

国家重点基础研究

智能变电站通信网络阻塞故障及其防范措施分析

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摘要:

详细介绍了在110kV曾家冲智能变电站二次网络调试期间发生的一起网络阻塞故障及其处理情况, 介绍了故障现场排查方法, 分析了引发网络故障的诱因。外网设备的不当接入与内网设备网络机制配置对安全防范考虑不足是导致此次网络阻塞的主要原因。此次故障是由外网有害设备向站内网络发送广播攻击报文诱发, 而内网智能组件网络响应机制失当又进一步加剧了网络阻塞的程度, 在两者共同作用下最终导致了全站网络阻塞。最后就智能变电站二次网络安全防护提出了启用网络抑制功能、改进智能组件网络收发机制、规范运行网络接入等措施和建议。

关键词: 网络阻塞 故障分析 智能变电站 安全防范

Analysis on Communication Network Congestion Occurred in Smart Substation and Preventive Measures

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Abstract:

A communication network congestion fault occurred during the commissioning of secondary network for 110kV Zengjiachong smart substation and the measures to cope with it are described in detail, and the on-site troubleshooting of the fault is presented and the predisposition led to the communication network fault is analyzed. Inappropriate connection with devices of outer network and insufficient consideration of security prevention for device configuration of inner network were main causes leading to the network congestion. At the beginning, this fault was induced by the broadcast message sent by unauthenticated device in outer network and inappropriate network response mechanism of smart component in inner network aggravated the extent of network congestion, thus under the combined action of the both, finally the network congestion of whole substation occurred. With regard to security protection of secondary network for smart substation, following suggestions such as starting the use of PRL and STP functions, improving the receiving and sending mechanism of smart component network, standardizing the connection with the network being operated, are put forward.

Keywords: network congestion fault analysis smart substation safety precaution

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