

特高压输电

徐州—南京1 000 kV输电线路潜供电流影响因素分析及高抗中性点接地电抗优化计算

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摘要:

以1 000 kV徐州—南京同塔双回输电线路为例, 利用ATP-EMTP电磁暂态分析程序建立了数学模型, 对加装高压并联电抗器中性点接地电抗限制潜供电流的方法进行了计算分析。详细计算了线路换位方式、线路塔型等多种因素对潜供电流的影响, 发现同类塔型中线路换位方式对潜供电流的影响最大, 推荐采用逆相序的2次反向全换位法。综合考虑各种影响因素后提出了接地电抗的优化选取方法, 针对同塔双回线路可能出现的3种运行方式分别计算, 推荐了中性点接地电抗阻值。

关键词:

Analysis on Factors Impacting Secondary Arc Current in 1 000 kV Transmission Line From Xuzhou to Nanjing and Optimized Calculation of Grounding Reactor Connected to Neutral of High Voltage Shunt Reactors

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Abstract:

Taking 1 000 kV power transmission line from Xuzhou to Nanjing, which adopts the structure of double-circuit on the same tower, for example, a mathematical model of this project is built by electromagnetic transient analysis software ATP-EMTP, then the calculation and analysis on the method to suppress secondary arc current by adding a grounding reactor connected to the neutral of high voltage shunt reactors are performed. The influences of many factors such as line transposition modes and tower types etc. on secondary arc current are calculated in details and it is found that as for the towers with similar structure the line transposition modes greatly influence secondary arc current, thus it is recommended that this 1 000 kV transmission line should be thoroughly transposed twice in reverse direction along its full length under reverse phase sequence. Considering various factors comprehensively, an optimized method to select the grounding reactor is given; and based on the respective calculation results of three possible operation modes of transmission line adopting the structure of double-circuit on the same tower, the recommended impedance value of grounding reactor connected to the neutral of HV shunt reactors is given.

Keywords:

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