

Current interruption performance of axial and radial magnetic field vacuum interrupters

Erik D. Taylor, Andreas Lawall*, Jörg Genzmer, Tilman Heydenreich

Siemens AG, Energy Management Division, Berlin, Germany

* Andreas.Lawall@siemens.com

Abstract— A key feature of vacuum interrupters (VI) is the contact design, in particular ability of the contacts to interrupt short-circuit currents. Two common types of VI contacts are the axial magnetic field (AMF) and the radial magnetic field (RMF) designs. In this work, VI's with 45 mm diameter RMF contacts and 48 mm diameter AMF contacts were tested in a synthetic circuit at short-circuit currents. The key parameter determining the success of the current interruption was the transferred charge during arcing (Q). For $Q < 200$ A·s, the VI's interrupted with a high degree of success at the first current zero; and for $Q > 200$ A·s the interruption performance dropped sharply, with a narrow transition region. This experience compares well to previous work on 62mm AMF contacts, which saw a very similar behavior over a wide range of parameters.

Keywords—*axial magnetic field, radial magnetic field, switchgear, vacuum arc, vacuum interrupter.*