

自动化

数字化变电站继电保护闭环实时仿真系统研究

孟恒信¹, 梁旭², 刘愈倬¹, 张悦¹

1. 山西电力科学研究院, 山西省 太原市 030001; 2. 电力系统及发电设备安全控制和仿真国家重点实验室(清华大学电机系), 北京市 海淀区 100084

摘要: 为适应基于IEC 61850通信标准的数字化变电站设备试验需求, 研究了基于DDRTS实时仿真平台的数字化变电站继电保护闭环实时仿真系统, 介绍了该系统的技术方案。该方案解决了仿真系统的动态实时性、多路合并单元信号并发、模拟量与数字量混合使用、IEC 61850-9-1及-9-2这2种通信规约信号同时仿真、电子式电压电流互感器仿真模型建立等一系列关键技术问题。利用升级后的DDRTS系统连接变压器保护及故障录波器, 通过模拟正常负荷及区内区外故障情况进行了大量试验, 验证了仿真系统的准确性、同步性及实用性, 为全数字式保护及二次装置的试验研究提供了重要的技术手段。

关键词:

Research on Closed Loop Real Time Simulation System of Relay Protection for Digital Substation

MENG Hengxin¹, LIANG Xu², LIU Yuzhuo¹, ZHANG Yue¹

1. Shanxi Electric Power System Research Institute, Taiyuan 030001, Shanxi Province, China; 2. State Key Lab of Control and Simulation of Power Systems and Generation Equipments (Department of Electrical Engineering, Tsinghua University), Haidian District, Beijing 100084, China

Abstract: To satisfy the demand of automation devices testing for digital substation based on IEC 61850 standard, based on Digital Dynamic Real-Time Simulator (DDRTS) a kind of real-time closed loop simulation system for protective relaying in digital substation is developed. The technical scheme of this simulation system, is presented, by which a series of key technical problems, such as dynamic real-time performance of simulation system, concurrent signals of multiple merging units, mixed-use of analog quantity and digital quantity, simultaneous simulation of signals belonging to IEC 61850-9-1 and IEC 61850-9-2 communication protocols, establishing simulation model for electronic voltage transformer (EVT) and electronic current transformer (ECT), are solved. Utilizing the upgraded DDRTS and connecting transformer protection with fault recorder, a lot of tests are performed by the simulation of normal loads and faults occurred inside and outside protection zone to verify the accuracy, synchronization and practicality of the proposed simulation system, and test results show that the performances of the proposed simulation system are satisfied.

Keywords:

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通讯作者: 孟恒信

作者简介:

作者Email: mhx4739@163.com1

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