Harmonic Load Flow

The problem of harmonic appearance in power systems of different countries has begun to attract attention of specialists and scientists since the beginning of the last century when electricity generation, transmission and distribution got its rapid and worldwide development. Since that time a lot of books and articles have been written as well as a lot of methods to calculate harmonics harm and localize harmonics sources were created.

The project considers harmonic load flow in a five-bus power system. Basic knowledge about harmonic studies is provided, including explanation about missing triple harmonics in power systems. The system is modeled as an one-line diagram and analyzed with the PCFLO software. Detailed explanation is given for specific components, such as ASD and passive filters. Harmonic effects are considered for three cases: adding a passive filter, phase shifting, and change in linear load. The results show that lower order harmonics such as 5th and 7th can be eliminated by these methods, which are highly desired in most cases.

Recommendations for further work are also given in this presentation.

This presentation was done as a part of term project for EE5200 in Fall 2008, which was written by a team of three students: Elizaveta Egorova, Zhengjie Gao and Oskar Reynisson.