

Analysis of industrial appliances potential as auxiliary balancing power in the Nordic region

The Project

We are now opening for a thesis project with the possibility to get involved in developing a new platform combining energy trading with M2M communication.

The project objective is to analyse and evaluate the business value of utilizing flexibility of commercial and industrial processes as balance power.

This involves contact with the industry, analysis of specific processes, and implementation of a model representation into a simulation toolbox developed by Expektra and KTH, and a comparative analysis of results.

The work will be supervised and tutored by Claes Sandels at ICS, KTH and Niclas Ehn at Expektra.

Requirements

We appreciate that you are at the end of your degree, you like to work independently and that you have some knowledge of the energy markets. The project may involve software development and we appreciate if you are familiar with Microsoft .Net platform. A well-performed project may lead to employment.

Company Background

The challenge with increasing wind and solar power generation is that the weather is unpredictable and variable. This also means that electrical power is not always generated when we need it the most. Electricity utility companies are financially responsible for balancing power consumption and production. This process alone represents a total cost of 20 000 MEUR/year in Europe, which in the end is paid by us end-consumers.

Today, the balancing process is all about adjusting production to follow consumption. As we enter the Internet of Things era, Ericsson and Cisco predicts that 50 billion devices will be online by 2020. This opens vast possibilities for a smart grid with higher security, efficiency and lower environmental impact, in which demand side management has a central role. This is about enabling the tuning of consumption to follow production.

Expektra develops a platform that enables flexible power consumption from different types of electric appliances, i.e. private heat pumps, commercial cooling systems or industrial processes, to be used as balancing power by the power utility. The platform is fully automated and delivered as a white labelled SaaS (software as a service) to BRP (Balance responsible parties) who can access flexible power without the need for upfront investments in specific technologies in order to reduce the cost of balancing.

In collaboration with KTH and KIC InnoEnergy, Expektra has developed a simulation tool to examine the business value of utilising flexible power consumption from various types of appliances as balancing power in different regions.

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