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The installation of electronic devices, digital equipment, and nonlinear loads in both industrial and domestic applications have dramatically increased in recent years, which in turn increased the level of harmonics in the system. Harmonic distortion is widely recognized as a significant cause of damage to, and mal-operation of electrical equipment. A harmonic filter can eliminate the potentially dangerous effects of harmonic currents created by nonlinear loads. There are two types of harmonic filters: passive filters and active filters. Passive filters are inexpensive compared with most mitigating devices.

In this paper, reactance one-port compensator is designed for current harmonic mitigation. The optimal parameters of the filter are determined using the Branch and Reduce Optimization Navigator (BARON) Nonlinear Programming Solver in the General Algebraic Modeling System (GAMS).

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