Comparison of Linear and Nonlinear Model Predictive Control for Optimization of Spray Dryer Operation - DTU Orbit (13/12/2018)

**Comparison of Linear and Nonlinear Model Predictive Control for Optimization of Spray Dryer Operation**

In this paper, we compare the performance of an economically optimizing Nonlinear Model Predictive Controller (E-NMPC) to a linear tracking Model Predictive Controller (MPC) for a spray drying plant. We find in this simulation study, that the economic performance of the two controllers are almost equal. We evaluate the economic performance with an industrially recorded disturbance scenario, where unmeasured disturbances and model mismatch are present. The state of the spray dryer, used in the E-NMPC and MPC, is estimated using Kalman Filters with noise covariances estimated by a maximum likelihood (ML) method.

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