

Monitoring neighbourhood electricity consumption

July 4 2014



If better use could be made of solar energy, with less need for storage capacity, residents' electricity bills would be reduced considerably. Credit: NTNU

With more and more households owning one or even two electric cars requiring charging overnight, how will we manage without sacrificing our hot morning shower and fresh bread for breakfast?

This is the headache now facing the [electricity supply](#) companies. But

this isn't their only problem. What use is it to those homeowners, who have installed a modest solar panel system on their roofs, when the sun is cracking the pavements in the middle of the day and no-one at home to use the energy? Batteries with sufficient [storage capacity](#) are expensive, and many homeowners are reluctant to invest in them.

From problem to potential

But we mustn't despair. The EU project CoSSMic, which started last year, aims to develop a system that will control [electricity consumption](#) in the home automatically and even out the peak load across whole neighbourhoods – resulting in less need for storage.

If better use could be made of [solar energy](#), with less need for storage capacity, residents' [electricity bills](#) would be reduced considerably.

Based on residents' needs

SINTEF is heading the project, which is now in the process of developing a new ICT system.

"Electricity consumption will be controlled automatically, and will be based on rules drawn up by the neighbourhood residents or building owners", explains Svein Olav Hallsteinsen at SINTEF.

"For example, the system will ensure that not all [electric cars](#) are charged at the same time, but in sequence. The cars will still be fully charged when their owners want to use them, and the same goes for heating and cooling systems such as hot water boilers, freezers, dishwashers and washing machines.

Technology already available

One of the main objectives of the project is to even out the peak load across a neighbourhood, and most of the technology needed to achieve this is already available. Freezers and boilers that can communicate with solar panel systems are already on the market. The [solar panels](#) can store surplus energy at a reduced temperature in the freezer (-25 degrees Celsius) or at an increased temperature in the boiler (90 degrees Celsius). And clothes and dishes can be washed in sequence – there will be no need for the machines to plough through their entire programmes in one go.

Testing

The system will be tested in two installations in Germany and Italy, and the households involved will participate actively in their design. At the same time, the researchers will have to ensure that data security can be maintained so that it won't be possible to sabotage or hack into the system and gain access to sensitive data.

Provided by SINTEF

Citation: Monitoring neighbourhood electricity consumption (2014, July 4) retrieved 21 September 2024 from

<https://phys.org/news/2014-07-neighbourhood-electricity-consumption.html>

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