whatever the cluster, every company just specializes in one piece of water information, namely snow monitoring, flood predictions, or DSS for reservoir management. By doing this, they neglect other aspects of the water cycle, resulting in poorer accuracy and limited scope in the water problems. Our differentiation is to develop an “all-in-one” solution, i.e., we account for the full water cycle, the full prediction services (both in the short and long-range), and the tool to manage the reservoir. This facilitates the purchasing procedure and provides higher accuracy. Therefore, Waterjade simplifies purchasing, extends monitoring outside the plant, and improves forecast accuracy.

Place, client, and respective year the service was implemented and tested successfully:

VIACQUA (Water Utility of Vicenza), Italy

Country: Italy

4. WaterShed Monitoring Europe



Company Description:

WaterShed Monitoring Europe develops and markets innovative water quality management solutions. As a partner with expertise in the water sector, the company offers strategic support and value-added consultancy services based around a single product: Enki, the first software-as-a-service designed to store and exploit all types of water-related data.

The solution proposed is the result of a partnership with the SCALIAN group, ESA, and CNES: the Nerthus service. This tool can predict conditions favourable to the proliferation of cyanobacteria using satellite imagery and artificial intelligence for each catchment area. The aim is to offer those responsible for beaches, lakes, and public health an accessible predictive service. Together, Nerthus and our expertise will enable action plans to be implemented to combat this increasingly common phenomenon.

Service Name: Nerthus



Service Description:

The developed solution relies on an artificial intelligence system to extract information from various terrestrial and spatial data sources, including multispectral satellite images that have undergone digital post-processing. Deep learning then provides a first indicator of the possible emergence of cyanobacterial efflorescence in a targeted geographical area.

Nerthus is an innovative and original service: the combined use of space imagery, meteorological data, limnological data, and artificial intelligence will be used to produce medium-term forecasts (the objective being three days ahead) of cyanobacteria blooms, a phenomenon that is highly critical for the management and use of a vital resource: water.

Cyanobacteria, with their high potential for developing toxins (neurotoxins, hepatotoxins, irritant toxins, etc.), pose a threat to the ecological integrity of lakes, drinking water production, livestock supplies, swimming, irrigation, and fishing.

The service, therefore, intends to use digital information to respond to health and environmental issues whose expansion is directly linked to global warming, water pollution, and air pollution and may impact all our water uses.

Service Differentiation:

Our predictive service will focus on helping clients/users in the target market perform one of their main functions: preventing health risks.

Moreover, the dynamics of urban development and expansion largely depend on a city's ability to manage the supply and distribution of its drinking water. In this context, the integration of the tool that we describe will likely bring a consequent help to the decision and the management. Thus, the value of our service to our future customers lies in its innovative character and in the financial, sanitary, and practical advantages it brings.

According to our preliminary research, other companies have positioned themselves in the segment of using space technologies to solve the problem of cyanobacteria toxicity in drinking water bodies. However, either because they are involved in detection (i.e., after the bloom) or because their predictions are based on the concentration of chlorophyll in the water, none of them offers an approach as complete as ours, which combines thermal information from space capture, secondary sources, and artificial intelligence.

Place, client, and respective year the service was implemented and tested successfully:

2023

Country: France

5. Werover

werover

Company Description:

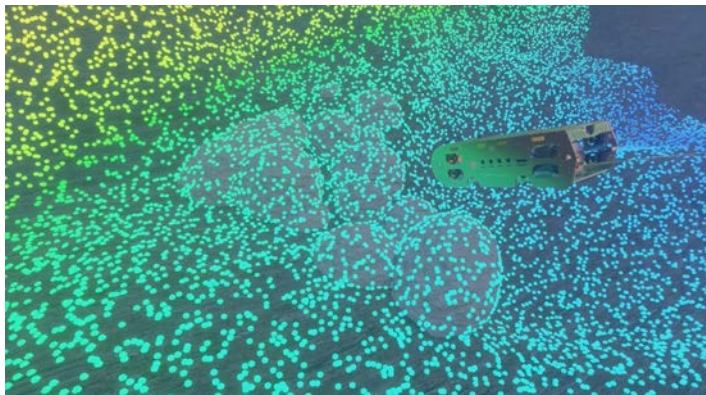
We specialize in two key technologies: Searover, our underwater Remotely Operated Vehicles (ROVs) with advanced mapping abilities for inspection of underwater assets, and Windrover, an AI-based real-time health monitoring device for wind turbine blades.

Searover's ROVs excel in precise 3D mapping and inspections in diverse underwater environments like hydropower plants, offshore wind farms, open-sea applications, and general underwater assets. Our focus is on improving infrastructure analysis and seabed mapping, addressing industry needs for efficient underwater interventions.

These ROVs employ sophisticated sensors for comprehensive inspections, optimizing infrastructure maintenance and safety. Our commitment to innovation ensures adaptability in various aquatic environments. Windrover, designed for wind turbine blades, aims to enhance performance, reduce maintenance costs, and improve turbine efficiency through real-time health monitoring.

So far, we have conducted over 70 inspections for underwater assets, mainly including hydropower plant tunnels. Our team has over 5,300 hours of underwater operation experience, and we have helped clients identify numerous distinctive issues beforehand that have resulted in huge savings in cost and asset safety. We aim to provide a high-tech, completely digitalized solution for underwater asset inspection that is highly accurate and reliable.

Service Name: Searover



Service Description:

Searover's line of ROVs is a top-of-the-line inspection solution for underwater assets. The design is deliberately made modular to cope with changing conditions and challenging work environments. The ROVs are equipped with the relevant sensors depending upon the operation being carried out. In most cases, we use a multi-beam sonar scanner to conduct 3D mapping of the targeted asset. The 3D maps are then used to inspect for damages such as cracks, sedimentation, etc. The ROVs are connected to the control unit via an optical fibre tether strengthened by a kevlar layering. The longest cable we have is 8 km, one of the longest in Europe, giving the ROVs a very high and competitive working range.

Service Differentiation:

We design and optimize our ROVs based on our experience conducting underwater inspection operations. Our ROVs are comparatively very small in size and modularly manufactured. This gives them much more manoeuvrability and the option of making physical changes to the design based on the operational environment and requirements. They are also much lighter than competitor ROVs in the market, which makes them much easier to transport and operate. We are also working on making further technological advancements, such as moving towards autonomous ROVs, optical image capturing, and even live data transmission with as little data loss as possible. Through this, we aim to provide even more value to our clients and stand out as pioneers in the field.

Place, client, and respective year the service was implemented and tested successfully:

Enerjisa Üretim, Turkey, 2022

Country: Germany and Turkey

The logo for the Merlin Innovation Awards 2024. It features a stylized white 'M' and 'A' with a dot, followed by the text 'MERLIN INNOVATION AWARDS 2024' in a clean, white, sans-serif font.

MERLIN
INNOVATION
AWARDS
2024

Good Luck!