

Shift towards renewable energy and technology for a smarter grid

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Employing renewable systems like solar and wind generators is becoming a widely adopted strategy due to the trends that indicate increasing prices of electricity. The shift towards [renewable energy](#) imposes challenges on the supply and demand side. On the supply side, the challenge is coordination of renewable of many small and volatile energy sources. The challenges are even greater when the supply requires cross-border cooperation. On the demand side, the main challenge that large consumers of electrical energy in industrial manufacturing are faced with, is how to respond to the extending energy market.

To cope with these challenges, the partners in the FINESCE project are developing solutions to optimize the interoperability of the grid and manage variations of wind and [solar power](#), also from renewables elsewhere in Europe. XLAB, the Slovenian Information Technology and Research company, has recently joined the consortium and will contribute by developing visualization tools for renewable energy generation, consumption and energy efficiency monitoring system.

A key characteristic of [electrical energy](#) from alternative sources like wind, solar or bio energy is its fluctuating availability and its decentralised and distributed production. Sites for [alternative energy](#)

[sources](#) are typically selected such that the energy production is optimised. Traditionally, these sites do neither match the sites of (former) large power plants nor the sites of the consumers of energy. This leads to a geographical imbalance between supply and demand that has to be tightly monitored, controlled and managed. An infrastructure that will get the renewables online will result in cost savings and, at the same time, have a positive impact on our environment. The technologies developed within XLAB's Research Department will contribute to a smarter grid with visualization tools for energy generation and consumption as well as to more efficient use of energy in the industrial sector.

Homes go green

FINESCE (Future INtErnet Smart Utility ServiCEs) is a smart energy use case project, part of FI-PPP program and funded by the European Union within FP7. Its challenge is to integrate decentralized renewable [energy sources](#) and electric mobility into the electricity system. The project runs a series of field trials at trial sites in 7 European countries. For the FINESCE Trial Sites in Horsens (Smart Village), Malmö (Smart Buildings) and Aachen (Smart Plant), XLAB will provide a set of standardized visualisation widgets to get a holistic view on energy consumption and generation, weather, in-house temperature, and other data in real-time or as measured historically. The Geographic Information System GAEA+ will be used to visualize layers of data on small powerplants as parts of distributed power generation and serve as the basis for a topological visualization of the distribution network and users in a Smart village.

... and So Does the Industry

Companies that are able to react adequately to varying prices set by

energy providers will possess a substantial competitive advantage. Thus, manufacturing companies need to avoid waste of energy within their production facilities and react to events in the grid. Due to the high amount and variety of energy data arising from an average production chain, monitoring and controlling [energy consumption](#) and efficiency is a challenging task.

Meeting these challenges head-on, an application has been developed within the Slovene SPEU project – Web Portal for Energy Efficiency Monitoring. It enables the inter-company comparison of [energy efficiency](#) processes. The users may find this service interesting for up to date consumption monitoring, evaluation of the [energy](#) efficiency measures, cost reduction and competitive position on the market.

More information: More information on SPEU available here: www.xlab.si/rd/finished-projects/speu/

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