

## **Modelling, Simulation and Optimization of Gas Transportation Networks**

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**Keywords:** Gas networks, mathematical modelling, numerical methods, optimization.

**Abstract.** *The goal of the presentation is to summarize an industrial research project related to mathematical methods for simulation and optimization of gas transportation networks. In the first part, the one-dimensional dynamic gas equations are recalled for a single pipe. Then, the gas network is modelled by a directed graph and a system of equations for steady state simulation are introduced. The existence of a solution to this system is proved and numerical algorithms are given. Next, an optimization problem related to compression stations is stated and numerically solved. Finally, some results for real gas networks are shown.*