



TEXAS A&M  
UNIVERSITY at QATAR

ELECTRICAL AND COMPUTER  
ENGINEERING PROGRAM

THE ELECTRICAL & COMPUTER ENGINEERING PROGRAM PRESENTS

# Sensorless Drives with PM Synchronous Machines

*Joachim Holtz, Fellow, IEEE, University of Wuppertal*

Tuesday, April 7  
12 – 1 p.m. Followed by light lunch  
Lecture Hall 144

Permanent magnet synchronous machines have the attractions of a compact design and high efficiency. Although primarily used for high precision motion control applications, sensorless control techniques have made these machines attractive for general purpose drives. Various methods have been developed for accurate rotor position estimation. Model based algorithms rely on the detection of the induced voltage. They work well if the rotor speed is high enough to generate a voltage of sufficient magnitude, but fail at lower speed and at standstill. Competing methods for rotor position estimation are valued by their sensitivity to machine parameters.

Joachim Holtz received the Ph.D. from the Technical University Braunschweig, Germany. In 1969 he became Associate Professor and, in 1971, Full Professor and Head of the Control Engineering Laboratory, Indian Institute of Technology. He joined the Siemens research Laboratories, in 1972. From 1976 to 1998, he was Professor and Head of the Electrical Machines and Drives Laboratory, Wuppertal University, Germany. He is presently Professor Emeritus and a Consultant. Dr. Holtz has extensively published, among others 12 invited papers in journals. He has earned 15 Prize Paper Awards. He is the coauthor of four books, and holds 31 patents. Dr. Holtz is the recipient of the IEEE IES Dr. Eugene Mittelmann Achievement Award, the IEEE IAS outstanding Achievement Award, the IEEE PES William E. Newell Field Award, the IEEE Third Millennium Medal, the Anthony J. Hornfeck Service Award, and the IEEE Lamme Gold Medal. Dr. Holtz is Past Editor-in-Chief of the IEEE Trans. on industrial Electronics, Distinguished Lecturer of the IEEE IAS and IEEE IES.



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