



Contribution ID: 3

Type: **not specified**

Experimental investigation on the interruption performance of a switch based on artificial current zero

Monday, 17 September 2018 11:00 (2 hours)

The quench protection switch (QPS) is indispensable to protect the magnet coils from the damage of a quench in a superconducting Tokamak. In this paper, a QPS based on the artificial current zero is involved. The vacuum circuit breaker (VCB), which is driven by a high-speed electromagnetic repulsion mechanism, is used as the main circuit breaker (MCB). Two kinds of commercial vacuum interrupters (VIs), which have electrodes generating axial magnetic field (AMF) and transverse magnetic field (TMF), respectively, are applied. Meanwhile, the breaking current with amplitude of 15-25kA is generated by a LC oscillating circuit. The counter-current with frequency in range of 500-5000Hz is provided by a commutation branch. The interruption performance of the two VIs under different breaking current and frequencies of counter-currents is investigated. The experiment results indicate that the differences of interruption performance under the two types of magnet fields are enlarging with the increasing of the frequencies of counter-currents.

Co-authors: Dr LI, Sheng (Xi'an Jiaotong University); Dr ZHAO, Linyan (Xi'an Jiaotong University); Dr SHI, Zongqian (Xi'an Jiaotong University); Dr DING, Dongdong (Xi'an Jiaotong University); Dr LIU, Yuhan (Xi'an Jiaotong University); Dr JIA, Shenli (Xi'an Jiaotong University); Dr WANG, Lijun (Xi'an Jiaotong University)

Presenter: Dr LI, Sheng (Xi'an Jiaotong University)

Session Classification: P1

Track Classification: Magnets and Power Supplies