

JSI - KIBERSik– Electricity Peak Shedding System for energy efficiency in industry

The KIBERSik system is part of SmartGrid technology and enables consumers and producers of electrical energy to become inter-active with electricity networks. It uses the technology of targeting the power consumption in fifteen-minute intervals, which considerably reduces electricity bills in a not well balanced or adapted consumption. The system can be used in all types of industries, but also other types of companies, for example in metal industry, wood industry, textile industry, glazier industry, paper industry, rubber industry, metallurgic industry, food industry, etc. KIBERSik system is already available in Mitsubishi sellers grid in Europe and South Africa. The predicted savings in electrical energy expenses, apart from other effects of the system on production costs and quality, are in average at 13% peak demand reduction and 0.9 years pay-back period with highs in energy intensive industries at over 20% reduction, and the longest paybacks registered at 2.2 years. Companies can have different contracts on supply as well as on the measurement of peaks, and the KIBERSik system covers all the possibilities enabled by the tariff system. Based on the use of advanced methods of predicting energy consumption and scheduling, the peaks are reduced by load shedding - switching off or discharging loads, by scheduling of operations and by using own electric power generation sources. The KIBERSik system is composed of one or several industrial controllers to which measurements and loads are connected, and of one or several control computers. All computers are interconnected in a network. The system was evaluated on 5 locations – by representatives of paper, paperboard, foundry and process industry and a distributor of electrical energy.

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SWOT ANALYSIS

Strengths:

- Interesting topic/idea. The predicted savings in electrical energy expenses are in average at 13% peak demand reduction and 0.9 years pay-back period; with highs in energy intensive industries at over 20% reduction; and the longest paybacks registered at 2.2 years;
- The system is designed to meet demanding challenges of the future SmartGrid technologies;
- The systems can be used in all types of industries;
- The research team is structured from different research and industrial fields and environments. The working teams included PLC specialists, SCADA specialists, technologists for optimization, technologists for electrical grid model and predicted algorithms, specialists for IT, specialists for economic optimization, specialists for power plants, specialists for loads shedding and specialists for reliability;
- KIBERSik, at this early stage, is installed now on 4 locations in Slovenia, while the market is very broad worldwide;

- The system is a part of family, which was chosen on SET-plan conference in Madrid 2010 as one of the 20 best energetic solutions.

Weaknesses:

- The idea to decrease of peak power consumption by load disconnection is not always applicable;
- The possibility of system's use in households isn't treated;
- It is still a research project co-funded by European structural funds and the Slovenian Ministry of Higher Education, Science and Technology. The system has not reached the market;
- Not a clear time schedule for the full commercialization of the proposed solution.

Opportunities:

- The KIBERSik systems can be used in all types of industries but also in other types of companies, for example in metal industry, wood industry, textile industry, glazier industry, paper industry, rubber industry, metallurgic industry, food industry. Market locations can be found all over the world. KIBERSik system is already selling in Mitsubishi sellers grid in Europe and South Africa;
- That goal of EU to use energy only from renewable sources by the year 2050 is impossible without systems like developed one.

Threats:

- It is possible to have a wrong loads disconnection;
- The integrated system development is still at early stage (research program), concerning market;
- It is possible market failure due to the strong antagonism.