

## 高电压技术

### 不同SF6气压下不同填料环氧树脂绝缘子的直流闪络特性

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#### 摘要:

建立了锥板电极系统来模拟气体绝缘金属封闭输电线路(gas insulated transmission line, GIL)中同轴圆柱结构的电场分布, 研究了直流下SF6中环氧树脂绝缘子的填料和形状对其闪络特性的影响, 结果表明, 直流GIL中填料为SiO<sub>2</sub>的环氧树脂绝缘子在短时加压和长期耐压试验中的绝缘性能都是最优良的。还介绍了基于锥板电极的直流GIL绝缘子外形结构优化的注意事项和绝缘子充电时间常数的近似求取方法。

#### 关键词:

### DC Flashover Characteristics of Epoxy Resin Insulator With and Without Fillers Under Different SF6 Gas Pressures

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#### Abstract:

Gas insulated transmission line (GIL) can be used to substitute part of overhead transmission line or power cable under special environments to enhance the flexibility of choosing transmission corridor. The key factor impacting the insulation level of GIL is the charge accumulation along the surfaces of support insulators in DC environment. In this paper, a cone-plate electrode assembly is built to simulate the electric field distribution of coaxial cylindrical structure inside the GIL under DC voltage and the impacts of the filler and the shape of epoxy resin insulator under different SF6 pressures in DC environment on its flashover characteristic are researched. Test results show that in DC GIL the epoxy resin insulator using SiO<sub>2</sub> as the filler is indicative of the best insulation performance in short-term voltage impressing and long-term voltage withstanding tests. The points, which attentions should be paid to, in the optimization of contour structure of cone-plate electrode assembly based epoxy resin insulator for DC GIL and the method to approximately acquire charging time constant of insulator are proposed.

#### Keywords:

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