电网技术 2008 32 (2008-01): 71-75 ISSN: 1000-3673 CN: 11-2410/TM

高电压技术

持久性就地成型防污闪复合涂料对绝缘子覆冰及交流冰闪电压的影响

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收稿日期 2006-12-30 修回日期 网络版发布日期 2008-1-8 接受日期

摘要
持久性就地成型防污闪复合涂料(permanent-room-temperature-vulcanized anti-contamination flashover composite coating，PRTV)具有优异的防污性能，但对绝缘子是否具有延缓覆冰和提高冰闪电压的作用国内外鲜有报道。根据人工气候室的试验结果，分析了PRTV涂料对绝缘子串覆冰及其冰闪电压的影响。结果表明：PRTV涂料在覆冰初期具有延缓覆冰的作用，但在严重覆冰过程中则没有明显效果；与未涂覆PRTV的绝缘子串相比，涂覆PRTV涂料的绝缘子串其冰闪电压约降低7%~15%；涂覆PRTV涂料后绝缘子串冰闪电压降低的主要原因是PRTV涂层的憎水性引起覆冰状态的改变，使得冰层内部形成高场强的"空腔"，更易产生局部放电并烧伤涂层。

关键词 持久性就地成型防污闪复合涂料 绝缘子覆冰 交流闪络 憎水性 高电压与绝缘技术

分类号 TM852

Effect of PRTV on Insulator String's Icing and Its AC Icing Flashover Voltage

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Abstract
As an anti-contamination flashover composite coating, Permanent-Room-Temperature-Vulcanized Anti-cont- amination Flashover Composite Coating(PRTV) possesses excellent anti-pollution performance, however, the research reports in the field of whether PRTV could delay the icing of insulator strings and improve the icing flashover voltage of insulator strings are seldom seen. According to the experimental results from artificial climate chamber, the impacts of PRTV on the icing of insulator string as well as on its icing flashover voltage are analyzed, and the results show that during the early stage of icing PRTV can delay the icing process, but there is no positive effect of PRTV on severe icing process; compared with the insulator string which is not coated with PRTV, the icing flashover voltage of the insulator string coated with PRTV is reduced by the range from 10% to 15%. The principal cause of icing flashover voltage deterioration is that the hydrophobicity of PRTV coating leads to the change of ice coating status, and it makes the formation of minute cavities with high electric field strength inside the ice cover, thus the partial discharge occurs more easily and the PRTV coating is burnt.

Key words PRTV ice-coated insulator hydrophobicity hydrophobicity high voltage and insulation technology

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