

Award for Paper on Standards-based Smart Grid Automation

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A paper co-written by Academic researchers and Power Industry experts has won the Andrew P. Sage Award for Best Paper in the IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews for 2012.

The paper was nominated by Editor in Chief, Professor Vlad Marik.

“Distributed Power System Automation with IEC 61850, IEC 61499, and Intelligent Control” by Neil Higgins, Prof. Valeriy Vyatkin, Prof. Nirmal-Kumar C Nair and Karlheinz Schwarz fuses ideas from two distinct areas, Industrial Control and Power System Automation. It describes how synergies between two emerging Standards, IEC 61499 *Function Blocks* and IEC 61850 *Communication Networks and Systems for Power Utility Automation*, can be leveraged to create powerful and robust Smart Grid automation schemes.

IEC 61499 promotes portability, interoperability and configurability aspects of control systems, adding an object-oriented flavour to precursors like IEC 61131. The second edition of IEC 61499 due for release in late 2012 builds on experiences in the development and application of complying products and systems since publication of the Standard in 2005.

IEC 61850 promotes interoperability and configurability of protection and control systems for the Power Industry. It represents a radical modernisation of the technologies used for these functions. Many parts of IEC 61850 are into their second editions, and the scope and impact of the Standard are growing almost daily.

The University of Auckland has spun off a company, BlokTech Systems, to commercialise the concepts illustrated in the paper. BlokGrid is an integrated development and simulation platform for Utility automation systems. It uses IEC 61850 Substation Configuration Language to describe automation schemes, and IEC 61499 function blocks to implement them.

Neil Higgins is a Senior Systems Development Engineer with Energex in Brisbane, Australia. Valeriy Vyatkin is an Associate Professor and External Relations Officer at the University of Auckland, New Zealand. Nirmal Nair is a Senior Lecturer and Associate Director of Graduate Studies at the University of Auckland, New Zealand. Karlheinz Schwarz is a principal of Netted Automation in Karlsruhe, Germany.