

## SonnWende+

Effizienter Lösungen für Photovoltaik-Energiemanagement basierend auf Blockchain-Technologie

<b>Programm / Ausschreibung</b>	ENERGIE DER ZUKUNFT, Smart Grids, ERA.Net Cofund SG 2. Call (PV EVO 2016)	<b>Status</b>	abgeschlossen
<b>Projektstart</b>	01.10.2017	<b>Projektende</b>	30.12.2019
<b>Zeitraum</b>	2017 - 2019	<b>Projektlaufzeit</b>	27 Monate
<b>Keywords</b>	Blockchain, lokale Wertschöpfung, virtuelles Kraftwerk, PV		

### Projektbeschreibung

Das Projekt analysiert Blockchain-Technologie im Kontext erneuerbarer elektrischer Einspeisung und Flexibilität im Innovationslabor "Energie Innovation Cluster Südburgenland". Ziel ist die Erforschung neuer und effizienter Lösungen für Energiemanagement-Services und Energiehandel auf regionaler Ebene. Innovative Methoden für die Maximierung des Photovoltaik-Eigenverbrauchs auf Gemeindeebene werden dabei entwickelt. Gemeinsam mit den Partnern des Innovationslabors soll ein Ökosystem geschaffen werden, in denen Nachfrager und Anbieter von Energiedienstleistungen in Co-Creation-Prozessen neue Lösungen für PV-Strom-Eigenoptimierung auf Mehrfamilienhaus- bzw. Gemeindeebene entwickeln und testen können.

### Abstract

The project deals with the analysis of Blockchain technology in the context of renewable electricity producers and flexibility as enabler for innovative service concepts, tested in the innovation-lab "Energie Innovation Cluster Südburgenland" with the goal to find new and efficient solutions for services in energy management and trading in a local level. Innovative methods for maximizing the self-consumption of photovoltaic generation within the communal area will be developed.

In comparison to existing methods, Blockchain technology is able to increase the efficiency of energy management and trading. This is due its distributed approach and the degree of digitalization and automation. The innovation-lab consists of a virtual power plant including a storage cluster, photovoltaic systems, and flexible loads. In addition to the electric side, a coupling to the heat sector will be created by a heater rod and a heat storage as well as a coupling to the mobility sector via public and private charging stations for electric vehicles. In this context, various applications of Blockchain technology become possible, such as a benefit scheme for energy carrier comprehensive local produced energy, internal pooling of the virtual power plant, and dynamic usage of a photovoltaic system by several tenants.

Together with partners of the innovation lab, an ecosystem shall be established where consumers and suppliers of energy services create and validate new solutions for self-optimization of PV power for apartment houses or communal level, respectively. The project partners contribute with their competence and experience in the domains of Blockchain

technology, energy economy, electricity, thermal systems, and the living-lab approach. Concrete solutions will be specified and their feasibility will be checked within the scope of the project. The design will be adjusted and a Blockchain-demonstrator implemented in the innovation-lab. Project results will be well-performing application pattern for the Blockchain technology which are planned to be further developed for their application in the lab as well as the deployment in the field.

### **Projektkoordinator**

- AIT Austrian Institute of Technology GmbH

### **Projektpartner**

- Energieinstitut an der Johannes Kepler Universität Linz
- lab10 collective eG