

AN ELECTRICAL ARC EROSION MODEL VALID FOR HIGH CURRENT:
VAPORIZATION AND SPLASH EROSION.

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AgCdO is one of the most widely used contact materials in the world because of its outstanding performance. Nevertheless, due to environmental considerations, it will soon be forbidden by European environmental directives. Therefore, finding a good substitute is of crucial importance.

Electrical arc erosion plays an important role in limiting the life of power switching devices. Consequently, a macroscopic arc erosion model, valid for high current, has been developed. This is the first of its kind since it takes into account two modes of contact material erosion: vaporisation and splash erosion.

Specifically, this model is used to measure the amount of contact material removed after one electrical discharge. It, therefore, allows the comparison of electrical contact erosion resistances between materials. Furthermore, this model is the first step in determining the composition of a suitable AgCdO substitute by identifying the most influential material properties in the arc erosion process.

White light interferometry, used to measure the amount of material removed; and a SEM with EDX, used to analyze the effects of the electrical arc on the contact material microstructure, have been used on AgCdO and AgSnO₂ to validate this model.