

U.S. Patent. No. 10,405,457 – Comparison of Claim Sets

Claim Set 1 (claims 1-5)	Claim Set 2 (claims 6-10)	Claim Set 3 (claims 11-16)
[1.0] An appliance immersion cooling system comprising:	[6.0] A <u>tank module adapted for use in</u> an appliance immersion cooling system, <u>the tank module</u> comprising:	[11.0] <u>A tank module (10) adapted for use in</u> an appliance immersion cooling system, <u>the tank module</u> comprising:
[1.1] a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:	[6.1] a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:	[11.1] a tank (12) adapted to immerse in a dielectric fluid a plurality of electrical appliances (16), each in a respective appliance slot (18) distributed vertically along, and extending transverse to, a long wall of the tank (10), the tank (10) comprising:
[1.2] a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, <u>having an overflow lip</u> adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot; and;	[6.2] a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, <u>having an overflow lip</u> adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot; and;	[11.2] a weir 22, integrated horizontally into the long wall of the tank (10) adjacent all appliance slots (18), adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot (18);
[1.3] a dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir;	[6.3] a dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir;	N/A
[1.4] a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:	[6.4] a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:	[11.3] a primary circulation facility (28) adapted to circulate the

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a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot;	a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot; <u>and</u>	dielectric fluid through the tank (10), comprising: a plenum (36), positioned adjacent the bottom of the tank (10), adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot (18); and
[1.5] a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; <u>and</u>	N/A	See Claim 16
[1.6] a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.	[6.5] a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.	[11.4] a control facility (58) adapted to control the operation of the primary fluid circulation facility (28) as a function of the temperature of the dielectric fluid in the tank (10).
2. The system of claim 1 wherein the tank and primary circulation facility comprise a highly-integrated module.	7. The <u>module of claim 6</u> wherein the tank and primary circulation facility comprise a highly-integrated module.	N/A

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3. The system of claim 1 wherein the tank further comprises:	8. The <u>module of claim 6</u> wherein the tank further comprises:	12. The <u>tank module of claim 11</u> wherein the tank further comprises:
an interconnect panel facility adapted to mount appliance support equipment.	an interconnect panel facility adapted to mount appliance support equipment.	an interconnect panel facility (24) adapted to mount appliance support equipment.
4. The system of claim 1 wherein the primary circulation facility further comprises:	9. The <u>module of claim 6</u> wherein the primary circulation facility further comprises:	13. The <u>module of claim 11</u> wherein the primary circulation facility further comprises:
at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;	at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;	at least first and second primary circulation sub-facilities (28a, 28b), each adapted to operate independently to circulate the dielectric fluid through the tank;
wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities <u>and the secondary fluid circulation facilities</u> so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.	wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.	wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

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5. The system of claim 1 wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.	10. The <u>module of claim 6</u> wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.	14. The <u>module of claim 11</u> wherein the control facility further comprises a communication facility (62, 64) adapted to facilitate monitoring and control of the control facility from a remote location.
N/A	N/A	15. An appliance immersion cooling system comprising a tank module according to any one of the preceding claims 11 through 14.
See claim 1	N/A	16. An appliance immersion cooling system according to claim 15, further comprising:
See claim 1	N/A	a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted.