Title: Leveraging Process Automation for Demand Side Management

Duration: 2013-2015

Sponsor: ABB

Contributing Faculty: Gabriela Hug

Contributing Students: Xiao Zhang

Description: This project focuses on demand side management of industrial processes. From the power system side, with the integration of a large share of renewable generation resources such as wind turbines and solar panels, it is important to increase the participation of demand response to balance the variability of these renewable generations. From the industry side, many industrial processes are power-intensive but flexible at the same time, such as aluminum smelters, electric arc furnaces, cement plants, etc. These industrial processes have both the aspiration and the ability to provide demand response. For example, aluminum smelters are able to adjust their power consumption very quickly and accurately by controlling the rectifier taps within seconds with the resolution of around 1 MW, so they are capable of providing regulation, spinning reserve to support the operation of power system. The overall goal of this research is to investigate the potential of industrial manufacturing plants for the provision of demand side management and to integrate this into power system operations.