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Experimental study of vacuum arc with different electrode materials DINGGE YANG, SHENLI JIA, LIJUN WANG, LIUHUO WANG, ZONGQIAN SHI — The material of electrodes is essential to affect the characteristics of vacuum arcs and the interruption performance of vacuum circuit breakers. In order to clarify the effect of electrode material on arc appearance and breaking capacity, experiments of cup-shaped axial magnetic field electrodes made of Cu and Cu70Cr30 were conducted respectively in a detachable vacuum chamber, with arc current varying from 5kA to 25kA (rms). The diameter of the electrodes is 58mm and the gap distance was fixed at 10mm in the experiments. The appearances of arc column, cathode surface and anode activities were recorded by a digital high-speed camera and the arc voltage was measured by a high-voltage probe of oscilloscope. The photos of contact surface erosion after experiments were also given. The experimental results of Cu electrodes were compared with those of Cu70Cr30 electrodes, the differences of the two kinds of vacuum arcs were given and those influencing the breaking capacity were also illustrated.

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