Claims

1. A cryogenic storage system, comprising:

an enclosure having a cavity;

a dewar that is positioned within the cavity of the enclosure and has a payload area that is configured to hold a liquid below ambient temperature and passively stabilize in an upright position, the dewar being formed with an inner wall and an outer wall;

a removable vapor plug that has a handle and a neck; and

an electronic thermocouple embedded within the neck of the removable vapor plug.

2. The cryogenic storage system of claim 1, wherein the dewar is shaped as a sphere and has a center of gravity or mass within a bottom portion of the dewar that passively stabilizes the dewar when the dewar is tilted, angled or rotated within the enclosure.

3. The cryogenic storage system of claim 1, wherein the enclosure is a cube, wherein the enclosure has a plurality of sides and a circular opening on each side of the plurality of sides to provide access to the dewar when the dewar is placed inside the cubicle enclosure.

4. The cryogenic storage system of claim 1, further comprising:

a corrugated neck tube that connects the inner wall and the outer wall and is configured to reduce an amount of heat conducted into the dewar, wherein the corrugated neck tube has a serpentine path to conduct the amount of heat.

5. The cryogenic storage system of claim 1, wherein the electronic thermocouple

is configured to monitor temperature within the dewar.

6. The cryogenic storage system of claim 5, wherein the electronic thermocouple is configured to:

wirelessly connect with an electronic device; and

transmit a temperature within the dewar to the electronic device.

7. The cryogenic storage system of claim 1, further comprising:

a ball transfer device that is connected to and interfaces between the dewar and the enclosure, wherein the ball transfer device is configured to minimize friction between the dewar and the enclosure.

8. The cryogenic storage system of claim 1, wherein the dewar is a spherical dewar that rotates in three-dimensions.

9. The cryogenic storage system of claim 8, wherein the spherical dewar is configured to maintain the upright position and return to the upright position when the dewar is tilted, rotated or angled.

10. The cryogenic storage system of claim 9, wherein the spherical dewar has a bottom portion and a top portion, wherein the bottom portion weighs more than the top portion such that the spherical dewar remains upright or stabilizes when tilted or rotated.

11. A dewar for storing a liquid below an ambient temperature, comprising:

an inner wall that forms a cavity within and encloses a stored liquid;

an outer wall, the outer wall and the inner wall having an opening that allows access for the liquid into the cavity;

a vacuum port that is configured to produce a vacuum insulation between the inner wall and the outer wall; and

a vapor plug having a handle and a neck that is configured to receive an embedded thermocouple within.

12. The dewar of claim 11, wherein the vapor plug is further

configured to be inserted into the cavity to plug the opening and prevent the liquid from entering or exiting the cavity of the dewar.

13. The dewar of claim 12, wherein the vapor plug is a magnetic vapor plug.

14. The dewar of claim 12, wherein the magnetic vapor plug is configured to be rotated to a position in the cavity to where magnets secure the vapor plug to the cavity.

15. The dewar of claim 12, wherein the magnetic vapor plug is configured to be rotated to a position in the cavity where magnets create force to push the magnetic vapor plug out of the cavity

16. The dewar of claim 12, further comprising a vapor plug locking device that locks the vapor plug to the dewar and maintains a gap between the vapor plug and the inner wall of the dewar to allow gas to escape.

17. The dewar of claim 11, wherein the dewar has a bottom portion and a top portion, wherein the bottom portion weighs more than the top portion such that the dewar remains upright or stabilizes when tilted or rotated.

18. The dewar of claim 11, further comprising:

a corrugated neck tube that connects the inner wall with the outer wall, wherein the corrugated neck tube has a serpentine path that conducts heat, wherein the dewar is shaped as a sphere.

19. A spherical dewar for storing a liquid at a temperature below an ambient temperature, comprising:

a top portion;

a bottom portion that weighs more than the top portion and is configured to stabilize the spherical dewar in an upright position when the spherical dewar is tilted, angled or rotated within an enclosure regardless of an orientation of the enclosure;

an inner wall that forms a payload area configured to hold the liquid at the temperature below the ambient temperature;

an outer wall, the outer wall and the inner wall having an opening that allows access to the liquid in the payload area;

a vacuum port that is configured to produce a vacuum insulation between the inner wall and the outer wall;

a vapor plug having a handle, a neck that is inserted into the opening and a locking device that locks the vapor plug in place and maintains a gap between the neck and the inner wall that allows gas to escape; and

an electronic thermocouple embedded within the neck of the vapor plug.

20. The spherical dewar of claim 19, wherein the vapor plug is magnetic vapor plug.