Minutes
Work Group Meeting

COST Action no. TD1207
Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks

15th March 2016
8:30 – 10:00

The TRR154 is a collaborative research center (CRC) in the field of mathematical modelling, simulation and optimization using the example of gas networks. The objective of the meeting is to see if there are opportunities for cooperation especially in terms of STSMs.

Alexander Martin is the chair of the collaborative centers. He presents the activities of the group. The project has more than 50 members, with more than 20 principal investigators and 18 PhD students.
The idea of the grant is to bring together the different fields of optimization on gas research (Integer programming, non linear optimization control and modelling and numerical simulation).
The gas network needs tailored models due to their complexity. From the trade point of view, exit and entry points can be traded within a certain capacity. The gas network planner has to ensure that the gas is transport the gas not matter the nomination shows up. This is a non linear problem and it is not clear how to model this problem. The network itself is non stationary, so there are dynamic and non dynamic issues. Furthermore there are uncertainties on the future demand. One of the issues is to bring all different models such as they are consistent between each other.
The team organize summer courses, graduate courses; it aims to create a common database. There are three main case studies on which working groups from participating universities work together to solve specific problems. The idea for the feature is to extend the models to other types of networks.
The involvement of industry consists in the delivery of company data and their willing to provide correct data. There is a specific position that is in charge of standardising the data. The consistent data are not existing, measurement are often not correct, the network changes very often. Inflows and outflows are not balanced at daily basis. There is the need to understand how this balancing dynamics works on the long term. Robust methods are needed rather than exact methods.

Antonio Frangioni presents the COST Action TD1207 and the Wiki to the TRR154 CRC. The Action is a networking project that was born from a mathematical optimization research group. It does not fund research but networking, training schools.
Antonio Frangioni underlines the need to consider the regulations existing are very important in the context of energy problems. This is taken into account and included in the Wiki. The idea of the Wiki is to give a categorization of the problems along a number of axes. The main axes are the strategic, tactical and operational.
The objective is to publicize the Wiki to a broad audience with the objective of reach the research groups like the TRR154 and, most importantly, the political decision makers.
Antonio invites the participants of the TRR154 to contribute to the gas section of the Wiki.
The wiki should be descriptive without mathematical models. The description of the problem should be understandable by most people for this reason formulas should be avoided.

The third presentation by Jens Lang from TRR154 is dedicated to gas network modelling.

The participants conclude that there are two main possibilities for future interaction: first, TRR154 is encouraged to apply for STSM funding, particularly for young researchers; second, the TD1207 wiki might be enriched by articles on gas networks written by young members of TRR154.