We claim:

1. A circuit for cooling, comprising:

a pulse generator for generating a continuous stream of pulses in a form of a square wave to maximize a change of voltage with respect to time (dV/dT);

a conductor coupled to the pulse generator that is configured to cool in response to the continuous stream of pulses;

a cold sink placed adjacent to the conductor; and

an output for receiving an electrical output emitted from the conductor.

2. The circuit of claim 1, wherein the cold sink is within a Carnot engine.

3. The circuit of claim 1, wherein the conductor is a layered heat exchanger including multiple conductive layers electrically coupled together with electrical insulators between the conductive layers.

4. The circuit of claim 1, wherein the conductor is a tube.

5. The circuit of claim 4, wherein the tube is filled with material having a predetermined permittivity or permeability larger than a vacuum.

6 The circuit of claim 4, further including a pump for pumping fluid through the tube.

7. The circuit of claim 6, wherein the fluid exchanges heat with the tube and the tube absorbs heat from the cold sink.

8. The circuit of claim 4, wherein the conductor is a tube having a cavity therein with a semiconductor or metal at least partially filling the cavity.

9. A method for cooling, comprising:

generating a continuous input stream of pulses in a form of a square wave to maximize a change of voltage with respect to time (dV/dT);

applying the input stream of pulses to a conductor that extracts heat from a cold sink, wherein the input stream of pulses cools the conductor; and

outputting an electrical signal from the conductor.

10. The method of claim 9, further including transmitting the continuous input stream of pulses through a negative resistance.

11. The method of claim 9, wherein the conductor is a tube having a cavity therein.

12. The method of claim 9, wherein the cold sink is within a Carnot or Stirling thermal cycle engine.

13. The method of claim 9, wherein the conductor is a conductive sheet having a conductive coating thereon.

14. The method of claim 13, wherein the conductive coating is any one of the following or combinations thereof: gold, silver, palladium, platinum, rhodium, nickel, chromium, graphene, aluminum, puralene or puralene derivatives, anodized aluminum, and carbon filled polymeric residues.

15. The method of claim 9, wherein the conductor is formed of concentric cylinders.

16. An apparatus for cooling, comprising:

a pulse generator to generate a continuous stream of electrical pulses having a first power, wherein the continuous stream of electric pulses are in a form of a square wave to maximize a change of voltage with respect to time (dV/dT); and

a conductor coupled to the pulse generator, the conductor for providing electrical energy to a load, wherein the conductor is configured to receive heat from a cold sink, and wherein the conductor is configured to cool in response to the continuous stream of electrical pulses.

17. The apparatus of claim 16, wherein the conductor is a tube ~~is~~ configured to extract excess heat from the cold sink.

18. The apparatus of claim 17, further including an oscillator coupled in series with the tube, wherein the electrical pulses are at a first frequency and the oscillator generates pulses at a second frequency, greater than the first frequency.

19. The method of claim 16, wherein the conductor is a conductive sheet having a conductive coating thereon.

20. The method of claim 19, wherein the conductive coating is any one of the following or combinations thereof: gold, silver, palladium, platinum, rhodium, nickel, chromium, graphene, aluminum, puralene or puralene derivatives, anodized aluminum, and carbon filled polymeric residues.