WHAT IS CLAIMED IS:

1. A wireless power transfer system comprising:

a transmitter transducer configured to produce a magnetic field in a power transfer region during conduction of a transmission signal;

a signal generator electrically configured to be connected to the transmitter transducer, the signal generator being operationally configured to:

receive a first power signal from a power source;

generate from the first power signal an alternating current transmission signal having a transmission frequency of at least 500 Hz; and

transmit the transmission signal to the transmitter transducer at the transmission frequency;

the signal generator including a controller;

a first communication circuit coupled to the controller; and

one or more power receivers, each of the one or more power receivers being configured to be electrically connected to respective one or more loads, wherein each of the one or more power receivers comprises:

a receiver transducer configured to inductively receive a time varying magnetic flux of the magnetic field transmitted from the transmitter transducer when the receiver transducer is disposed in the power transfer region, and convert the time varying magnetic flux to a second power signal, the second power signal being a time varying power signal having the transmission frequency of the transmission signal;

a power processor electrically connected to the receiver transducer, and configured to convert the second power signal to a third power signal appropriate for the respective one or more loads and to produce receive information about a function of the receiver; and

a second communication circuit operatively coupled to the power processor for receiving the receiver information, the second communication circuit configured to communicate the receiver information to the first

communication circuit, and the first communication circuit configured to communicate to the controller the receiver information received from the second communication circuit, the controller configured to generate a control signal in response to the received receiver information, and the signal generator being responsive to the control signal for adjusting a parameter of the transmission signal

wherein the one or more power receivers is configured to detect a presence of the magnetic field produced by the transmitter transducer; and automatically initiate converting the second power signal to the third power signal in response to detecting the presence of the magnetic field, and the presence of the magnetic field is detected when the receiver transducer produces a threshold amount of electromotive force.

2. The wireless power transfer system of claim 1, wherein one parameter of the one or more parameters comprises the transmission frequency of the transmission signal.

3. The wireless power transfer system of claim 1, wherein one parameter of the one or more parameters comprises a power level of the transmission signal.

4. The wireless power transfer system of claim 1, wherein the one or more parameters comprises the transmission frequency and a power level of the transmission signal.

5. The wireless power transfer system of claim 1, wherein the transmitter transducer is an elongate transmitter conductor extending along the power transfer region.

6. The wireless power transfer system of claim 5, wherein the transmitter transducer is made of a plurality of individually insulated wires.

7. The wireless power transfer system of claim 1, wherein the signal generator in combination with the transmitter transducer includes a resonant circuit, the resonant circuit including a variable reactance electrically connected to the transmitter transducer, and the resonant circuit is configured to resonate at the transmission frequency.

8. The wireless power transfer system of claim 1, wherein the power processor in combination with the receiver transducer includes a resonant circuit configured to resonate at a reception frequency, the resonant circuit including a variable reactance electrically connected to the receiver transducer, the variable reactance being controllable to make the reception frequency correspond to the transmission frequency.

9. The wireless power transfer system of claim 1, wherein the power processor includes a super-capacitor.

10. The wireless power transfer system of claim 1, wherein the signal generator is configured to detect a presence of the one or more power receivers in the power transfer region; and automatically initiate the generation of the transmission signal in response to detecting the presence of the one or more power receivers in the power transfer region.

11. The wireless power transfer system of claim 1, wherein the transmitter transducer is a loop of a non-shielded electrical conductor.

12. The wireless power transfer system of claim 1, wherein the transmitter transducer comprises a plurality of concentric loops of electrical conductors, the plurality of concentric loops including loops of different sizes.

13. The wireless power transfer system of claim 1, where the load uses power having a pre-determined voltage level, and wherein the power processor is further configured to convert a voltage level of the second power signal to the third power signal with the pre-determined voltage level.

14. The wireless power transfer system of claim 13, wherein the power processor further comprises a transformer electrically connected between the receiver transducer and the load, the transformer being configured to convert the voltage level of the second power signal to the pre-determined voltage level.

15. The wireless power transfer system of claim 1, wherein the signal generator is configured to generate the transmission signal with a frequency in a range of 10kHz – 500kHz.

16. The wireless power transfer system of claim 1, wherein the signal generator is configured to generate the transmission signal with a frequency in a range of 5 kHz – 1000 kHz.

17. The wireless power transfer system of claim 1, wherein the signal generator is configured to generate the transmission signal with a frequency in a range of 500 kHz – 100 MHz.

18. The wireless power transfer system of claim 1, wherein a largest dimension of the receiver transducer is between 1 and 0.00001 times a largest dimension of the transmitter transducer.

19. The wireless power transfer system of claim 18, wherein the largest dimension of the receiver transducer is between 0.1 and 0.00001 times the largest dimension of the transmitter transducer.

20. The wireless power transfer system of claim 1, wherein:

the signal generator is configured to produce transmitter information about a function of the signal generator;

the first communication circuit is configured to receive the transmitter information from the signal generator and communicate the transmitter information to the second communication circuit,

the second communication circuit is configured to communicate the received transmitter information to the power processor, and

the power processor is configured to adjust a parameter of the second power signal in response to the received transmitter information.

21. A wireless power transfer system comprising:

a transmitter transducer configured to produce a magnetic field in a power transfer region during conduction of a transmission signal;

a signal generator electrically configured to be connected to the transmitter transducer, the signal generator being operationally configured to:

receive a first power signal from a power source;

generate from the first power signal an alternating current transmission signal having a transmission frequency of at least 500 Hz; and

transmit the transmission signal to the transmitter transducer at the transmission frequency;

the signal generator configured to produce transmitter information about a function of the signal generator;

a first communication circuit coupled to the signal generator and configured to receive the transmitter information from the signal generator; and

one or more power receivers, each of the one or more power receivers being configured to be electrically connected to respective one or more loads, wherein each of the one or more power receivers comprises:

a receiver transducer configured to inductively receive a time varying magnetic flux of the magnetic field transmitted from the transmitter transducer when the receiver

transducer is disposed in the power transfer region, and convert the time varying magnetic flux to a second power signal, the second power signal being a time varying power signal having the transmission frequency of the transmission signal;

a power processor electrically connected to the receiver transducer, and configured to convert the second power signal to a third power signal appropriate for the respective one or more loads, to receive transmitter information, and to control an operation of the power processor in response to the received transmitter information; and

a second communication circuit operatively coupled to the power processor;

wherein the first communication circuit is configured to communicate the transmitter information to the second communication circuit, the second communication circuit is configured to communicate the received transmitter information to the power processor, and the power processor is configured to adjust a parameter of the second power signal in response to the received transmitter information

wherein the one or more power receivers is configured to detect a presence of the magnetic field produced by the transmitter transducer; and automatically initiate converting the second power signal to the third power signal in response to detecting the presence of the magnetic field, and the presence of the magnetic field is detected when the receiver transducer produces a threshold amount of electromotive force.