CLAIMS

1. A heat exchanger comprising:

a chamber configured to contain a first composition and an amount of air;

tubing located within the chamber and configured to contain a second composition; and

a level element located within the chamber and configured to maintain a predetermined amount of the first composition within the chamber, wherein the predetermined amount of the first composition corresponds to a level of the first composition that is from 75% to 95% of a height of the chamber~~.~~;

wherein the first composition from the chamber is prevented from entering the tubing to mix with the second composition.

2. The heat exchanger according to Claim 1, wherein the level of the first composition is from 80% to 90% of the height of the chamber.

3. The heat exchanger according to a Claim 1, wherein the air comprises 5% to 35% of a total interior volume of the chamber.

4. The heat exchanger according to a Claim 1, wherein the level element is at least one of: a capacitance level element, a grounded level element, radar, guided radar, ultrasonic, hydrostatic pressure, differential pressure element, radiometricor element, a combination thereof.

5. The heat exchanger according to a Claim 1, wherein the heat exchanger is an aseptic cooler.

6. The heat exchanger according to a Claim 1, wherein the first composition is a food grade coolant selected from the group consisting of water, propylene glycol, ethylene glycol, salt brine, synthetic hydrocarbon base chemicals from the polyalphaolefin family, refined vegetable extracts coolant and combinations thereof.

7. The heat exchanger according to a Claim 1, wherein the second composition is a food product.

8. The heat exchanger according to a Claim 1, wherein the second composition comprises particulates.

9. The heat exchanger according to a Claim 1, wherein the chamber comprises a top end and a bottom end, wherein the top end of the chamber comprises a second

composition outlet and a first composition inlet, and wherein the bottom end of the chamber comprises a second composition inlet and a first composition outlet.

10. The heat exchanger according to a Claim 1, wherein the chamber comprises an air vent.

11. The heat exchanger according to a Claim 1, wherein the tubing comprises a shape that is selected from the group consisting of linear, helical, serpentine, and combinations thereof.

12. The heat exchanger according to a Claim 1, further comprising at least one sensor located within the chamber and configured to sense an amount of the first composition within the chamber, wherein the amount of the first composition corresponds to a level of the first composition that is from 75% to 95% of a height of the chamber.

13. The heat exchanger according to a Claim 12, further comprising a second sensor that is configured to sense an amount of pressure within the chamber.

14. The heat exchanger according to any one of Claims 1, wherein the air comprises 5% to 35% of a total volume of the chamber.

15. An aseptic food processing system comprising:

a heating apparatus;

a holding apparatus; and

a cooling apparatus having

a chamber configured to contain a first composition and an amount of air,

tubing located within the chamber and configured to contain a second composition, and

a level element located within the chamber and configured to maintain a predetermined amount of the first composition within the chamber, wherein the predetermined amount of the first composition corresponds to a level of the first composition that is from 75% to 95% of a height of the chamber~~.~~;

wherein the first composition from the chamber is prevented from entering the tubing to mix with the second composition.

16. The aseptic food processing system according to Claim 15, wherein the heating apparatus is a heat exchanger selected from a group consisting of those claimed in Claims 1 to Claim 13.

17. The aseptic food processing system according to Claim 15, wherein the cooling apparatus is a heat exchanger selected from a group consisting of those claimed in Claims 1 to Claim 13.

18. The aseptic food processing system according to Claim 15, wherein the system is a closed system.

19. The aseptic food processing system according to Claim 15, further comprising at least one of: a temperature sensor, a pre-heating apparatus; a pre-cooling apparatus; a pump configured to circulate the first composition, or a combination thereof.

20. The aseptic food processing system according to Claim 15, further comprising at least one sensor located within the chamber and configured to sense an amount of the first composition within the chamber, wherein the amount of the first composition corresponds to a level of the first composition that is from 75% to 95% of a height of the chamber.

21. A method of producing an aseptic food product, the method comprising:

heating a food composition in a heating apparatus to a predetermined temperature;

holding the composition in a holding apparatus for a predetermined amount of time; and

cooling the composition in a cooling device having a chamber configured to contain a first composition and an amount of air,

tubing located within the chamber and configured to contain a second composition, and

a level element located within the chamber and configured to maintain a predetermined amount of the first composition within the chamber, wherein the predetermined amount of the first composition corresponds to a level of the first composition that is from 75% to 95% of a height of the chamber~~.~~;

wherein the first composition from the chamber is prevented from entering the tubing to mix with the second composition.

22. The method according to Claim 21, wherein the heating apparatus is a heat exchanger selected from a group consisting of those claimed in Claims 1 to Claim 14.