

Proposed theme

Program: Energy - FP7; EUREKA; EUROSTARS

Title: REDOX POWER STORAGE SYSTEM FOR INCREASING THE POWER FEEDING EFFICIENCY AND THE SAFETY IN FEEDING FOR RESIDENTIAL/INDUSTRIAL CONSUMERS

Keywords:

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We are looking for: Partners / Coordinator
Research area:
Institution type: SME / University / Technology Transfer Centre
Expertise:

Abstract:

It is well known that one of the most restrictive features of electricity is the simultaneity between production and consumption. That is why the idea of storing large amounts of power on long periods of time has been and is now even more challenging.

Thus, on the backdrop of continued growth in the consumption of electricity in recent years and the negative impact that the development of the energy sector led the environmental effects of climate-evident, the project made a first national system for storing electricity at an industrial scale with the help of vanadium batteries with using REDOX technology.

The proposed system, integrated with an intelligent consumption management system, increases the power efficiency for the industrial / residential consumer by flattening the load profile, offers the possibility of reducing and en-frame it in the consumption prognosis, increases the safety in feeding - also having a secondary power source role and leads to the reduction of the non-feeding time and the effects of these on the consumers, whether accidental or planned.

Furthermore, the system architecture allows integration with complex systems and intelligent power management solutions, the possibility of applying it on a large scale system leading to equilibrating the balance of power generation and increasing its efficiency, and as a result, reducing CO2 emissions.

The project is included in the National Research and Development Program of Innovation 2 -

Module 1-product- systems development, its progress aiming the technological transfer of applied research results and innovation, and also the implementation of the CE certification of technological solutions using key components provided by VRB Storage Systems.

The design, the supply of the consumption management system and the integration of the two systems, as well as putting in the work of the entire revolutionary system achieved by Rokura Industrial Applications Ltd., the project finalization is being marked by obtaining the patent for the implemented system.

At present, as it is mentioned in Romania's Energy Strategy for 2007-2020, approximately 65% of electric power lines of low, medium and high voltage of the transforming stations and substations are characterized by physical wear and over 30% of installations are equipped with devices produced in the '60s.

Also, it was noticed an excess increase of the consumption in peak hours which led to high differences between the power consumption per tier schedules. Furthermore, heavy operating regimes in overload conditions are doubled when it comes to extreme weather phenomena - extreme heat, storms, and floods - with devastating effect, which have as a result long time interruptions in power feeding the consumers.

The technical solution proposed for building a power storage system using the REDOX technology and its integration into a consumption management system, will allow storage of cheap electric power generated in the empty hours of consumption and injecting it into the local power grid during the peak of the load profile or during the power feeding interruptions, the system taking in this case the function of secondary power source.

The pilot project will be built for an office building, based on the power load measurements and preliminary tests carried out by specialized personnel of the Rokura Industrial Applications Ltd., resulting that this type of consumers registered a load difference on certain tier zones that can reach up to 100%.

It will consist in assembling a system whose storage capacity will be determined in order to achieve an optimum in terms of technical and economic load profile flattening, taking into account the level of daily consumption, disconnection intervals and the price of consumed electric power.

Rokura Industrial Applications (RAI), according to the business plan, offers to the identified target clients groups the solutions to increase efficiency and safety in power feeding through power storage systems using the REDOX technology for increasing the consumption efficiency and also improving the quality of services offered by electric power distributors.