# Modeling the value of using controllable demand response as balancing power

EXPEKTRA

## 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 develop, evaluate and use models to analyse the business value of utilizing automated demand response on Swedish and European markets.

The work will be supervised and tutored by Claes Sandels at ICS, KTH and Niclas Ehn at Expektra. During the project you will get a good overview of how energy trading works and the opportunity to connect with many players in the industry. You will also improve your development skills and your knowledge in building software simulation tools.

## Requirements

The project may involve software development and we appreciate if you are familiar with Microsoft .Net platform. You are at the end of your degree, with some knowledge of our power system and like to work independently. 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.

Utilizing the thermal inertia of our homes and buildings through a smart control of the heating and cooling system (demand response), each building can virtually function as a small energy storage. 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.

Expektra is now developing an M2M communication platform that interfaces multiple electronic machines with electricity utility companies. Through the implementation of large-scale "virtual energy storage", we will be able to make energy consumption flexible while reducing the cost of imbalances in the power system.

The backbone is a marketplace where electricity utility companies buy demand response power from their customers. With new automatic functionality implemented in ordinary electronic equipment, such as heat pumps or home automation control systems, end-consumers can relax while a smart ICT platform actively helps balancing the power system while reducing the electricity bill. Expektra will work as a broker and aggregator on the marketplace.

## Contact

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