Course ID # 311C:

**Utilizing JTAG / Boundary Scan and JTAG Emulation for board and system level test and design verification**

**Course Description:**
This session provides a classification of common and not so common applications utilizing the JTAG port as defined in IEEE 1149.1. We will cover a wide spectrum ranging standard applications such as connectivity tests and in-system programming for various types of devices, as well as more advanced ways of utilizing the JTAG interface for application such as functional tests for device and board interface circuitry. We will show ways to utilize access to on-chip emulation and debug resources for board and system level design verification and manufacturing tests and illustrate how automated test pattern generation can be used to develop such applications quickly and efficiently.

*This course is part of the Development Tools track of sessions.*

**Track Description:**
Developers of software for embedded systems can make their tasks easier and gain efficiency by taking full advantage of the features and capabilities of the latest system development tools. Therefore this topic of DevCon 2010 provides details on the capabilities of the tools available for Renesas MCUs and MPUs and tips on how to use them effectively. Sessions cover subjects ranging from integrated development environments (IDEs) and graphical code generation for peripheral module initialization to high-level visualization and interaction with embedded applications using Windows APIs and run-time analyzers. Techniques are described for advanced debugging of embedded applications with state-of-the-art tools. Proven "tricks and tips" are presented for tracking down elusive bugs and problems.

**Presenter:  Heiko Ehrenberg, Goepel Electronics**

**Presenter Bio:**
Managing Director of Operations  
GOEPEL Electronics; Austin TX

Education
University of Applied Sciences at Mittweida, Germany

Work Experience
Application Engineer GOEPEL electronic GmbH in Jena, Germany - JTAG/Boundary Scan; supporting European Customers