

(Pt24) A Dynamic Cyber-attack Approach for Real-time Hardware-in-the-loop Simulation of Power Grid

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(Pt9)Abstract—Cyber-attacks on the power grid happen frequently nowadays which results in a high incidence of power fault, like power blackouts. The current cyber-physical co-simulation technology for power grid vulnerability researches still adopt script simulation rather than dynamic simulation, making the dynamic analysis unavailable. In this paper, a real-time hardware-in-the-loop simulation platform integrated by QualNet and Real-time Digital Simulator (RTDS) is investigated. On this platform, a dynamic cyber-attack approach, i.e., DoS attack and data tampering attack, is proposed, where users can dynamically configure the cyber-attack situations of power grid via a designed panel during the simulation process, to estimate and analyse the impact of cyber-attacks on the power grid system. Experiment results verify the operability and effectiveness of the proposed approach.

(Pt9)Keyword—Smart Grid; QualNet; RTDS; Real-time simulation; Cyber-attack; Dynamic simulation



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