

講演会名称	IEEE Distinguished Lecture
日時	平成 24 年 6 月 12 日(月) 14:40~16:10
会場	琉球大学 工学部4号館 111教室
演題	1. Hardware-in-the-Loop Systems with Power Electronics 2. Encoders for Simultaneous Sensing of Position and Speed
講師	Prof. Ralph Kennel (Techn. Univ. München)
講演概要	<p>- Hardware-in-the-Loop Systems with Power Electronics Usual simulation programs deal with numbers and respective mathematical equations only. Any physical restriction or limitation has to be considered by a respective model. Any mistake in the model results in failures during simulation. The physical behavior of energy has specific characteristics and restrictions given by nature. Including real energy in the simulation process would consider these natural characteristics without the need of designing a respective simulation model. Power electronics provide the possibility of including real energy in the simulation without losing it during the process. Shifting energy from one storage device (inductance, capacitance, etc.) to another one and feeding back the respective physical quantities to the simulation program results in a Hardware-in-the-Loop System with Power Electronics (PHiL), with real energy as part of the simulation.</p> <p>This seminar reports about experiences with a PHiL-System used for simulation of electrical machines for testing power electronic products - especially voltage source inverters for drive applications. For this purpose the inverter under test is not connected to a real machine, but to a second inverter instead, which behaves like an electrical machine. The power capability of the so-called "Virtual Machine" is increased by sequential switching of parallel connected standard inverters. By this concept the power capability and the effective switching frequency can be increased to provide better performance than the device under test. The parallel connected inverters can be of the same type as the inverter under test. Hence there exists no power limit for drive inverter testing with respect to the product range of the manufacturer.</p> <p>> >></p> <p>- Encoders for Simultaneous Sensing of Position and Speed Speed and position sensors have become an important topic for servo drives, especially since the drive control is realized digitally -; i.e. by a microcontroller. For many application engineers this is somewhat surprising -; nobody expected any impact in comparison to servo drives with analogue control. This issue is not yet completely understood. There is a swapping of expressions like "accuracy" and "resolution" -; of course these words do describe different characteristics and should not be mixed up. Furthermore the introduction of digital control, which started in industry already 20 years ago, made issues like "differential accuracy" and "smoothness" much more important than before for a lot of servo drive applications.</p> <p>This seminar presents some general explanation of the items mentioned above as well as different encoder technologies available today and their characteristics -; especially with respect to digitally controlled servo drives. This is an attempt to contribute to clearness and understanding in the impact an encoder has on the control behavior of a servo drive -; especially under slow motion operation. Discussions and experience exchange between servo drive engineers might hereby be streamlined and get more efficient.</p>
問合先	琉球大学 工学部 千住智信
主催・共催	<p>【主催】 琉球大学工学部</p> <p>【共催】 電子情報通信学会九州支部, IEEE Fukuoka Section, IEEE PELS Fukuoka Chapter,</p> <p>【協賛】 電気学会九州支部、電気学会九州支部沖縄支所</p>
その他	(聴講料)無料