CLAIMS

1. A stencil printer for printing viscous material on a substrate, the stencil printer comprising:

a frame;

a stencil coupled to the frame;

a print head, coupled to the frame, to deposit and print viscous material over the stencil;

a lift table assembly configured to support the substrate in a transport position and a print position; and

a conveyor system including a pair of rail members coupled to the frame, the pair of rail members extending through the frame and being configured to transport the substrate through the stencil printer, and for each rail member, a lift tool assembly coupled to the rail member, the lift tool assembly being configured to cooperate with the lift table assembly and to engage and support the substrate at a transport height and a print height, the lift tool assembly including a lifter portion configured to be engaged by a support of the lift table assembly, the lifter portion having a foot that extends under the rail member, the foot being configured to be engaged by the support of the lift table assembly, the foot of the lifter portion having at least two permanent magnets configured to secure the foot of the lifter portion to the support when engaging the support to the lifter portion, and at least one vacuum pocket formed in a bottom surface of the foot of the lifter portion, the at least one vacuum pocket being configured to selectively secure the lifter portion in place on the support.

2. The stencil printer of claim 1, wherein the at least two permanent magnets includes at least one permanent magnet positioned on one side of the at least one vacuum pocket and at least one permanent magnet positioned on an opposite side of the at least one vacuum pocket.

3. The stencil printer of claim 2, wherein the at least one vacuum pocket includes two vacuum pockets positioned between the at least two permanent magnets.

4. The stencil printer of claim 3, wherein two permanent magnets are positioned on one side of the at least one vacuum pocket and two permanent magnets are positioned on the opposite side of the at least one vacuum pocket.

5. The stencil printer of claim 2, wherein the at least one vacuum pocket includes at least one port coupled to a vacuum source to selectively create a vacuum within the vacuum pocket when engaging the support.

6. A method for supporting and clamping a substrate in a print position during a print operation of a stencil printer, the method comprising:

moving the substrate on a conveyor system having a pair of rails at a transport height over a lift table assembly;

clamping opposite edges of the substrate;

moving the substrate in a z-axis direction with a lift tool assembly coupled to each rail member, moving the substrate in the z-axis direction including engaging the lift tool assembly with a support of the lift table assembly, the lift tool assembly including a lifter portion configured to be engaged by a support of the lift table assembly, the lifter portion having a foot that extends under the rail member, the foot being configured to be engaged by the support of the lift table assembly; and

releasably securing the lifter portion to the support with magnets and a vacuum when engaging the lifter portion with the support.

7. The method of claim 6, wherein the foot of the lifter portion has at least two permanent magnets configured to secure the foot of the lifter portion to the support when engaging the support to the lifter portion, and at least one vacuum pocket formed in a bottom surface of the foot of the lifter portion, the at least one vacuum pocket being configured to selectively secure the lifter portion in place on the support.

8. The method of claim 7, wherein the at least two permanent magnets includes at least one permanent magnet positioned on one side of the at least one vacuum pocket and at least one permanent magnet positioned on an opposite side of the at least one vacuum pocket.

9. The method of claim 8, wherein the at least one vacuum pocket includes two vacuum pockets positioned between the at least two permanent magnets.

10. The method of claim 8, wherein the at least one vacuum pocket includes at least one port coupled to a vacuum source to selectively create a vacuum within the vacuum pocket when engaging the support.

11. The method of claim 8, wherein two permanent magnets are positioned on one side of the at least one vacuum pocket and two permanent magnets are positioned on the opposite side of the at least one vacuum pocket.

12. The method of claim 6, wherein the substrate is configured to move between a transport height position, a vision system clearance height position and a print height position.

13. The method of claim 12, further comprising locating a pin associated with the lift tool assembly into a locator associated with the rail member when moving the substrate to the transport height position.

14. A conveyor system for a stencil printer of the type to print viscous material on a substrate, the conveyor system comprising:

a pair of rail members coupled to the frame, the pair of rail members extending through the frame and being configured to transport the substrate through the stencil printer; and

for each rail member, a lift tool assembly coupled to the rail member, the lift tool assembly being configured to cooperate with the lift table assembly and to engage and support the substrate at a transport height and a print height, the lift tool assembly including a lifter portion configured to be engaged by a support of the lift table assembly, the lifter portion having a foot that extends under the rail member, the foot being configured to be engaged by the support of the lift table assembly, the foot of the lifter portion having at least two permanent magnets configured to secure the foot of the lifter portion to the support when engaging the support to the lifter portion, and at least one vacuum pocket formed in a bottom surface of the foot of the lifter portion, the at least one vacuum pocket being configured to selectively secure the lifter portion in place on the support.

15. The conveyor system of claim 14, wherein the at least two permanent magnets includes at least one permanent magnet positioned on one side of the at least one vacuum pocket and at least one permanent magnet positioned on an opposite side of the at least one vacuum pocket.

16. The conveyor system of claim 15, wherein the at least one vacuum pocket includes two vacuum pockets positioned between the at least two permanent magnets.

17. The conveyor system of claim 15, wherein the at least one vacuum pocket includes at least one port coupled to a vacuum source to selectively create a vacuum within the at least one vacuum pocket when engaging the support.

18. The conveyor system of claim 15, wherein two permanent magnets are positioned on one side of the at least one vacuum pocket and two permanent magnets are positioned on the opposite side of the at least one vacuum pocket.