Claims

1. A power module system comprising a first stack comprising vertically stacked first and second containers that each comprise:

a base;

support pillars extending vertically from the base;

power modules disposed in a row on the base, the power modules comprising a cabinet, a hotbox disposed in the cabinet, and a fuel cell stack disposed in the hotbox; and

a back support extending vertically from the base between at least two of the support pillars and facing a back side of the power modules,

wherein the support pillars of the first container support the base of the second container, and

the back supports of the first and second containers at least partially define a shared exhaust plenum configured to receive exhaust air from the power modules.

2. The power module system of claim 1, further comprising air inlet plenums located on sides of the power modules opposite the exhaust plenum.

3. The power module system of claim 1, further comprising a second stack comprising vertically stacked third and fourth containers that each comprise:

a base;

support pillars extending vertically from the base;

power modules disposed in a row on the base, the power modules comprising a cabinet, a hotbox disposed in the cabinet, and a fuel cell stack disposed in the hotbox; and

a back support extending vertically from the base between at least two of the support pillars and facing a back side of the power modules,

wherein:

the support pillars of the third container support the base of the fourth container, and

the shared exhaust plenum is disposed between the first and the second stacks, and is at least partially defined by the back supports of the third and fourth containers.

4. The power module system of claim 3, further comprising fifth and sixth containers that each comprise:

a base;

support pillars extending vertically from the base;

power modules disposed in a row on the base, the power modules comprising a cabinet, a hotbox disposed in the cabinet, and a fuel cell stack disposed in the hotbox; and

a back support extending vertically from the base between at least two of the support pillars and facing a back side of the power modules,

wherein:

the support pillars of the second container support the base of the fifth container, such that the first, second, and fifth containers are vertically stacked in the first stack,

the support pillars of the fourth container support the base of the sixth container, such that the third, fourth, and sixth containers are vertically stacked in the second stack, and

the shared exhaust plenum is at least partially defined by the back supports of the fifth and sixth containers.

5. The power module system of claim 1, wherein the first and second containers are each half width shipping containers.

6. The power module system of claim 5, wherein the first and second containers comprise locking mechanisms disposed in corners and/or along edges of the first and second containers, the locking mechanisms configured to lock the first and second containers together to form a full width shipping container.

7. The power module system of claim 1, wherein the first and second containers each comprise shock dampers located between the power modules and the base.

8. The power module system of claim 1, wherein the first and second containers further comprise non-heat generating modules arranged in a row with the power modules.

9. The power module system of claim 1, wherein each of the first and second containers further comprises additional fuel cell power modules disposed in a second row on the base.

10. The power module system of claim 1, wherein the back supports are blocking walls configured to fill gaps in the rows of power modules to form the shared exhaust plenum.

11. The power module system of claim 1, further comprising a blower or exhaust fan in the shared exhaust plenum.

12. The power module system of claim 1, further comprising an electrical room located below the first and second containers.

13. The power module system of claim 1, wherein one or more of the power modules are configured to slide toward or away from each other.

14. The power module system of claim 1, wherein:

the first and second containers are located in a building having air intake equipment located on a roof of the building;

the shared exhaust plenum is fluidly connected to a chimney located on the roof of the building; and

an outlet of the chimney is located above the air intake equipment.