

其他

XLPE电缆局部放电在线监测系统研究

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摘要:

交联聚乙烯(cross linked polyethylene,XLPE)电力电缆的局部放电严重影响电缆和电网的运行可靠性。在基于电流互感器测量原理的基础上,提出了一种利用Rogowski线圈测量的XLPE电力电缆局部放电在线监测系统。首先研究了高频电磁耦合传感器的设计,确定了与测量灵敏度相关的参数,并通过实验确定了用于XLPE电力电缆局部放电测量的罗氏线圈参数;设计了监测XLPE电力电缆局部放电的设备和基于光纤通讯的电缆局部放电在线监测系统的整体结构,最后对某变电站运行中的电缆进行了局部放电测试,对监测数据进行分析,结果表明了基于高频罗氏线圈及光纤传输的电缆局部放电在线监测系统的有效性。

关键词: XLPE电缆 电缆接头 局部放电 罗氏线圈 状态检修

On-line partial discharge monitoring system for XLPE power cable

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Abstract:

Partial discharge occurred in the cross-linked polyethylene (XLPE) power cable is a serious factor to the power supply reliability of cables and power system. Based on the measuring principle of the current transformer, a Rogowski coil based partial discharge monitoring system for XLPE power cable on line monitoring system was proposed. The high frequency electromagnetic coupling sensor was studied, the parameters related to measurement sensitivity were identified, and the Rogowski coil parameters for XLPE power cable partial discharge was determined by experiment. The structure of partial discharge monitoring device and the on-line partial discharge monitoring system based on optical communication cable were designed in detail. The test was carried out on a certain operating cables in a substation. The monitoring data analysis showed the effectiveness of the proposed on-line partial discharge monitoring system for XLPE power cable.

Keywords: cross-linked polyethylene(XLPE) cable cable joint partial discharge Rogowski coil condition based maintenance

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