

In this paper, an improvement of digital differential relay reliability for protecting a large power transformer is discussed. First, the Fourier sine and cosine coefficients required for fundamental, second, third and fifth harmonics determination have been calculated using rectangular transfer technique. Then, these harmonics have been used in harmonics restrain and blocking techniques used in differential protection system. Simulation testes have been carried out on a variety of magnetizing conditions (normal aperiodic inrush and over excitation conditions) using Simulink/MATLAB. The obtained results shows that the developed approach provides good discrimination between the magnetizing current and the internal fault current