

ECE Seminar

Time and Location: Tuesday Mar. 5, 2013 at 11am

Location: LSC 208

Speaker: Salman Mohagheghi, Assistant Professor, Colorado School of Mines

Title: Energy Management of Industrial Systems through Demand Response

Abstract:

Electric demand side management (DSM) focuses on changing the electricity consumption patterns of end-use customers through improving energy efficiency and optimizing allocation of power. Demand response (DR) is a DSM solution that targets residential, commercial and industrial customers, and is developed for demand reduction or demand shifting at a specific time for a specific duration. In the absence of on-site generation or possibility of demand shifting, consumption level needs to be lowered. While non-criticality of loads at the residential and commercial levels allows for demand reduction with relative ease, demand reduction of industrial processes requires a more sophisticated solution. Production constraints, inventory constraints, maintenance schedules and crew management are some of the many factors that have to be taken into account before one or more processes can be temporarily shut down. However, what makes these customers attractive targets for demand response is the size of their consumption level. In fact, at many utilities, the industrial customers (2–10% of total number of customers) account for up to 80% of the electricity usage. This presentation proposes an intelligent system, based on the concepts of expert systems and graph theoretic analysis, for implementation of DR at an industrial site. Based on the various operational constraints of the industrial process, the designed system determines the loads that could be potentially curtailed.

Bio:

Salman Mohagheghi received the B.Eng. from University of Tehran, Iran, M.Sc. from Sharif University of Technology, Tehran, Iran and PhD from Georgia Institute of Technology, Atlanta, GA all in Electrical Engineering. Currently, he is an Assistant Professor in the Electrical Engineering and Computer Science Department at Colorado School of Mines, Golden, CO. Prior to joining School of Mines, he was a Senior R&D Engineer at ABB Corporate Research Center, Raleigh, NC from 2007 to 2010, and a Postdoctoral Fellow at Georgia Institute of Technology from 2006 to 2007. His current research focuses on situational awareness, distributed and renewable energy resources, communication networks in power systems, and distribution automation systems. Dr. Mohagheghi is a member of the IEC TC-57 Working Group 17 on Communications Systems for Distributed Energy Resources.