CLAIMS

1. A system for providing power to a load, comprising:

a first reactor comprising a first coil configured to generate a first magnetic field and at least one second coil configured to generate a plurality of second magnetic fields that vary an intensity of the first magnetic field; and

a second reactor comprising at least one second reactor coil configured to tune the first reactor to the load;

wherein the first reactor is configured to provide the power to the load, and wherein the second reactor is configured to increase the power provided to the load by the first reactor by increasing an intensity of the plurality of second magnetic fields generated by the at least one second coil and tuning the first reactor to the load.

2. The system of claim 1, further comprising an input inverter configured to receive power from a DC power source and convert the power into AC power for use as an excitation energy for the system.

3. The system of claim 2, wherein the input inverter is configured to receive power from a utility grid.

4. The system of claim 1, further comprising a rectifier assembly configured to receive AC output power at an output of at least one of the first reactor and the second reactor and convert the AC output power into DC output power.

5. The system of claim 1, further comprising one or more sensors configured to sense an output current associated with the load.

6. The system of claim 5, wherein the one or more sensors comprise one or more Hall Effect current sensors.

7. The system of claim 5, further comprising a processor configured to receive a signal from the one or more sensors and determine whether to activate or deactivate one or both of the first reactor or the second reactor based on the signal from the one or more sensors.

8. A system for providing power to a load, comprising:

a first plurality of coils, wherein a first coil of the first plurality of coils is configured to generate a first magnetic field, and wherein a plurality of second coils of the first plurality of coils are configured to generate a plurality of second magnetic fields that vary an intensity of the first magnetic field; and

a second plurality of coils, wherein the second plurality of coils are configured to tune at least one tuned coil of the first plurality of coils to the load;

wherein the first plurality of coils is configured to provide the power to the load, and wherein the second plurality of coils is configured to increase the power provided to the load by the first plurality of coils by increasing an intensity of the plurality of second magnetic fields generated by the plurality of second coils and tuning the tuned coil to the load.

9. The system of claim 8, further comprising an input inverter configured to receive power from a DC power source and convert the power into AC power for use as an excitation energy for the system.

10. The system of claim 9, wherein the input inverter is configured to receive power from a utility grid.

11. The system of claim 8, further comprising a rectifier assembly configured to receive AC output power at an output of at least one of the first plurality of coils and the second plurality of coils and convert the AC output power into DC output power.

12. The system of claim 9, further comprising one or more sensors configured to sense an output current associated with the load.

13. The system of claim 12, wherein the one or more sensors comprise one or more Hall Effect current sensors.

14. The system of claim 12, further comprising a processor configured to receive a signal from the one or more sensors and determine whether to activate or deactivate one or more of the first plurality of coils or the second plurality of coils based on the signal from the one or more sensors.

15. A method of providing power to a load, comprising:

generating, using a first coil of a first plurality of coils, a first magnetic field;

generating, using a plurality of second coils of the first plurality of coils, one or more second magnetic fields configured to vary an intensity of the first magnetic field;

tuning, using a second plurality of coils, at least one tuned coil of the first plurality of coils to the load; and

providing, using the first plurality of coils, power to the load, wherein the second plurality of coils is configured to increase the power provided to the load by the first plurality of coils by increasing an intensity of the plurality of second magnetic fields generated by the plurality of second coils and tuning the tuned coil to the load.

16. The method of claim 15, further comprising receiving excitation energy from an input inverter configured to receive power from a DC power source and convert the power into AC power for use as the excitation energy.

17. The method of claim 16, wherein the input inverter is configured to receive power from a utility grid.

18. The method of claim 15, further comprising transmitting AC output power from at least one of the first plurality of coils or the second plurality of coils to a rectifier assembly configured to convert the AC output power into DC output power.

19. The method of claim 15, further comprising:

sensing, using one or more sensors, an output current associated with the load; and

determining, using a processor, whether to activate or deactivate one or more of the first plurality of coils or the second plurality of coils based on the signal from the one or more sensors.

20. The method of claim 15, wherein the one or more sensors comprise one or more Hall Effect current sensors.