

Paper 05: Point-on-wave vs Pre Insertion Resistor techniques in capacitor bank switching

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Abstract:

The aim of the present work is to compare two different switching techniques for capacitor bank energization and de-energization. Nowadays capacitor banks are used more and more to ensure reactive power compensation and voltage regulation. It is required to change reactive power based on system needs, which means for individual capacitors to be switched in or out many times on daily basis. Energizing capacitor banks can result in harmful overvoltage and overcurrent transients, especially if switched by traditional circuit breakers. Some mitigation means like pre-insertion resistors, inrush limiting reactors, and synchronous switching can mitigate the transients but not all of them are able to fulfill their duty in the same manner. Synchronous switching and pre-insertion resistor provide added advantages in reducing both current and voltage transients, but even among them, there are differences in their performance.