

HIGH SPEED OBSERVATION OF VACUUM ARCS BETWEEN DIFFERENT CONTACT DIAMETER AT TMF CONTACT PAIR

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ABSTRACT

Vacuum interrupter, especially with high short-circuit current interruption ability, are mostly equipped with the same diameter at the applied contact pair. Specifically, for short-circuit current making- and breaking- interruption operations the contact material based on CuCr-25 ... 35 wt.-% is widely used in most of the cases by applying transverse magnetic field (TMF) contacts for multipurpose application.

The study is carried out on standard contact pair with both contacts having the same diameter as well as “optimized” contact pair with different contact diameter by applying the TMF principle.

Furthermore, it considered the combination of TMF principle on the one hand side and the butt contact on the other. The contact material is based on the well-known solid-state sintered material production technology. A huge number of interruption operations under short circuit current condition are done to investigate the arc movement and the arc path at contact pairs applied the different contact diameter. By using a high-speed digital video camera, different contact pairs are observed during arcing under short-circuit current conditions at the interruption operation. The investigation is concentrated on the average and highest arc velocity, especially the number of arcs turns at one half period with 50 Hz / T = 20 ms and the motion path respective to the “positive” or “negative” wave polarity at the chosen contact pair side during the AC current interruption is being presented.

The study is focused on four contact pairs such as one standard contact with the same diameter and three different contact diameter pair combination. The combination of TMF contact to butt contact was taken into consideration.

Primary = Vacuum Interrupters and Spark Gaps

Secondary = Vacuum Interrupters and Spark Gaps

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