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Y型绝缘子串交流和直流电压分布特性

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摘要
采用球隙法测量了交、直流500 kV输电线路中Y型串绝缘子的电压分布，采取相应措施减小了环境因素对测量结果的影响，得到了交、直流500 kV电压下Y型串的电压分布曲线。研究结果表明：在交流电压下，Y型绝缘子串的电压分布极不均匀，其电压分布曲线和交流悬垂I串类似；在直流电压下，Y型绝缘子串的电压分布极不均匀，绝缘子串导线侧绝缘子分担电压高于其它绝缘子，总体上呈现导线侧和杆塔侧两端高、中间低的分布趋势。研究结果为Y型串输电系统的外绝缘设计提供了参考依据。

关键词 Y型绝缘子串；电压分布；直流；交流；高电压技术

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Research on Voltage Distribution of Y-type Insulator Strings under AC and DC Condition

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Abstract
The voltage distribution of Y-type insulator strings for AC/DC 500 kV transmission line is measured by sphere gap method and corresponding measures are adopted to reduce the impacts of environmental factors on measured results, thus the voltage distribution curve of Y-type insulator strings under AC/DC 500 kV conditions. Research results show that under AC voltage the voltage distribution of Y-type insulator strings is extremely non-uniform and the voltage distribution curve of Y-type insulator string is similar to that of I-Type suspension insulator string; under DC voltage the voltage distribution of Y-type insulator string is also extremely non-uniform, the voltage undertaken by the insulators at the conductor side of Y-type insulator string is higher than that undertaken by other insulators of the same string, and as a whole the voltage distribution trend is that the voltage undertaken by the insulators at both ends of the Y-type insulator string is higher than the voltage undertaken by the insulators at the middle of the same insulator string. Therefore, the research results are available for reference to the external insulation design for power transmission system adopting Y-type insulator strings.

Key words Y-type insulator string；voltage distribution；DC；AC；high voltage engineering

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