Polyhedral 3D Models for Compressors in Gas Networks

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Abstract

Compressor machines are crucial elements in a gas transmission network, required to compensate for the pressure loss caused by friction in the pipes. Modelling all physical and technical details of a compressor machine involves a large amount of nonlinearity, which makes it hard to use such models in the optimization of large-scale gas networks. In this paper, we are going to describe a modelling approach for the operating range of a compressor machine, starting from a physical reference model and resulting in a polyhedral representation in the 3D space of mass flow throughput as well as in- and outlet pressure.

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