



### Electrical Drive Systems and Power Electronics

Besides the typical topics of electrical drive systems, like the different types of electrical machines, their operation and control, the chair works also on sensorless control of electrical drives, on predictive control of converters and on Hardware-in-the-Loop-systems for Power Electronics.

The wide range of research and teaching areas makes the chair of Electrical Drive Systems and Power Electronics at Technische Universität München the best basis for a future-oriented education in terms of systems and drive engineering.

### Key Research Fields & Competence Areas:

- Optimization strategies to identify mechatronical systems
- Non-linear, adaptive (time variant) control of mechatronic multivariable (multiple-input, multiple-output) control systems
- Sensorless control of Induction machines
- Predictive control of multilevel inverters
- Predictive control of Induction machines
- Flatness based predictive control of electrical drives

### Institute Highlights:

- Great modern laboratory
- Hardware-in-the-Loop-systems for Power Electronics

- Practical education on modern hardware and software
- Brand new control and inverter technology
- Real-time-system for inverter control
- Broad performance capacity in the field of drive systems

### Professor:

Ralph M. Kennel was born in 1955 at Kaiserslautern (Germany). In 1979 he got his diploma degree and in 1984 his Dr.-Ing. (Ph.D.) degree from the University of Kaiserslautern. Until 1999 he worked on several positions with Robert BOSCH GmbH (Germany). From 1994 to 1999 Dr. Kennel was appointed Visiting Professor at the University of Newcastle-upon-Tyne (England, UK). From 1999 - 2008 he was Professor for Electrical Machines and Drives at Wuppertal University (Germany). Since 2008 he is Professor for Electrical Drive systems and Power Electronics at Technische Universität München. His main interests today are: Sensorless control of AC drives, predictive control of power electronics and Hardware-in-the-Loop systems.

Dr. Kennel is a Senior Member of IEEE, a Fellow of IEE and a Chartered Engineer in the UK. Within IEEE he is Treasurer of the Germany Section as well as ECCE Global Partnership Chair of the Power Electronics society (PELS).