Conversations with my washing machine

an in-the-wild study of demand shifting with self-generated energy

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Ordinary householder as ‘energy farmer’

Distributed generation over the last years

Solar Photovoltaic (PV)

Energy losses: Storage

Direct consumption

Export To the grid

Energy losses: Transport, transformation

Import From the grid

Self-consumption

Appliances

Energy losses: Storage

Wind

MicroCHP pilot

Anaerobic digestion

Hydro

Solar PV

Installed Capacity (MW)

Q2 Q3 Q4 2010 Q2 Q3 Q4 2011 Q2 Q3 Q4 2012 Q2 Q3 Q4 2013
Energy becomes more *visible* and more *complex*
How to support people in a more intelligent use of energy?
Interactive Energy Demand-Shifting technologies around the washing machine

1. Delayed feedback
2. Real time feedback
3. Proactive suggestion
4. Contextual control

Before washing machine use

After washing machine use
User study

- 18 participants from EON Thinking Energy Project
- 8 months from July 2013 to February 2014
- Participatory data analysis, focus groups and questionnaire
- Monitoring of overall energy consumption, generation and washing machine consumption
- Remote control of the washing machine
Text messages

Real time feedback

'You ran your washing machine at 12:04 and 15:45 today (3.7% green). You could have achieved 43.6% by starting it at 10:34 and 13:52.'

Proactive suggestions

'If you want to run your washing machine today, then 12:30-14:30 should be the greenest time. It is a better day than tomorrow.'
Contextual control

Washing machine application

Deployment
1. Shifting & decision making
2. ‘À la carte’ support

3. Appliance interference
Towards interactive energy management systems

‘Guys, full power in 15 minutes!’

‘OK, I’ll suggest they get me ready for that…’

‘Guys, I’m going to use a lot of power for the next 30 minutes’

‘Hmm… I want these clothes for today, I’ll start the washing machine right now.’

‘That’s fine, we can go to sleep for a while.’
Thank you

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- Submited at ICT4s 2014 “Using Participatory Data Analysis to Understand Social Constraints and Opportunities of Electricity Demand-Shifting”, Bourgeois J., van der Linden, J., Kortuem, G., Price, B.

- Submited at UbiComp 2014 “Conversations with my washing machine: an in-the-wild study of Interactive Energy Demand-Shifting with self-generated energy”, Bourgeois J., van der Linden, J., Kortuem, G., Price, B.