Polish engineering and technology SME, specialising in renewable energy integration, hydrogen technologies and intelligent energy management developing an energy management system (EMS) based on edge AI, seeks international technology partners

Summary

Profile type	Company's country	POD reference
Technology request	**Poland**	**TRPL20261019023**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement**	• **All countries**
Contact Person	**Term of validity**	**Last update**
Enrico FRANZIN	**19 Oct 2026** **19 Oct 2027**	**19 Oct 2026**

General Information

Short summary

SME is developing an energy management system (EMS) based on edge AI, which coordinates renewable electricity generation, battery storage, hydrogen systems and end-user energy demand within a common control framework. Company seeks international technology and business partners to develop, demonstrate and deploy integrated renewable energy and hydrogen solutions using the system. They are also open to joint research and development projects with SMEs, universities and research organisations.

Full description

Polish engineering and technology SME established in 2024, specialising in renewable energy integration, hydrogen technologies and intelligent energy management. The company combines engineering consultancy, system integration and software development to support the deployment of distributed, low-carbon energy systems.
Its core product is an energy management system (EMS) based on edge AI. It is being developed to coordinate renewable electricity generation, battery storage, hydrogen systems and end-user energy demand within a common control framework. The aim is to help different technologies operate together efficiently, taking account of renewable energy availability, site requirements and equipment constraints.
A key development focus is the integration of photovoltaic and wind generation with electrolysers, hydrogen storage and fuel cells. In such configurations, surplus renewable electricity can be used to produce hydrogen for subsequent use, including electricity generation through fuel cells. Batteries can provide short-term flexibility, while hydrogen can support longer-duration storage and backup power, depending on system design and operating conditions.
The system is intended to manage the interaction between these assets: when to supply electricity directly to consumers, charge batteries, operate an electrolyser or use stored hydrogen to generate electricity. Control strategies can take account of renewable generation forecasts, electricity demand, energy prices, battery state of charge, hydrogen availability and the technical operating limits of connected equipment.
The system uses local data processing to support monitoring and control close to the installation, reducing dependence on continuous cloud connectivity. Industrial interfaces, including Modbus TCP and MQTT, support integration with compatible equipment and sensors. Hydrogen-related integration is developed on a project-specific basis, with our system providing supervisory energy management alongside dedicated equipment control and safety systems.
Target applications include industrial facilities, renewable energy sites, local energy communities, public infrastructure and microgrids seeking to combine renewable generation with storage and flexible demand. We contribute expertise in energy system design, equipment selection and integration, as well as the development of control strategies adapted to individual installations.

Advantages and innovations

Our innovation focus is the coordinated management of renewable generation, battery storage and hydrogen technologies through an edge AI energy management platform.
1. Integrated electricity and hydrogen management
The platform is being developed to coordinate photovoltaic and wind generation with electrolysers, hydrogen storage, fuel cells and batteries. This enables control strategies to consider the entire site’s energy needs and the interaction between assets.
2. Complementary storage technologies
The control approach combines the rapid response of batteries with the longer-duration storage potential of hydrogen. Energy allocation can account for conversion losses, equipment constraints, demand forecasts and renewable electricity availability.
3. Predictive operation
The development approach combines operational measurements with generation and demand forecasts to plan flexible loads, battery charging and hydrogen production. The objective is to increase on-site use of renewable electricity, limit demand peaks and reduce energy expenditure where operating conditions allow.
4. Local intelligence and operational continuity
Processing data at the edge reduces dependence on cloud connectivity and enables local energy management during internet outages. This architecture is relevant to distributed installations and sites requiring operational resilience.
5. Integration across equipment suppliers
Interfaces such as Modbus TCP and MQTT support connections to compatible equipment from different manufacturers. Hydrogen integration is configured for each project, with supervisory optimisation operating alongside dedicated equipment controls and safety systems.
6. Combined engineering and software expertise
We combine energy engineering with system’s development, enabling system architecture, equipment integration

and control strategies to be adapted together. Pilot cooperation can evaluate performance against site-specific baselines.

Technical specification or expertise sought

We seek complementary technologies and expertise to integrate renewable electricity generation, battery storage and hydrogen systems with the system's energy management platform. Partners may contribute in one or more of the following areas:
Hydrogen technologies: Electrolysers, fuel cells, hydrogen storage and auxiliary equipment suitable for integration with external supervisory control. Relevant technical information includes operating limits, efficiency curves, minimum loads, start-up times, ramp rates and available monitoring and control interfaces.
Renewable energy and storage integration: Expertise in combining photovoltaic and wind generation with batteries, hydrogen systems and variable electricity demand. Experience in microgrid design, power conversion, energy balancing and coordination of short- and long-duration storage is particularly relevant.
Industrial communication and automation: Documented interfaces such as Modbus TCP, MQTT, OPC UA or APIs, with access to equipment status, measurements, alarms and permitted control commands. Partners should support interoperability testing and the definition of control boundaries between the system and equipment-level controllers.
Predictive control and modelling: Expertise in renewable generation and demand forecasting, optimisation, equipment degradation modelling and assessment of energy conversion losses. Knowledge of weather-data integration and electricity price signals would support joint development.
Testing and validation: Access to laboratory facilities, simulation environments or pilot installations for evaluating integrated operation. Relevant capabilities include performance measurement, baseline definition and technical and economic assessment.

Stage of development

Available for demonstration

Sustainable Development goals

- **Goal 7: Affordable and Clean Energy**

IPR Status

Secret know-how

IPR Notes

Partner Sought

Expected role of the partner

We seek international partners for technological cooperation, joint R&D, pilot projects and commercial deployment of the system, with a focus on integrating renewable energy sources, battery storage and hydrogen technologies.
Equipment manufacturers and technology providers:
Companies developing electrolysers, fuel cells, hydrogen storage, batteries, photovoltaic or wind energy systems. Their role would be to provide equipment expertise and interface documentation, support integration with the system and jointly develop and validate coordinated control strategies.
System integrators and engineering companies:
Partners experienced in renewable energy, hydrogen installations, industrial automation or microgrids. They would

contribute to system design, installation, commissioning and local technical support. Cooperation may include licensing the system or engaging us as an EMS integration subcontractor.
Pilot-site operators:
Industrial companies, energy producers, utilities, energy communities and public infrastructure operators willing to host demonstrations. Their role would be to define operational needs, facilitate access to relevant equipment and data, and assess performance against agreed technical and economic indicators.
Research and development partners:
Technology SMEs, universities and research organisations interested in predictive control, hybrid battery-hydrogen storage, renewable hydrogen production and secure industrial IoT. They would contribute complementary expertise, testing facilities or modelling capabilities and participate in joint development and international project proposals.
Partners should have relevant technical capabilities and be willing to define a practical use case, responsibilities and measurable objectives together. We contribute the platform, energy engineering expertise and integration work.
Cooperation can start with a feasibility assessment or a limited pilot and expand to further development and deployment.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **SME <=10**

Dissemination

Technology keywords

- **01003003 - Artificial Intelligence (AI)**
- **04001003 - Storage of electricity, batteries**
- **04002011 - Micro-generation and grid connection**
- **04002001 - Fuel cells**
- **04002002 - Hydrogen production**

Market keywords

- **06003008 - Other alternative energy**
- **06008 - Energy Storage**
- **06003003 - Wind energy**
- **06003002 - Photovoltaics**
- **06003010 - Distributed power and grid connection**

Targeted countries

- **All countries**

Sector groups involved

- **Renewable Energy**
- **Digital**