Hybrid dynamic control of a sewage sludge dewatering and incineration process

Abstract:
This paper deals with the automatic setting of setpoints for physically interconnected decentralized control loops in dependence upon the overall plant operating mode, denoted as high-level control. In the last two decades, a lot of effort has been spent on the development of such control concepts which are almost exclusively based on online-optimization, like Model Predictive Control (MPC). The application of these optimization based control approaches at a real plant is cost-intensive and, therefore, economically viable for large-scale processes only. However, in the process industry there is also a need for high-level control concepts for less sophisticated processes, which are characterized by a weak meshing of the decentralized control loops. This paper proposes a new hybrid dynamic controller for the automatic setpoint setting for an industrial sewage sludge dewatering and incineration process and compares its behavior with an MPC in a simulation study. The investigation shows that the hybrid controller yields good results by adapting the setpoints to different plant operation modes and, moreover, even approximates the behavior of the MPC with appropriate accuracy. This example illustrates the great potential of the proposed approach.
for industrial applications where cost efficiency and effortless maintenance are important.

Kongress- / Buchtitel:
13th IEEE International Conference on Automation Science and Engineering (CASE 2017)

Publikationsdatum: 20.08.2017

Jahr: 2017

Jahr / Monat: 2017-08

Nachgewiesen in: Scopus; Web of Science

Revied: ja

Occurences:

· Hochschulbibliographie > 2017 > Fakultäten > Maschinenwesen > Assistant Professorship Sichere Eingebettete Systeme (Prof. Provost)
· Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Mechatronik > Assistant Professorship Sichere Eingebettete Systeme (Prof. Provost) > New Folder