

自动化

基于电流差动的双端带并联电抗器输电线路三相重合闸永久性故障判别

梁振锋,索南加乐,宋国兵

西安交通大学 电气工程学院, 陕西省 西安市 710049

摘要:

提出一种基于分相电流差动原理的双端带并联电抗器输电线路三相重合闸永久性故障判别方法。该方法以并联电抗器电流为已知量, 利用时域方法补偿电容电流。输电线路发生故障且两侧断路器跳开后, 利用电流差动原理对两端并联电抗器各相电流进行比较。瞬时性故障时, 两侧各相并联电抗器电流之差为0; 永久性故障时, 两侧故障相并联电抗器电流之差远大于0。据此实现永久性故障识别。大量EMTP仿真表明, 该判别方法能够有效识别永久性故障和瞬时性故障, 能够可靠实现两端带并联电抗器输电线路的三相自适应重合闸。

关键词: 电力系统 继电保护 输电线路 并联电抗器 三相重合闸 分相电流差动

Differential Current-Based Identification of Permanent Faults for Three-Phase Autoreclosure on Transmission Line With Shunt Reactors at Both Ends

LIANG Zhenfeng ,SUONAN Jiale ,SONG Guobing

School of Electrical Engineering, Xi'an Jiaotong University, Xi'an 710049, Shaanxi Province, China

Abstract:

Based the principle of segregated current differential, a method to judge permanent fault for three-phase autoreclosure on transmission line with shunt reactors at both ends is proposed. In the proposed method, the currents in shunt-reactors are taken as known quantities, and the capacitance current is compensated by time-domain approach. When circuit breakers at both ends of the faulty line are tripped out, by use of current differential principle the three-phase currents of two shunt reactors at both ends are compared. For instantaneous fault, the current differences of corresponding phases of shunt reactors at both ends are zero; for permanent fault, the current differences of corresponding phases of shunt reactors at both ends are much larger than zero. On this basis, the permanent fault can be identified. A lot of results of EMTP simulation show that the proposed judgment method can effectively distinguish permanent fault from instantaneous fault, thus based on the identification the three-phase adaptive autoreclosure for transmission line with shunt-reactors at both ends can be reliably implemented.

Keywords: power system protective relaying transmission line shunt reactors three-phase adaptive reclosure segregated current differential

收稿日期 2010-09-14 修回日期 2010-11-25 网络版发布日期 2011-06-16

DOI:

基金项目:

国家自然科学基金重点项目(51037005, 50877062)。

通讯作者: 梁振锋

作者简介:

作者Email: lzf@xaut.edu.cn;lzf_9999@163.com

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