

Seminar 21 Sunday June 17, 2001

MODERN SIMULATION BASED DESIGN METHODS FOR ELECTRONIC DRIVE SYSTEMS 9:00am - 6:00pm

Instructors: Dr. Andreas Baral, IST GmbH
Dr. Lutz Zacharias, SIMEC GmbH & Co. KG

ABOUT THE INSTRUCTORS

Dr.-Ing. A. Baral: Dr.-Ing. Baral studied electrical engineering at the Technical University of Kassel until 1992. From 1992 to 1997 he was scientific assistant at the Institute of Electrical Power Engineering. PhD 1996 in the field of magnetic bearings. Since 1997 President of IST-Engineering Corporation (Ingenieurgesellschaft für Systemtechnik mbH (IST)).

Dr. -Ing. L. Zacharias studied Cybernetics and Automation Technology at Chemnitz University until 1987. 1986 he spend part of his studies at the electrotechnical institute at Novosibirsk. From 1988 – 1991 assistant lecturer at the Technical University Chemnitz. In 1992 he took his PhD degree in the field of automatized drives. Since 1992 president of SIMEC GmbH & Co. KG, Chemnitz, responsible for application and sales.

TOPICAL OUTLINE

Progress in power electronics (PE) nowadays is an important source of innovation in the fields of drive technology and automation engineering. The development is characterized more and more by miniaturization of electrical systems, standardization and integration of PE into the actuation/drive system. To keep pace with this trend, simulation also here becomes step by step a key technology. The mathematical algorithms of the **SIMPLORER** simulation approach introduced here, are adapted to such systems perfectly.

- Introduction in time saving modeling/simulation of Electronic Drive Systems
 - Handling of multi domain systems with multi domain simulation
 - Methods of behavioral modeling and their practical implementation
- Overview on electrical machine modeling
 - Theory and modeling aspects of DC machine
 - Induction machine,
 - Synchronous machine
 - Switched mode power supplies, inverters
 - Digital control systems (PWM, closed loop, etc...)
 - Automatized electrical drive systems
 - Introduction of Power Electronic Systems Model Library
 - Introduction of web based simulation
 - Introduction of VHDL-AMS modeling and simulation for PE systems
- Motion control
 - DC machine
 - Converter supplied induction and synchronous machine
 - Field-oriented control
- Introduction of Power Electronic Systems Model Library
- Introduction of Electrical Machines Model Library, also pre-parameterized motors
- Introduction of VHDL-AMS modeling and simulation for actuation systems
- Various simulation examples

OBJECTIVES/BENEFITS

Demonstration of an easy, more efficient and engineers like way, how to use simulation for optimum "drive" designs. Modeling approaches for system and component level as well, scalable models. A user-friendly solution enabling the parameterization of dynamic power semiconductor models without the need of internal manufacturer data will be presented. Practical modeling and simulation exercises are done during the seminar so, that the participants will be ready to adapt the methods described also for their own technical tasks. Free Evaluation CD of "system" simulation package for each course attendee.

WHO SHOULD ATTEND

All engineers, managers and academics, who have to deal with the design or application of modern drive systems and power electronics and want to use simulation.