

Algorithm for blocking distance protection of power lines.

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There have been cases of disconnecting power lines in post-emergency operation conditions of the power system due to excessive operation of distance protection of power lines. If a short circuit occurs on adjacent power lines, the third stage of the remote control starts up, performing the function of long-distance backup of other relay protections. But after the short circuit is cleared, the remaining protections do not reset, which, after a time delay, leads to unnecessary shutdown of other power lines. The reset of protection in the emergency mode does not occur, since the measured impedance of the electric network is inside the response characteristic of the remote sensing. The excess of the calculated value of the network impedance is due to the development of electric networks and an increase in the transmitted power.

The article proposes an algorithm for blocking the remote protection of power lines in post-emergency operating conditions, in which absolute values and derivatives of the currents of symmetrical components are used. The developed algorithm is implemented in a microprocessor relay protection device and tested on a real-time RTDS complex.

Keywords: electric power systems, electric networks, relay protection, short circuit currents.