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Analysis of Temperature Distribution Affected by Convection to Ring Electrode in Double-Flow Type Gas Circuit Breaker YUJI KOMAI, YUKI SUZUKI, JUMPEI OYA, YOSHIFUMI MAEDA, TORU IWAO, Tokyo City University — The arc temperature affected by the convection to ring electrode in double-flow type gas circuit breaker (GCB) was analyzed. The objective of this research to elucidate the contribution to arc extinction affected by the convection to ring electrode. GCB is an electric power equipment in order to interrupt the current quickly. The compressed gas in thermal chamber flows out in the two opposite directions to quench the arc plasma. The arc column is strongly curved and significantly lengthened by the convection of two opposite directions. Thus, it has been reported that the double-flow type GCB interrupts the current more easily than the single-flow type GCB. However, contribution of the convection to ring electrode for arc extinction in double-flow type GCB is not elucidated. In this paper, analysis of temperature distribution in double-flow type gas circuit breaker using 3-D electromagnetic thermal fluid simulation is investigated. As a result, the flow velocity to the ring electrode increased and the high temperature gas was transported with increasing the pressure of ring electrode area. Therefore, it was suggested that the flow field to electrode ring contributes the improvement of current interruption performance.

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