

Thursday, June 22, 2017

Afternoon Breakout Sessions



Industry Special Session – AVL Test Systems, Inc.

TESTING DRIVE INVERTER PERFORMANCE WITH A VIRTUAL E-MOTOR (PHIL)

Thursday, June 22nd, 2017

2:00PM – 3:20PM

Venue: Room 311

Presentation Summary:

Drive inverter testing today can be easily accomplished by use of a virtual e-motor in a Power-Hardware-in-the Loop setup. Core element is a “virtual” e-motor which emulates an e-motor and mimics e-motor characteristics in both, static and highly dynamic drive scenarios. Key to this technology is the precise motor replication, which finally allows to test not only the inverter power capability but also the control performance – without a real motor or mechanics.

A game changer in inverter development: The new testing concept bases on the precise emulation of the electromagnetic motor characteristics while all mechanical behavior is simulated only. It meets the demands of development-related tasks, verification on system level and end-of-line testing. At the same time requirements stipulated by ISO 26262 can be fulfilled. The independence of a real e-motor, a dyno or any other mechanical setup provides an extremely fast method of inverter verification. One tool serves the whole inverter test process as it reliably mimics correct e-motor behavior at all operational points, thus reducing testing effort by more than 90%. Various applications like high power e-drive trains, hybrid configurations or low power applications can take impressive advantage from this testing method.

The workshop will demonstrate a virtual e-motor which replaces the real e-motor in a power steering application. In this setup the motor control electronics (i.e. the unit under test) runs in a closed loop drive simulation configuration with the real electrical (power) interface but without any mechanics involved. In that way detailed motor control electronics testing including fault injection, tolerance scans and dynamic response can be done precisely, reproducibly and in a fast and automated way.



Speaker: *Horst Hammerer, Co-Founder & CEO, SET Power Systems GmbH – Member of the AVL Group*

Horst Hammerer is Co-Founder & CEO of SET Power Systems GmbH, part of the AVL Group and a leading global supplier of inverter testing systems. He has been involved in aerospace, test systems and power electronics for more than 30 years. Prior to founding his own company, Horst developed and designed new testing strategies at Liebherr-Aerospace. In 2008 he was granted an innovation award for successfully introducing a P-HiL component to test A380 CPCS computers, resulting in a joint venture between his private enterprise and the AVL List GmbH. He is passionate about enhancing and redefining testing methods for more meaningful results, focusing on the transfer of aerospace testing methods to e-mobility. His visions and innovative approaches to technological thinking make him a welcome speaker at conferences and universities. Horst studied in both Germany and the UK and holds a degree in communication engineering from the University of Applied Sciences Ulm. Together with his wife and children he lives in Southern Germany.

