CLAIMS:

1. System for providing a controlled temperature in a control volume, comprising:

a main chamber defining the control volume, and having at least one main chamber inlet and one main chamber outlet;

a mixing chamber having a mixing chamber inlet and a mixing chamber outlet, the mixing chamber outlet in selective fluid communication with said main chamber inlet, at least one mixing chamber inlet, and a ram air inlet different from said at least one mixing chamber inlet for allowing a ram airflow at a first temperature to be channeled into said mixing chamber;

a gasflow source in selective fluid communication with said at least one mixing chamber inlet and configured for selectively providing a source gasflow at a second temperature to said mixing chamber, said second temperature being greater than said first temperature;

wherein said mixing chamber is configured for:

- in the presence of said source gasflow in said mixing chamber, selectively allowing said ram airflow and said source gasflow in said mixing chamber to mix therein to provide a mixing chamber outflow to the main chamber; or
- in the absence of said source gasflow, selectively allowing said ram airflow in said mixing chamber to flow to the main chamber to thereby provide a mixing chamber outflow;

said mixing chamber outflow being at a third temperature at least at or near said main chamber inlet;

a control system operative to control at least one of said ram airflow, said source gasflow and said mixing chamber outflow to provide a desired said third temperature at least at said main chamber inlet; and

wherein said gasflow source comprises an auxiliary ram intake, in operation thereof being open to atmospheric air, and an auxiliary conduit connecting said

auxiliary ram intake to said mixing chamber inlet, wherein said auxiliary ram intake is configured for selectively channeling an atmospheric auxiliary airflow into the mixing chamber to thereby provide said source gasflow.

2. The system according to claim 1, wherein said control system is operative to provide a said third temperature such as to maintain a temperature in said control volume within a preset operating temperature range between a preset minimum temperature and a preset maximum temperature.

3. The system according to claim 2, wherein said preset minimum temperature is -35°C and wherein said preset maximum temperature is +55°C.

4. The system according to any one of claims 1 to 3, comprising heating elements for controllably heating said source gasflow to a desired said second temperature.

5. The system according to claim 4, wherein said heating elements are electrical heating elements coupled to said gasflow source.

6. The system according to any one of claims 1 to 5, comprising a first temperature sensor in said main chamber at or in the vicinity of said main chamber inlet, the first temperature sensor being in operative communication with said control system.

7. The system according to claim 6, wherein said control system operates to provide a desired said third temperature based at least partially on a sensed inlet temperature as sensed by said first temperature sensor.

8. The system according to any one of claims 1 to 7, comprising a second temperature sensor in said main chamber at or in the vicinity of said main chamber outlet, the second temperature sensor being in operative communication with said control system.

9. The system according to claim 8, wherein said control system operates to provide a desired said third temperature based at least partially on a sensed outlet temperature as sensed by said second temperature sensor.

10. The system according to any one of claims 7 to 9, wherein the control system

operates to increase at least one of the source gasflow, the second temperature, and the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature reaching said preset minimum temperature.

11. The system according to claim 10, wherein the control system operates to cease said increase of at least one of the source gasflow, the second temperature, and the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature being significantly above said preset minimum temperature.

12. The system according to any one of claims 7 to 11, wherein the control system operates to decrease at least one of the source gasflow and the second temperature, and/or to increase the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature reaching said preset maximum temperature.

13. The system according to claim 12, wherein the control system operates to cease said decrease of at least one of the source gasflow and the second temperature, and/or to cease said increase of the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature being significantly below said preset maximum temperature.

14. The system according to any one of claims 1 to 13, comprising a first controllable variable pump operatively connected to the control system and configured for controllably varying the magnitude of said source gasflow into said mixing chamber.

15. The system according to claim 14, further comprising a first controllable valve operatively connected to the control system and configured for selectively closing flow of said source gasflow into said mixing chamber.

16. The system according to any one of claims 1 to 15, comprising a second controllable variable pump operatively connected to the control system and configured for controllably varying the magnitude of said mixing chamber outflow into said main chamber.

17. The system according to claim 16, further comprising a second controllable valve operatively connected to the control system and configured for selectively closing flow of said mixing chamber outflow into said main chamber.

18. The system according to any one of claims 1 to 17, wherein said main chamber comprises an auxiliary outlet, and said gasflow source further comprises a recirculation conduit connecting said auxiliary outlet to said mixing chamber inlet and configured for providing a recirculating airflow from said main chamber into the mixing chamber to thereby provide said source gasflow.

19. The system according to claim 18, wherein said recirculation airflow is a first proportion of said mixing chamber outflow.

20. The system according to claim 19, wherein said first proportion is between 0% and 100% of said mixing chamber outflow.

21. The system according to claim 19 or claim 20, wherein said first proportion is between 30% and 70% of said mixing chamber outflow.

22. The system according to any one of claims 18 to 21, comprising a first heating system coupled to said recirculation conduit to selectively heat said recirculation airflow to provide a desired said second temperature to said source gasflow.

23. The system according to any one of claims 1 to 22, comprising a second heating system coupled to said auxiliary conduit to selectively heat said atmospheric auxiliary airflow to provide a desired said second temperature to said source gasflow.

24. The system according to any one of claims 1 to 23, wherein said gasflow source further comprises a pressurized gas container, and a container conduit connecting said pressurized gas container to said mixing chamber inlet and configured for providing a pressurized gasflow into the mixing chamber to thereby provide said source gasflow.

25. The system according to claim 24, comprising a third heating system coupled to said container conduit to selectively heat said pressurized gasflow to provide a desired said second temperature to said source gasflow.

26. The system according to any one of claims 2 to 25, further comprising a main ram intake, in operation thereof being open to atmospheric air, and a ram conduit connecting said main ram intake to said ram air inlet, wherein said main ram intake is configured for selectively channeling said ram airflow into said mixing chamber.

27. The system according to any one of claims 1 to 26, wherein said main chamber accommodates electronic components.

28. The system according to claim 27, wherein said components are operational within said preset temperature range.

29. An air vehicle comprising the system as defined in any one of claims 1 to 28.

30. The air vehicle according to claim 29, wherein the air vehicle is a UAV.

31. Method for providing a controlled temperature in a control volume, comprising:

(A) providing a ram airflow at a first temperature into a mixing chamber;

(B) selectively providing a source gasflow at a second temperature into said mixing chamber, said second temperature being greater than said first temperature; comprising selectively channeling an atmospheric auxiliary airflow into the mixing chamber, different from said ram, airflow, to thereby provide said source gasflow; and wherein:

- in the presence of said source gasflow in said mixing chamber, selectively allowing said ram airflow and said source gasflow in said mixing chamber to mix therein to provide a mixing chamber outflow to the control volume; or
- in the absence of said source gasflow, selectively allowing said ram airflow in said mixing chamber to flow to the control volume to thereby provide a mixing chamber outflow;

said mixing chamber outflow being at a third temperature at least at or near entry to the control volume;

(C) controlling at least one of said ram airflow, said source gasflow and said mixing chamber outflow to provide a desired said third temperature at least at or near entry

to the control volume.

32. The method according to claim 31, wherein said third temperature such as to maintain a temperature in said control volume within a preset operating temperature range between a preset minimum temperature and a preset maximum temperature.

33. The method according to claim 32, wherein said preset minimum temperature is -35°C and wherein said preset maximum temperature is +55°C.

34. The method according to any one of claims 31 to 33, comprising providing a heating source and, using the heating source, controllably heating said source gasflow to a desired said second temperature.

35. The method according to any one of claims 31 to 34, comprising providing a desired said third temperature based at least partially on a sensed inlet temperature as sensed at or in the vicinity of an inlet of the control volume.

36. The method according to any one of claims 31 to 35, comprising providing a desired said third temperature based at least partially on a sensed outlet temperature as sensed at or in the vicinity of an outlet of the control volume.

37. The method according to claim 36, comprising increasing at least one of the source gasflow, the second temperature, and the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature reaching said preset minimum temperature.

38. The method according to claim 37, comprising ceasing said increase of at least one of the source gasflow, the second temperature, and the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature being significantly above said preset minimum temperature.

39. The method according to claim 36, comprising decreasing at least one of the source gasflow and the second temperature, and/or to increase the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature reaching said preset maximum temperature.

40. The method according to claim 39, comprising ceasing said decrease of at least one of the source gasflow and the second temperature, and/or to cease said increase of the mixing chamber outflow, responsive to one of said sensed inlet temperature or said sensed outlet temperature being significantly below said preset maximum temperature.

41. The method according to any one of claims 31 to 40, comprising controllably varying the magnitude of said source gasflow into said mixing chamber.

42. The method according to any one of claims 31 to 41, comprising controllably varying the magnitude of said mixing chamber outflow into the control volume.

43. The method according to claim 42, comprising controllably varying the magnitude of said mixing chamber outflow into the control volume.

44. The method according to any one of claims 31 to 43, further comprising providing a recirculating airflow from the control volume into the mixing chamber to thereby provide said source gasflow.

45. The method according to claim 44, wherein said recirculation airflow is a first proportion of said mixing chamber outflow, and wherein said first proportion is between 30% and 70% of said mixing chamber outflow.

46. The method according to any one of claims 31 to 45, comprising further providing a pressurized gasflow into the mixing chamber to thereby provide said source gasflow.

47. The method according to any one of claims 31 to 46, wherein the control volume accommodates electronic components.