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## Performance simulation of a bias-flux superconducting fault current limiter (SFCL) based on MATLAB/SIMULINK

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Superconducting fault current limiter (SFCL) can not only reduce the capacity of the circuit breaker but also lower the cost of line construction, it become more and more popular for the application in a high-voltage transmission line. A novel superconducting fault current limiter with bias magnetic flux is proposed by using a reactor with two symmetrical split copper windings and a non-inductive YBCO magnet which is in series to one copper winding. A magneto-thermal coupled FEM model of the bias-flux SFCL with the YBCO magnet and the reactor is established based on MATLAB/SIMULINK. The performance parameters are calculated through the simulation of a prototype SFCL. The response speed, overvoltage and overcurrent characteristics considering the influence of different fault current are compared and the robustness of the SFCL in a power system are discussed under different operating conditions simulation. These results validate the effectiveness of this bias-flux SFCL.

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