

From Simulation to Optimization

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Abstract: The FORNE projects deals with several questions regarding the planning and operation of gas transport networks. One of the central questions is whether it is possible to find a stationary state for a particular demand/supply situation given all parameters of the network. This includes discrete decisions like whether a given compressor is running at all and also continued ones like the rate of revolution of the compressor in case it is running. Traditionally, this problem is solved by use of an experienced human network planner together with a simulation tool. In this talk we report how we transformed this simulation problem into a fully automatized optimization model. A detailed account of the mathematical models and solution methods will be given. We will discuss the meaning of feasibility in this setting. Furthermore, it is possible to answer several more involved questions, which also include stochastic aspects once the above procedure is available.

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