

Integrated Substation Data for Control Center Applications

Mladen Kezunovic
Texas A&M University

Abstract

The control center substation data collection is based on the Remote Terminal Units (RTUs) feeding Supervisory Control and Data Acquisition Systems. The fidelity of data collection is directly dependent on the scan rates and reporting by exception settings. Since RTUs are scanning the data, the phase difference between different quantities (voltage, current) in the three phase system is hard to determine. Some advanced applications associated with detecting and analyzing major disturbances and faults, such as topology processor for State Estimation, Intelligent Alarm Processor, detection and mitigation of cascades, and Fault Location can benefit from the substation data that is captured with higher time resolution and more precise time synchronization. To achieve better information about the substation measurements and switching state, two independent developments are taking place: addition of non-operational data from relays and recorders, and inclusion of synchrophasor data. As such integrations are pursued many practical and fundamental issues are raised. This presentation explores such issues and offers some practical approaches to the integration.