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研究报告

400 Hz低压阻性小电流电弧对银石墨触头材料的侵蚀研究

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摘要:

利用研发的小容量变频ASTM触头材料电性能模拟测试系统和电光分析天平完成了低压、交流400 Hz和50 Hz、阻性小电流下AgC、AgCdO、AgNi和AgW触头材料的电性能对比试验和材料称重,用SEM和EDAX测量与分析了银石墨触头材料的表面形貌与微区组份。研究表明:400 Hz时,电弧对电触头材料的烧损形式是停滞式,而非50 Hz时的漩流式;同时,触头烧蚀面积较50 Hz减小,表层烧蚀更严重。在400 Hz、小电流下,对比不同第二组元银基合金触头材料的抗熔焊性能,银石墨触头材料的最弱。

关键词: 400 Hz 低压 阻性电路 银石墨 触头材料 电弧侵蚀

RESEARCH ON SMALL CURRENT ARC EROSION OF SILVER/GRAPHITE CONTACT MATERIAL WITH LOW VOLTAGE AND RESISTIVE LOAD AT 400 Hz

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Abstract:

Using a self-developed ASTM test system of contact material electrical properties of small-capacity and the current-frequency changed, the performance comparison trials and material weighing of AgC, AgCdO, AgNi and AgW contact materials were completed under low voltage, resistive load and small current at 400 Hz and 50 Hz. The surface profiles and constituents of Ag-graphite contact material were observed and analyzed by SEM and EDAX. Researches indicated: the form of the contact material arc burnout at 400 Hz is stasis, not an eddy flow style at 50 Hz; meanwhile, the area of the contact burnout is less than that of 50 Hz, the ablation on the surface layer at 400 Hz is more serious. Comparing the capacities of arc erosion resistance of the silver-based alloy contact material with different second element at 400 Hz, it can be known that the capacity of the silver/graphite material is the weakest.

Keywords: 400 Hz low voltage resistive load silver/graphite contact material arc erosion

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