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## 2P44 - Perspectives of Supercritical Fluids for Switching Applications

Tuesday 25 June 2019 13:00 (1h 30m)

Introduction

Fast and repetitive switching in high-power circuits is a challenging task where the ultimate solutions still have to be found. Areas of application are power switches in high-voltage networks and heavy duty switches for pulsed power applications.

Supercritical switch media

We propose a new approach: the use of supercritical fluids as switching medium. Supercritical fluids have insulation strength and thermal properties like liquids and fluidity, self-healing and absence of bubbles like gases. These properties are very beneficial of power switching, and in particular allow very high breakdown voltages (thus compact switches) and very fast recov-ery behaviour (thus repetitive switches). We will present the concept of a supercritical switch, and data of breakdown behaviour of a prototype supercritical switch. In addition, a model for calculating the re-covery time will be presented, supported by experimental data on the recovery behaviour of supercritical nitrogen.

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