CLAIMS:

1. A shipping container, comprising:

a structural frame comprising a ceiling and defining an interior;

a transport refrigeration unit (TRU) comprising an inlet through which air is drawn from a lower region of the interior and an outlet through which cooled air is exhausted toward an upper region of the interior;

a control system configured to control an exhaustion of the air cooled by the refrigeration unit toward the upper region of the interior to maintain a predefined environmental condition within the interior; and

a smart plenum defined in the upper region of the interior and by which the outlet is fluidly communicative with the upper region of the interior,

wherein the smart plenum is defined along an entire span of the ceiling and comprises a plenum ceiling disposed in the interior below the ceiling and provided as a continuous air-porous or air-permeable medium along the entire span of the ceiling.

2. The shipping container according to claim 1, wherein:

the structural frame comprises a floor, the ceiling and sidewalls supporting the floor above the ceiling, and

the TRU is coupled to one of the sidewalls and another one of the sidewalls comprises a sealed door.

3. The shipping container according to claim 1, wherein:

the structural frame comprises a floor, the ceiling and sidewalls supporting the floor above the ceiling, and

the TRU is integrated into one of the sidewalls and another one of the sidewalls comprises a sealed door.

4. The shipping container according to claim 3, wherein the inlet is disposed proximate to the floor and the outlet is disposed proximate to the ceiling.

5. The shipping container according to claim 1, further comprising controllable ducts supportively disposed along the ceiling, wherein the outlet is fluidly communicative with the upper region of the interior by the smart plenum and the controllable ducts.

6. The shipping container according to claim 5, wherein the control system comprises:

sensing elements deployed throughout the interior; and

a controller coupled to the sensing elements and the smart plenum and the controllable ducts and configured to control operations of smart plenum and the controllable ducts based on at least readings of the sensing elements to maintain the predefined environmental condition within the interior

7. A shipping container, comprising:

a structural frame comprising a ceiling and defining an interior;

a transport refrigeration unit (TRU) comprising an inlet through which air is drawn from a lower region of the interior and an outlet through which cooled air is exhausted toward an upper region of the interior;

a smart plenum defined in the upper region of the interior and by which the outlet is fluidly communicative with the upper region of the interior; and

a control system configured to control the smart plenum to maintain a predefined environmental condition within the interior,

wherein the smart plenum is defined along an entire span of the ceiling and comprises a plenum ceiling disposed in the interior below the ceiling and provided as a continuous air-porous or air-permeable medium along the entire span of the ceiling.

8. The shipping container according to claim 7, wherein:

the structural frame comprises a floor, the ceiling and sidewalls supporting the floor above the ceiling, and

the TRU is coupled to one of the sidewalls and another one of the sidewalls comprises a sealed door.

9. The shipping container according to claim 7, wherein:

the structural frame comprises a floor, the ceiling, axial sidewalls and lateral sidewalls supporting the floor above the ceiling, and

the TRU is integrated into one of the axial sidewalls and another one of the axial sidewalls comprises a sealed door.

10. The shipping container according to claim 9, wherein the inlet is disposed proximate to the floor and the outlet is disposed proximate to the ceiling.

11. The shipping container according to claim 9, wherein the smart plenum is defined along the entire span of the ceiling between the lateral sidewalls.

12. The shipping container according to claim 11, wherein the plenum ceiling extends continuously along the entire span of the ceiling between the lateral sidewalls.

13. The shipping container according to claim 7, wherein the control system comprises:

sensing elements deployed throughout the interior; and

a controller coupled to the smart plenum and the sensing elements and configured to control operations of the smart plenum based on at least readings of the sensing elements to maintain the predefined environmental condition within the interior.

14. A shipping container, comprising:

a structural frame comprising a ceiling and defining an interior;

a transport refrigeration unit (TRU) comprising an inlet through which air is drawn from a lower region of the interior and an outlet through which cooled air is exhausted toward an upper region of the interior;

controllable ducts supportively disposed in the upper region of the interior and by which the outlet is fluidly communicative with the upper region of the interior; and

a control system configured to control the controllable ducts to maintain a predefined environmental condition within the interior,

wherein the smart plenum is defined along an entire span of the ceiling and comprises a plenum ceiling disposed in the interior below the ceiling and provided as a continuous air-porous or air-permeable medium along the entire span of the ceiling.

15. The shipping container according to claim 14, wherein:

the structural frame comprises a floor, the ceiling and sidewalls supporting the floor above the ceiling, and

the TRU is coupled to one of the sidewalls and another one of the sidewalls comprises a sealed door.

16. The shipping container according to claim 14, wherein:

the structural frame comprises a floor, the ceiling and sidewalls supporting the floor above the ceiling, and

the TRU is integrated into one of the sidewalls and another one of the sidewalls comprises a sealed door.

17. The shipping container according to claim 16, wherein the inlet is disposed proximate to the floor and the outlet is disposed proximate to the ceiling.

18. The shipping container according to claim 16, wherein the controllable ducts are supportively disposed along each side of the ceiling.

19. The shipping container according to claim 14, wherein each controllable duct comprises:

a duct element; and

a controllable valve element to control an amount of the air cooled by the refrigeration unit that is permitted to flow through the duct element.

20. The shipping container according to claim 14, wherein the control system comprises:

sensing elements deployed throughout the interior; and

a controller coupled to the controllable ducts and the sensing elements and configured to control operations of the controllable ducts based on at least readings of the sensing elements to maintain the predefined environmental condition within the interior.