

## 高电压技术

### 干式变压器局部放电在线监测脉冲电流传感器的开发

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#### 摘要:

基于自积分式Rogowski线圈等效电路模型相应的传递函数, 利用Matlab仿真平台, 分析了环形铁心平均直径、铁心圆形横截面直径、线圈匝数、负载电阻和杂散电容等参数对局部放电脉冲电流传感器频率特性和灵敏度的影响。结合现场实际, 提出了参数优选准则, 为脉冲电流传感器的设计和制造提供了理论依据。据此准则, 研制了一种用于干式变压器局部放电在线监测的脉冲电流传感器, 并进行了特性测试实验。实验结果表明, 该传感器具有良好的频率响应特性, 满足设计要求。

#### 关键词:

### Development of Pulse Current Sensor for On-Line Monitoring of Partial Discharge in Dry-Type Transformer

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#### Abstract:

Based on the transfer function corresponding to equivalent circuit model of self-integral Rogowski coil and by use of Matlab platform, the influences of parameters such as mean diameter of ring iron core, diameter of circular cross-section of iron core, coil turns as well as load resistance and stray capacity on frequency characteristic and sensitivity of pulse current sensor for partial discharge monitoring are analyzed. According on-site practice, a criterion for the selection of parameters, which offers theoretical foundation for the design and manufacturing of pulse current sensor, is put forward. Based on the proposed criterion a pulse current sensor for the on-line monitoring of partial discharge in dry-type transformer is developed and corresponding experiments to test the characteristics of the pulse current sensor are performed. Experimental results show that the proposed pulse current sensor possesses good frequency response characteristic and the design requirements are met.

#### Keywords:

收稿日期 2009-11-04 修回日期 2010-07-06 网络版发布日期 2011-02-16

DOI:

#### 基金项目:

“十一五”国家科技支撑计划重大项目(2007BAK29B05, 2007BAB13B01), 山西省高等学校优秀创新团队资助项目。

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