# STUDY OF SWITCHING CONTACTS BY OPTICAL TECHNIQUES

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## ABSTRACT

Vacuum arcs are widely used in various switching devices in power grids. Those devices provide a high number of operations under standard load conditions, safe short-circuit current interruption capability and maintenance-free operation. The lifetime of contact systems is mainly controlled by a limited thermal load of the electrode surface. Various electrode materials are used for optimized contact performance. This contribution presents the results of comparative study of two typical contact materials, namely CuCr and WCuSb, used for current interruption at similar operation conditions. An AC current pulse with a peak value up to 7 kA and frequency of 50 Hz was used. The measurements of arc current and voltage were complemented by optical diagnostics. The arc dynamics was observed by a high-speed camera. Near infrared radiation (NIR) spectroscopy determined the anode surface temperature after current zero crossing. During the active phase, a high-speed camera equipped by a narrow band filter was applied for acquisition of qualitative distribution of the anode surface temperature. To test the dielectric performance an HV pulse was applied after current interruption. The results for modification of surface morphology, measured temperature evolution of anode surface temperature and dielectric withstand will be presented and discussed.

Topic: Vacuum Interrupters and Spark Gaps
Preferred format of presentation: Oral