Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Temperature after Arc Discharge Affected by Current Decrement Ratio in Wall Stabilized Arc KEN SATO, DAICHI SUZUKI, TORU IWAO, Master Engineering in Electrical and Electronic Engineering, Tokyo City University — Recently, the stable supply of electric power is indispensable in a power generation, and a transmission and distribution system of electric power. The GCB (Gas Circuit Breaker) has been researched for performance improvement of the arc interruption of abnormal fault current without the fail. The GCB has been researched for the high capacity and downsizing for development of practical use. Because the power network is expanded, the capacity of interruption current increased for reliability. The GCB should interrupt the arc of high current and voltage, shorten the time to interrupt, and become the high capability in order to improve the reliability and practicability. It is important to prevent the insulation of re-ignition and thermal re-ignition of arc after the arc interruption. It is mainly considered that the factor of thermal re-ignition is the arc temperature distribution after current zero. The temperature distribution has been elucidated by the current decrement ratio (di/dt). However, the variation of temperature distribution and decrement process of the temperature by the wall radius is also important in order to design the circuit breaker. In this paper, temperature after Arc Discharge Affected by Current Decrement Ratio in Wall Stabilized Arc was elucidated in order to know the effect on the temperature in the wall radius. As a result, when the wall radius decreases, the temperature at 0 A after 200 μs is lower.

Ken Sato
Master Engineering in Electrical and Electronic Engineering,
Tokyo City University

Date submitted: 19 Jul 2015 Electronic form version 1.4