CLAIMS

1. A method of immersion cooling a system comprising electronic equipment, the method comprising:

immersing the electronic equipment in a pressure-sealed tank holding heat transfer fluid in liquid form, and including a vapor space above a surface of the liquid heat transfer fluid, wherein the vapor space is connected to a condenser mounted outside of the pressure-sealed tank;

operating the electronic equipment to generate heat so as to evaporate some of the heat transfer fluid and cause heat transfer fluid vapor to enter the condenser via a riser tube;

condensing the heat transfer fluid vapor in the condenser to produce heat transfer fluid condensate;

returning, via a return line, the heat transfer fluid condensate to the tank; and

increasing power consumption by the electronic equipment to increase heat generated and develop an increased pressure of the heat transfer fluid vapor, wherein the increased pressure increases effectiveness of the condenser to bring the system into an equilibrium condition.

2. The method of claim 1, further comprising reducing power consumption by the electronic equipment to reduce the heat generated and cause a decrease in pressure of the heat transfer fluid vapor, the lower pressure decreasing a boiling point of the heat transfer fluid to bring the system back to equilibrium.

3. The method of claim 2, wherein the reduced power consumption causes a degree of vacuum to be developed inside of the tank.

4. The method of claim 3, wherein power consumption by the electronic equipment is reduced substantially to zero, and the pressure of the heat transfer fluid vapor in the tank is reduced to about 0.4 bar absolute

5. The method of claim 1 further comprising filtering the condensate to remove at least one of moisture and metal particles before returning the condensate to the tank.

6. The method of claim 1, wherein the heat transfer fluid comprises a dielectric fluid.

7. The method of claim 1 further comprising condensing, by condenser tubes in the tank, some of the heat transfer fluid vapor.

8. The method of claim 1 further comprising removing, by a desiccant, moisture from air in the vapor space of the tank.

9. An apparatus for immersion cooling of electronic equipment, comprising:

a pressure-sealed tank configured for holding heat transfer fluid in liquid form into which the electronic equipment can be immersed, and including a vapor space above a surface of the liquid heat transfer fluid;

a condenser mounted outside of the pressure-sealed tank, the condenser having an inlet connected, by a riser tube, to the vapor space and configured for receiving heat transfer fluid vapor, a sealable vapor outlet, and a condensate outlet; and

a condensate return line so configured that through it condensed heat transfer fluid can return from the condensate outlet to the tank.

10. The apparatus of claim 9 further comprising a filter in the condensate return line configured for removing at least one of moisture and metallic particles.

11. The apparatus of claim 9, further comprising means inside the tank configured for condensing heat transfer fluid vapor.

12. The apparatus of claim 11 wherein the means for condensing comprises a bank of condenser tubes.

13. The apparatus of claim 9 further comprising a desiccant configured for aiding removal of moisture from air in the vapor space of the tank.

14. A method of commencing immersion cooling of electronic equipment, comprising:

immersing the electronic equipment in a pressure-sealed tank holding heat transfer fluid in liquid form, and including a vapor space above a surface of the liquid heat transfer fluid, wherein the vapor space is connected to a condenser mounted outside of the pressure-

sealed tank, the condenser being disposed above the tank and including a vapor outlet with a valve operable for sealing the vapor outlet;

commencing operation of the electronic equipment to generate heat, so as to evaporate some of the heat transfer fluid, to produce heat transfer fluid vapor in the vapor space;

opening the valve to allow the heat transfer fluid vapor generated to drive air from the vapor space through a riser tube to the condenser and out through the vapor outlet until substantially all of the air has been driven out of the vapor space;

closing the valve;

continuing operation of the electronic equipment to generate heat so as to produce heat transfer fluid vapor;

condensing the heat transfer fluid vapor in the condenser to produce heat transfer fluid condensate; and

returning the heat transfer fluid condensate to the tank via a return line.