Slovak University of Technology in Bratislava
Institute of Information Engineering, Automation, and Mathematics

PROCEEDINGS

of the 18th International Conference on Process Control

Hotel Titris, Tatranská Lomnica, Slovakia, June 14 – 17, 2011

ISBN 978-80-227-3517-9

http://www.kirp.chtf.stuba.sk/pc11

Editors: M. Fikar and M. Kvasnica

Papafotiou, G.: Model Predictive Control for Industrial Applications, Editors: Fikar, M., Kvasnica, M., In *Proceedings of the 18th International Conference on Process Control*, Tatranská Lomnica, Slovakia, 495–495, 2011.

Full paper online: http://www.kirp.chtf.stuba.sk/pc11/data/abstracts/102.html

Model Predictive Control for industrial applications

Georgios Papafotiou

ABB Corporate Research, Segelhof, 5405 Dättwil, Switzerland

Model Predictive Control represents an exciting academic research field and at the same time a well established and mature technology in many industrial applications, where physical processes need to be controlled in an efficient and reliable way. Until recently, however, its appeal has been mainly restricted to processes with rather slow dynamics with sampling times ranging from a few minutes to many hours, such as the ones encountered in the areas of (petro)chemicals, minerals and metals. The main reason for this restriction can be traced to the computational demand that optimization-based algorithms can pose to the control hardware platforms, since in its most common version MPC requires the online solution of a constrained optimization problem at each time step. Nowadays, however, the increased computational capacity that is becoming available in the commonly employed controllers, coupled with recent algorithmic advances, has encouraged the emergence of MPC applications in the automotive, and more recently the power electronics industry, where the time scales are in the range of milli- or even micro-seconds. This talk tries to emphasize this visible trend in industrial reality and present recent developments in the application of MPC for the efficient control of Medium Voltage induction motor drives.