

Master Thesis

# Load-Balancing of Consumers in Electricity Networks

With the arrival of renewable energy sources the volatility of power in the electrical grid has increased. The reason behind this is that specially in the European continent the availability of sun and wind is quite variable, thus it cannot be planned when the energy generated by these sources will enter the grid. Having local installations being able to consume more or less energy depending on when energy is available would reduce this volatility by reducing the peaks.

Work description: Design and implement a protocol that will adjust the consumption of energy in a home based on several parameters such as price and user interaction. It should be possible to detect devices and to avoid local as well as global peaks.

- **Implementation:** The ideas developed should be implemented using the digital-STROM devices.
- **Tests:** All these implementations should be tested—and the global energy-optimization should be analyzed in a theoretical way.

## Contact

Stephan Holzer, ETZ G64.1, [stholzer@tik.ee.ethz.ch](mailto:stholzer@tik.ee.ethz.ch), 044 632 7065

Miguel Rodriguez (aizo) [miguel.rodriguez@aizo.com](mailto:miguel.rodriguez@aizo.com)

Prof. Dr. Roger Wattenhofer, ETZ G63, [wattenhofer@tik.ee.ethz.ch](mailto:wattenhofer@tik.ee.ethz.ch), 044 632 6312