Distributed Control of a Network with Multiple Electricity Producers and Consumers

Larsen, Gunn Kristine Holst

Stelligen
behorende bij het proefschrift
Distributed Control of a Network with Multiple Electricity Producers and Consumers
van
Gunn Kristine Holst Larsen

1. In order to match local power demand and production in the Smart Grid, it is a better idea to match with a few neighbours in a connected network, than to use a centralized setting. (Chapters 1, 3)
2. Neighbours in the Smart Grid should exchange information about their power production and demand. This information exchange should be done in a virtual network that does not necessarily have the same topology as the physical Power Grid. However, to keep the power load over a transformer station more flat, neighbours in the virtual information matrix should also be close in the physical Power Grid. (Chapter 3)
3. Distributed Model Predictive Control based on dual-decomposition and subgradient iterations is a scalable and useful method to coordinate decisions in the Smart Grid. (Chapters 4, 5, 6)
4. In the Netherlands in late autumn, it is beneficial from a resource perspective that every third household has a μ Combined Heat and Power system installed with 30% electric efficiency and 70% heat efficiency in order to cover the local electricity and heat demand. (Chapter 5)
5. Doing a PhD changes your view of people, and your view of yourself.
6. It would benefit men and women in The Netherlands if they were granted parental leave of equal length.
7. "Reserve your right to think, for even to think wrongly is better than not to think at all." *Hypatia*
8. "What we find is that if you have a goal that is very, very far out, and you approach it in little steps, you start to get there faster." *Mae Jemison*