CLAIMS

1. A cartridge for an additive manufacturing system, comprising:
a sealable chamber having a powder bed in a x-y plane;
a powder hopper positioned within the sealable chamber;
a powder spreader positioned within the sealable chamber for distributing powder from the powder hopper onto the powder bed; and
z-axis components comprising:
    a print plate supporting the powder bed;
    a plunger driven along the z-axis by a z-axis piston of a print station to lower the print plate after printing each layer at the powder bed; and
    a clamp for connecting the plunger of the cartridge with the z-axis piston of the print station.

2. The cartridge for the additive manufacturing system of claim 1, further comprising a laser transparent window that is positioned to allow an external camera to focus on the bed within the sealable chamber.

3. The cartridge for the additive manufacturing system of claim 1, wherein the sealable chamber supports a camera to focus on the bed within the sealable chamber.

4. The cartridge for the additive manufacturing system of claim 2, further comprising a wipe blade mounted within the sealable chamber to clean the laser transparent window.

5. The cartridge for the additive manufacturing system of claim 2, further comprising a bellows attached to the sealable chamber to hold the laser transparent window.

6. The cartridge for the additive manufacturing system of claim 1, wherein an electronic memory attached to the cartridge is configured to hold electronic information to identify the cartridge and control operation of a print station and is accessible by the interface plate.

7. The cartridge for the additive manufacturing system of claim 1, wherein the z-axis components further comprise a seal to confine the powder to the cartridge and a platform holding the powder bed.

8. The cartridge for the additive manufacturing system of claim 1, further comprising an interface plate for receiving power from the print station to power the powder hopper and the powder spreader.

9. The cartridge for the additive manufacturing system of claim 1, wherein the plunger seals the sealable chamber to prevent leakage of the powder.

10. A cartridge for an additive manufacturing system, comprising:
a sealable chamber having a powder bed in a x-y plane and a laser transparent window;
a powder hopper positioned within the sealable chamber;
a powder spreader for distributing powder from the powder hopper onto the powder bed;
a bellows attached to the sealable chamber to hold the laser transparent window; and
z-axis components comprising:
    a print plate supporting the powder bed;
    a plunger driven along the z-axis by a z-axis piston of a print station to lower the print plate after printing each layer at the powder bed; and
    a clamp for connecting the plunger with the z-axis piston of the print station.

11. The cartridge for the additive manufacturing system of claim 10, wherein the laser transparent window is positioned to allow an external camera to focus on the bed within the sealable chamber.

12. The cartridge for the additive manufacturing system of claim 10, wherein the sealable chamber supports a camera to focus on the bed within the sealable chamber.

13. The cartridge for the additive manufacturing system of claim 10, further comprising a wipe blade mounted within the sealable chamber to clean the laser transparent window.

14. A cartridge for an additive manufacturing system, comprising:

a sealable chamber having a powder bed in a x-y plane and a laser transparent window;

a powder hopper positioned within the sealable chamber;

a powder spreader positioned within the sealable chamber for distributing powder from the powder hopper onto the powder bed;

a wiper mechanism configured to clean an inside of the laser transparent window; and

z-axis components comprising:

a print plate supporting the powder bed;

a plunger driven along the z-axis by a z-axis piston of a print station to lower the print plate after printing each layer at the powder bed; and

a clamp for connecting the plunger of the cartridge with the z-axis piston of the print station.

15. The cartridge for the additive manufacturing system of claim 14, wherein the laser transparent window is positioned to allow an external camera to focus on the bed within the sealable chamber.

16. The cartridge for the additive manufacturing system of claim 14, wherein the sealable chamber supports a camera to focus on the bed within the sealable chamber.