

Wednesday, September 21st.

Mathematical Optimization of Macroeconomic Energy Systems Models

The liberalization of energy markets and the decentralization of power supply have created increased demand for more complex technical and economical systems to control production, storage, and distribution of energy. Quantitative energy systems models (ESMs) based on mathematical optimization provide a basis to answer political, technical, and economical questions regarding the future development of energy networks. Today's state-of-the-art ESMs come with a high temporal, spatial, and technological level of detail and result in optimization problems (mostly linear and mixed-integer linear programs) that often cannot be solved satisfactorily with state-of-the-art solver software. This workshop is devoted to advances both in models and solution algorithms for complex ESMs.

09:00-10:00 Talks (Ambros Gleixner)

10:00-10:30 Coffee

10:30-12:00 Talks (Frieder Borggrefe)

12:00-13:00 Lunch

13:00-14:30 Talks

14:30-15:00 Coffee

15:00-16:30 Talks

Thursday, September 22nd.

Energy day 2016

Lectures: (chairman Jaromir Antoch)

9:00-9:50 Berit Müller, founding member of the Reiner Lemoine Institut (RLI, established in 2010), she focuses on the intersectoral simulation of energy systems and on the development of publicly available simulation models and basic data to improve the scientific performance of the work and the socio-political dialogue.

10:00-10:50 Dana Drabova, president of the State Nuclear Safety Authority of the Czech Republik, in period 2006-2009 president of Western European Nuclear Regulators Association (WENRA),

11:00-11:50 Filip Prochazka (Masaryk University in Brno), director of MycroftMind company (<http://www.mycroftmind.cz/en/models-and-simulations/>) and the leader of development team of LODIS project (control of local distribution networks) and others applications in real networks.

12:00-13:00 Lunch

13:00-13:30 Opening round tables (Gejza Dohnal)

13:40-14:20 } { theme 1: Impact of research activities to real energy systems

14:20-15:00 } } theme 2: Nuclear versus smart grids (future energy mix)

15:00-15:40 } { theme 3: Real applications in energy production and distribution practice

16:00-16:50 Closing summary (Emil Pelikan)

real applications.

Friday, September 23rd.

Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks - COST Action TD 1207

Energy Production and Distribution (EP&D) is among the biggest challenges of our time, since energy is a scarce resource whose efficient production and fair distribution is associated with many technical, economical, political and ethical issues like environmental protection and people health. EP&D networks have rapidly increased their size and complexity, e.g. with the introduction and interconnection of markets within the EU. Thus, there is an increasing need of systems supporting the operational, regulatory and design decisions through a highly inter-disciplinary approach, where experts of all the concerned fields contribute to the definition of appropriate mathematical models. The Action proposes a matrix approach with an organization into four working groups (WG1-WG4) providing a methodological subdivision of the activities and subjects to three transversal topics, touching all WGs:

- problems requiring decisions that affect a time span variable from the minutes to the days/weeks/few months range.
- EP&D problems on time spans ranging from one week to one (or a few) year.
- a long-term evolution of EP&D over the course of several years due to the combined effect of several different factors.

09:00-09:45 Database development of all applications of EP&D, with extensive cross-link (Antonio Frangioni, WG1 leader)

09:45-10:30 Complements and contributes to the “wiki” of WG1 regarding the methodological advances that are relevant to make novel EP&D problems addressable (Jean Bernard Lasserre and Christoph Helmberg, WG2 leaders)

10:30-11:00 Coffee

11:00-11:45 Complements and contributes to the “wiki” of WG1 on the area of the technical validity of the mathematical models currently used in EP&D applications (Sandrine Charouset, WG3 leader)

11:45-12:30 Methodological results of WG2 with actually usable software, ready to exploit data provided by WG3 (Martin Mevissen, WG4 leader)

12:30-14:00 Lunch

14:00-16:00 Discussion about a future work (Horizon 2020 proposals).