



University of Hawai'i at Mānoa

Hawai'i Natural Energy Institute

School of Ocean & Earth Science & Technology

Hardware-in-Loop Fuel Cell Testing

Studying transient characteristics and performance behavior of PEM fuel cells in highly dynamic applications requires a fast test set-up, faster than what is currently on the market. Therefore, a new controller architecture was designed, making use of top-edge technology, such as FPGA and Real-Time, to combine industrial-grade reliability and safety with the flexibility of an open-source research system. A multi-layer structure had to be employed, embedding platform- and software-independent communication pathways to allow data exchange with most simulation software programs.

In this presentation, the outline of the above development and the usage of various LabVIEW™ modules shall be presented, along with first results of the improvements.

Guenter Randolph

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