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Development of 35kV SF6 Phase-Control Circuit Breaker Equipped with EFDA

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Abstract : This paper mainly focuses on the problem that high voltage circuit breaker's closing and opening operation at random phase brings harmful electromagnetic transient effects on the power system. To repress the negative transient effects, a 35 kV SF6 phase-control circuit breaker equipped with electromagnetic force driving actuator is designed in this paper. Based on the constructed mathematical and structural models, the static magnetic field distribution and dynamic properties of the under loading actuator are simulated. The prototype of 35 kV SF6 phase-control circuit breaker is developed based on theories analysis and simulation. Tests are carried on to verify the operating reliability of the prototype. The developed circuit breaker can control its operating speed intelligently and switches with phase selection. Results of the tests and simulation prove that the phase-control circuit breaker is feasible for industrial applications.

Keywords : phase-control, circuit breaker, electromagnetic force driving actuator, tests and simulation
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