Minimum Cost Gas Transport with Renewable Electric Energy

J. Thiedau[1] and <u>M. C. Steinbach</u>[2]

Abstract: Storing large amounts of renewable electric energy from highly volatile sources like wind or solar power is a major challenge in transforming the energy system. Existing gas network infrastructure can provide a contribution if electric compressors are used for the gas transport: that way electricity is converted to a pressure increase in the pipes (linepack) or in underground storage facilities. We present an optimization model based on electricity spot prices combined with transient gas dynamics and technical network elements. Results of an ex-post study for a realistic gas pipeline are discussed.

[1,2] Institute of Applied Mathematics, Leibniz Universität Hannover
Welfengarten 1, 30167 Hannover, Germany
thiedau@ifam.uni-hannover.de, mcs@ifam.uni-hannover.de