CLAIMS

1. A neutral and/or ground harmonic filter system, comprising:

a first coil unit comprising a first conductive wire coil, wherein the first conductive wire coil comprises a first end and an opposite second end, the first conductive wire coil is disposed in an insulating material, the first conductive wire coil and the insulating material are disposed in a first housing, and the first end of the first conductive wire coil is electrically coupled to a first contact that extends from the first housing; and

a second coil unit comprising a second conductive wire coil, wherein the second conductive wire coil comprises a first end and an opposite second end, the second conductive wire coil is disposed in a ferrous material, wherein the ferrous material, the second conductive wire coil and the ferrous material are disposed in a second housing, the opposite second end of the second conductive wire coil is electrically coupled to a second contact that extends from the second housing, and the first end of the second conductive wire coil is electrically coupled to the opposite second end of the first conductive wire coil.

2. The neutral and/or ground harmonic filter system of claim 1, wherein the first housing comprises a first non-conductive tube, wherein the second housing comprises a second non-conductive tube, and wherein a distance between a center of the first non-conductive tube and a center of the second non-conductive tube is less than 3 inches.

3. The neutral and/or ground harmonic filter system of claim 1, wherein the first conductive wire coil and the second conductive wire coil each comprise 12 to 1,000 turns of conductive wire.

4. The neutral and/or ground harmonic filter system of claim 1, wherein the ferrous material comprises metal particles and graphite particles.

5. The neutral and/or ground harmonic filter system of claim 4, wherein the ferrous material comprises a greater amount of the metal particles as compared to the graphite particles.

6. The neutral and/or ground harmonic filter system of claim 1 further comprising a housing unit in which the first coil unit and the second coil unit are both disposed.

7. The neutral and/or ground harmonic filter system of claim 6, wherein the housing unit comprises a ground loop.

8. The neutral and/or ground harmonic filter system of claim 6 further comprising a housing insulating material disposed in the housing unit.

9. The neutral and/or ground harmonic filter system of claim 8, wherein the housing insulating material comprises epoxy and acetone.

10. The neutral and/or ground harmonic filter system of claim 6, wherein the first contact and the second contact further extend from the housing unit, providing electrical contacts to other electrical systems.

11. An electrical system, comprising:

a conductor bar; and

a neutral and/or ground harmonic filter system comprising a first coil unit and a second coil unit and configured to mitigate neutral and/or ground harmonics of the electrical system, wherein:

the first coil unit comprising a first conductive wire coil, wherein the first conductive wire coil comprises a first end and an opposite second end, the first conductive wire coil is disposed in an insulating material, the first conductive wire coil and the insulating material are disposed in a first housing, and the first end of the first conductive wire coil is electrically coupled to a first contact that extends from the first housing; and

the second coil unit comprising a second conductive wire coil, wherein the second conductive wire coil comprises a first end and an opposite second end, the second conductive wire coil is disposed in a ferrous material, wherein the ferrous material, the second conductive wire coil and the ferrous material are disposed in a second housing,

the opposite second end of the second conductive wire coil is electrically coupled to a second contact that extends from the second housing, and the first end of the second conductive wire coil is electrically coupled to the opposite second end of the first conductive wire coil.

12. The electrical system of claim 11, wherein the conductor bar is a neutral bar and a first set of conducting wires comprises all neutral wires of the electrical system that are electrically coupled to the neutral bar.

13. The electrical system of claim 11, wherein the conductor bar is a ground bar and a first set of conducting wires comprises all ground wires of the electrical system that are electrically coupled to the ground bar.

14. The electrical system of claim 13, wherein the first housing comprises a first non-conductive tube, wherein the second housing comprises a second non-conductive tube, and wherein a distance between a center of the first non-conductive tube and a center of the second non-conductive tube is less than 3 inches.

15. The electrical system of claim 13, wherein the first conductive wire coil and the second conductive wire coil each comprise 12 turns of conductive wire.

16. The electrical system of claim 13, wherein (a) the ferrous material comprises metal particles and graphite particles and (b) the ferrous material comprises a greater amount of the metal particles as compared to the graphite particles.

17. The electrical system of claim 13, wherein the neutral and/or ground harmonic filter system further comprises a housing unit in which the first coil unit and the second coil unit are both disposed.

18. The electrical system of claim 17, wherein the housing unit comprises a ground loop.

19. The electrical system of claim 17, wherein the neutral and/or ground harmonic filter system further comprises a housing insulating material disposed in the housing unit.

20. The electrical system of claim 19, wherein the housing insulating material comprises epoxy and acetone.

21. The electrical system of claim 11, wherein the first contact and the second contact are electrically coupled to a first location and a second location of the conductor bar respectively, wherein the first location and the second location are spaced apart so that a first set of conducting wires of the electrical system is electrically coupled to the conductor bar at locations between the first location and the second location.