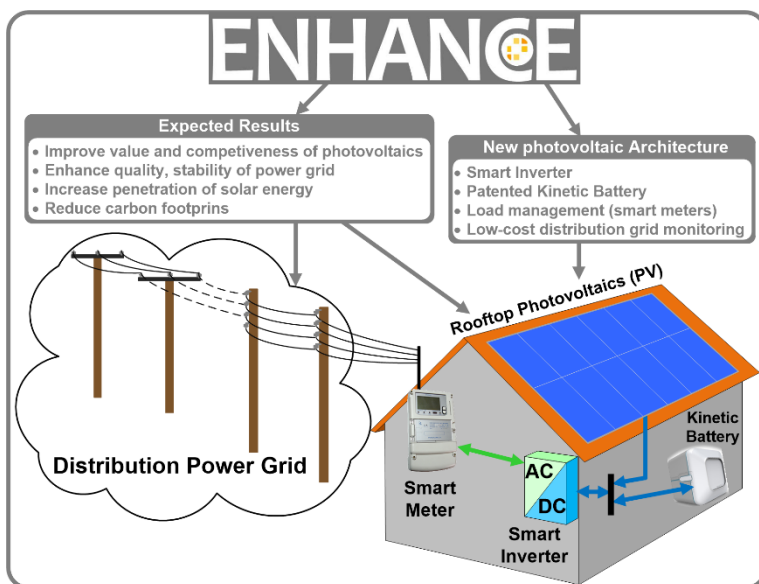


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KIOS Center of Excellence coordinates research project for the development of innovative residential photovoltaic systems



The KIOS Research and Innovation Center of Excellence of the University of Cyprus coordinates the ENHANCE research project. ENHANCE aims to pave the way for a seamless and massive deployment of solar energy into the power system by developing innovative residential photovoltaic systems (PVs).

Currently, the high penetration of residential photovoltaic systems is possible to cause stability and power quality problems to the power system. These problems may be caused due to the unpredictable and variable nature of solar energy and the fact that the operator of the power distribution system lacks real-time measurements (lack of smart meter

installations). To overcome these problems, the ENHANCE research project will develop an innovative residential photovoltaic system architecture that combines a smart inverter, a patented ecological kinetic battery system, and an intelligent system for flexible and automatic management of household electrical devices.

The proposed system will increase the competitiveness of solar power in the energy market by extending the lifetime of photovoltaic systems and reducing the generation cost of the solar kilowatt. Therefore, ENHANCE will allow a seamless and large-scale deployment of residential photovoltaics by properly supporting the quality and stability of the power grid. In addition, ENHANCE will develop a low-cost information platform which will allow distribution system operators to monitor the operation of the electricity network without installing any additional smart meters. The proposed platform will allow for an optimal and smooth network operation under high penetration of photovoltaic energy.



ENHANCE is expected to bring multiple benefits to the society, the economy and the environment. First of all, the techno-economical advantages of the proposed photovoltaic system will allow the widespread dissemination of solar-photovoltaic energy, resulting in a reduction of CO₂ emissions alongside with the positive consequences for the environment. The project will also contribute to the improvement of the quality and the reliability of the power system with a positive social impact, as citizens will enjoy uninterrupted access to high-quality and lower cost electricity.

In addition to the University of Cyprus which is the coordinator of the project, three industrial partners are participating in the research project: Eletoyia from Cyprus and Chakratec Ltd. and PowerCom from Israel, composing a dynamic joint venture between industry and the KIOS Research and Innovation Center of Excellence. The project is particularly important since the two countries apart from sharing the same vision regarding the decarbonization of their economies, they also share one of the highest solar irradiations on earth, while they are also currently working on the interconnection of their power systems. At a European level, it is expected that the project's results will substantially contribute towards meeting the industrial objectives and the market needs as defined by the Solar Europe Industry Initiative.

The project is funded by the 7th Framework Program of the European Union (SOLAR-ERA.NET) through the Research Promotion Foundation (RPF) of Cyprus and the Ministry of National Energy and Water Infrastructures of Israel. The research team in Cyprus is led by Professor Elias Kyriakides and is complemented by Dr. Lenos Hadjidemetriou and Ph.D. student Yiannis Tofis.
