CLAIMS:

1. A substrate processing system comprising:

a plurality of processing regions;

a transfer region housing defining a transfer region fluidly coupled with the plurality of processing regions;

a plurality of substrate supports, each substrate support of the plurality of substrate supports vertically translatable between the transfer region and an associated processing region of the plurality of processing regions; and

a transfer apparatus comprising:

a rotatable shaft extending through the transfer region housing, and

an end effector coupled with the rotatable shaft, wherein the end effector includes a central hub defining a central aperture fluidly coupled with a purge source, wherein the central aperture extends through a top surface of the central hub, and wherein the end effector further includes a plurality of arms having a number of arms equal to a number of substrate supports of the plurality of substrate supports.

2. The substrate processing system of claim 1, further comprising:

a plurality of purge channels having a number of purge channels equal to the number of substrate supports of the plurality of substrate supports.

3. The substrate processing system of claim 2, wherein each purge channel of the plurality of purge channels extends through the transfer region housing proximate a corresponding substrate support of the plurality of substrate supports.

4. The substrate processing system of claim 2, wherein each processing region of the plurality of processing regions is at least partially defined from above by a separate lid stack, and wherein each lid stack comprises a pumping liner fluidly coupled with an exhaust of the substrate processing system.

5. The substrate processing system of claim 4, wherein each pumping liner at least partially defines an exhaust flow path from each processing region for a purge gas delivered through the plurality of purge channels.

6. The substrate processing system of claim 1, wherein the rotatable shaft defines one or more apertures fluidly coupled with the purge source, the one or more apertures configured to deliver purge gas to a central volume of the transfer region at least partially defined by the central hub of the end effector.

7. The substrate processing system of claim 6, wherein the purge source is configured to deliver greater than or about 75% of a purge gas through the one or more apertures relative to the central aperture defined through the central hub.

8. The substrate processing system of claim 1, wherein the plurality of substrate supports comprises at least three substrate supports distributed about the transfer region, and wherein the transfer apparatus is centrally located between the plurality of substrate supports.

9. A substrate processing system comprising:

a plurality of processing regions;

a transfer region housing defining a transfer region fluidly coupled with the plurality of processing regions;

a plurality of substrate supports, each substrate support of the plurality of substrate supports vertically translatable between the transfer region and an associated processing region of the plurality of processing regions;

a plurality of purge channels defined through the transfer region housing, a number of purge channels of the plurality of purge channels equal to a number of substrate supports of the plurality of substrate supports; and

a transfer apparatus comprising:

a rotatable shaft extending through the transfer region housing, and

an end effector coupled with the rotatable shaft, wherein the end effector includes a central hub defining a central aperture fluidly coupled with a purge source, wherein the central aperture extends through a top surface of the central hub, and wherein the end effector further includes a plurality of arms having a number of arms equal to a number of substrate supports of the plurality of substrate supports.

10. The substrate processing system of claim 9, wherein the central hub of the end effector defines an aperture providing fluid access to the transfer region from the rotatable shaft of the transfer apparatus.

11. The substrate processing system of claim 9, wherein each processing region of the plurality of processing regions is at least partially defined from above by a separate lid stack, and wherein each lid stack comprises a pumping liner fluidly coupled with an exhaust of the substrate processing system.

12. The substrate processing system of claim 9, wherein each pumping liner at least partially defines an exhaust flow path from each processing region for a purge gas delivered through the plurality of purge channels.

13. The substrate processing system of claim 9, wherein the rotatable shaft defines one or more apertures fluidly coupled with a purge source, the one or more apertures configured to deliver purge gas to a central volume of the transfer region at least partially defined by the central hub of the end effector.

14. A method of semiconductor processing comprising:

delivering one or more processing precursors through a plurality of lid stacks of a substrate processing system, each lid stack of the plurality of lid stacks fluidly accessing a processing region of a plurality of processing regions, wherein each processing region of the plurality of processing regions is at least partially defined by a lid stack of the plurality of lid stacks and a substrate support of a plurality of substrate supports;

delivering a purge gas into a transfer region of the substrate processing system through a plurality of purge channels extending through a transfer region housing defining the

transfer region, wherein the transfer region is fluidly coupled with the plurality of processing regions; and

exhausting the one or more processing precursors and the purge gas through pumping liners of the plurality of lid stacks, wherein the substrate processing system comprises a transfer apparatus positioned in the transfer region, the transfer apparatus comprising:

a rotatable shaft extending through the transfer region housing, and

an end effector coupled with the rotatable shaft, wherein the end effector includes a central hub defining a central aperture fluidly coupled with a purge source, wherein the central aperture extends through a top surface of the central hub and wherein the end effector further includes a plurality of arms having a number of arms equal to a number of substrate supports of the plurality of substrate supports.

15. The method of semiconductor processing of claim 14, further comprising:

delivering an additional purge gas through the rotatable shaft and into the transfer region from the central aperture defined by the central hub.

16. The method of semiconductor processing of claim 15, wherein the rotatable shaft defines one or more apertures fluidly coupled with the purge source, and wherein a central volume of the transfer region is at least partially defined by the central hub of the end effector.

17. The method of semiconductor processing of claim 16, further comprising:

delivering the additional purge gas through the one or more apertures within the rotatable shaft and into the central volume of the transfer region.

18. The method of semiconductor processing of claim 17, wherein the purge gas delivered into a transfer region of the substrate processing system through a plurality of purge channels comprises a gas volume that is less than or about 80% of a gas volume of the one or more processing precursors delivered through the plurality of lid stacks of the substrate processing system.

19. The method of semiconductor processing of claim 18, wherein the additional purge gas delivered through the rotatable shaft and into the transfer region from the

central aperture defined by the central hub is less than or about 20% of a total volume of the additional purge gas delivered through the rotatable shaft and into the central volume of the transfer region.