

学术报告会

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Model-based Process Control in the Steel Industry

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Abstract:

The steel industry is confronted with an increased competition demanding for more diversified product portfolios, tighter quality tolerances, increased energy efficiency, as well as reduced waste and environmental impact under volatile energy and raw material prices. Advanced process control and automation are important value drivers to improve the production capabilities, the sustainability, the flexibility, and the efficiency of the various production processes. These processes feature many challenging properties for a control engineer: nonlinearities, MIMO coupling, different time scales, transport delay, strong parameter variations, scarcity of measurements, rough environmental conditions. Thus, model-based analysis and control design concepts turn out to play a key role. In this talk, we will give some selected industrial applications from steel industry with a special focus on the interplay between the control theoretic background and the practical implementation.

Biography:

Professor Andreas Kugi is head of the Automation and Control Institute (ACIN) and full professor for Complex Dynamical Systems at Vienna University of Technology in Austria. He received the Dipl.-Ing. degree in Electrical Engineering in 1992 from Graz University of Technology, Austria, the Ph.D. (Dr.techn.) and the "Habilitation" degree in the field of automatic control and control theory from Johannes Kepler University (JKU), Linz, Austria, in 1995 and 2000, respectively. His research interests include the physics-based modeling and control of (nonlinear) mechatronic systems, differential geometric and algebraic methods for nonlinear control, and control design for infinite-dimensional systems. He is involved in industrial research projects with more than 40 companies. These projects cover the fields of automotive applications, hydraulic, pneumatic, and electrical drives, robotics and smart structures, as well as process control applications. He has published about 200 scientific publications, holds about 30 patents, serves as the Editor-in Chief of Control Engineering Practice and is a full member of the Austrian Academy of Sciences.