

## **IEC 61850-based WLAN peer-to-peer feeder protection improvement in smart grid substation automation system**

### **ABSTRACT**

The development of a computational platform of a communication network for an automation system using the precepts of IEC 61850 has become a great trend in substation automation systems (SASs) research. Recent developments in wireless communication technologies, especially the IEEE802.11 have enabled cost-effective remote control systems with a capability of monitoring, control and protection in the real-time operating conditions of substations. The message delay and throughput in substation automation while using the WLAN and smart grid must satisfy the standard requirements specified in the IEC 61850-5. In this paper, the end-to-end (ETE) delay of IEC 61850-based messages and operating time of the over current protection using the WLAN-based communication network has been evaluated using Opnet Modeler Edition 18.0.

**Keyword:** IEC 61850; Substation Automation Systems (SASs); Wireless Local Area Network (WLAN)