WHAT IS CLAIMED IS:

1. A substrate processing apparatus, comprising:

a first processing module including a first process container in which at least one substrate is processed and a substrate loading port installed at a front side of the first processing module;

a first utility system including a first supply system configured to supply a first processing gas into the first process container, a surface of the first utility system is connected or arranged close to a rear surface of the first processing module; and

a first vacuum-exhauster arranged behind the first processing module and configured to exhaust an inside of the first process container,

wherein the first vacuum-exhauster includes:

a first booster pump with a first intake port formed forward at a position substantially facing a first exhaust port installed backward at a rear side of the first process container;

a first exhaust pipe configured to substantially linearly bring the first exhaust port into fluid communication with the first intake port and including a first pressure regulator, a first gate valve, and a first bellows installed at a flow path in series; and

an outer side surface configured such that the outer side surface does not protrude more outward than an outer side surface of the first utility system.

2. The substrate processing apparatus of Claim 1, wherein the first vacuum-exhauster is arranged close to a rear surface of the first utility system, and the first vacuum-exhauster has an installation area of less than 500 × 500 $mm^2$ ~~includes a first booster pump and a first intake port formed at a position substantially facing a first exhaust port installed at a rear side of the first process container, and further comprising:~~

~~a first exhaust pipe configured to substantially linearly bring the first exhaust port into fluid communication with the first intake port and including a first pressure regulator installed at a flow path~~.

3. The substrate processing apparatus of Claim 2, further comprising:

a second processing module arranged close to a side surface of the first processing module and including a second process container in which the at least one substrate is processed;

a second utility system including a second supply system configured to supply a second processing gas into the second process container, a surface of the second utility system is connected or arranged close to a rear surface of the second processing module; and

a second vacuum-exhauster arranged behind the second processing module such that an outer surface of the second vacuum-exhauster does not protrude more outward than an outer side surface of the second utility system, and configured to exhaust an inside of the second process container,

wherein the at least one substrate includes a plurality of substrates, the first process container is configured to accommodate the plurality of substrates arranged in multiple stages on a first substrate holder and thermally treat the substrates, and the second process container is configured to accommodate the plurality of substrates arranged in multiple stages on a second substrate holder and thermally treat the substrates,

wherein a first maintenance port configured to be capable of allowing the first process container or the first substrate holder to be taken out of the substrate processing apparatus is formed on the rear surface of the first processing module at a position below or above the first exhaust port,

wherein a second maintenance port configured to be capable of allowing the second process container or the second substrate holder to be taken out of the substrate processing apparatus is formed at the rear surface of the second processing module at a position below or above a second exhaust port installed at a rear side of the second process container, and,

wherein a maintenance area, which is formed by being sequentially surrounded by the first vacuum-exhauster, the first utility system, the first processing module, the second processing module, the second utility system, and the second vacuum-exhauster, is configured to have a width and a height large enough to unload at least one selected from the

group of the first process container, the first substrate holder, the second process container, and the second substrate holder taken out via the first maintenance port and the second maintenance port respectively.

4. The substrate processing apparatus of Claim 3, wherein the second vacuum-exhauster includes a second booster pump, the second vacuum-exhauster is arranged close to a rear surface of the second utility system, and the second vacuum-exhauster includes a second intake port formed at a position substantially facing the second exhaust port, and further comprising:

a second exhaust pipe configured to substantially linearly bring the second exhaust port into fluid communication with the second intake port and including a second pressure regulator, a second gate valve, and a second bellows installed at a flow path in series,

wherein the first booster pump and the second booster pump have a rotating shaft respectively extending in the vertical direction, and

wherein the first ~~booster pump~~ vacuum-exhauster includes a first gantry configured to match a height of the first intake port with the first exhaust port, and the second ~~booster pump~~ vacuum-exhauster includes a second gantry configured to match a height of the second intake port with the second exhaust port.

5. The substrate processing apparatus of Claim 4, wherein the first pressure regulator, the first gate valve, ~~and~~ the second pressure regulator, and the second gate valve are configured to be openable at flow path cross-sectional areas equal to or larger than cross-sectional areas of the first exhaust pipe and the second exhaust pipe respectively.

6. A method of manufacturing a semiconductor device, the method comprising:

providing, to a first process container in which a substrate is processed, the substrate to be loaded into the first process container via a first loading port installed at a front side of the first process container, the first process container being included in a first processing module;

providing, to a second process container in which the substrate is processed, the substrate to be loaded into the second process container via a second loading port installed at a front side of the second process container, the second process container being included in a second processing module arranged close to a side surface of the first processing module;

supplying a first processing gas into the first process container from a first supply system included in a first utility system, a surface of the first utility system being connected or arranged close to a rear side of the first processing module;

supplying a second processing gas into the second process container from a second supply system included in a second utility system, a surface of the second utility system being connected or arranged close to a rear side of the second processing module;

exhausting an inside of the first process container by a first vacuum-exhauster arranged behind the first processing module,

wherein the first vacuum-exhauster includes:

a first booster pump with a first intake port formed forward at a position substantially facing a first exhaust port installed backward at a rear side of the first process container;

a first exhaust pipe configured to substantially linearly bring the first exhaust port into fluid communication with the first intake port and including a first pressure regulator, a first gate valve, and a first bellows installed at a flow path in series; and

an outer side surface configured such that the first vacuum-exhauster outer side surface does not protrude more outward than an outer side surface of the first utility system; and

exhausting an inside of the second process container by a second vacuum-exhauster arranged behind the second processing module such that the second vacuum-exhauster does not protrude more outward than an outer side surface of the second utility system.

7. A substrate processing apparatus comprising:

a process chamber;

an exhauster configured to exhaust the process chamber;

an exhaust pipe configured to bring the process chamber into fluid communication with the exhauster;

a pipe housing configured to support the exhaust pipe; and

a vibration-damper installed at at least one connector between the pipe housing and the exhaust pipe.

8. The substrate processing apparatus of Claim 7, wherein the pipe housing includes a frame and a panel configured to cover an outside of the frame,

wherein the at least one connector is provided between the frame and the exhaust pipe, and

wherein the vibration-damper is installed at the at least one connector.

9. The substrate processing apparatus of Claim 7, wherein the exhaust pipe includes a flexible portion configured to allow displacement of an end of the exhaust pipe, and the at least one connector includes a plurality of connectors installed closer to the process chamber than the flexible portion.

10. The substrate processing apparatus of Claim 9, wherein the flexible portion is installed at the exhaust pipe near the exhauster.

11. The substrate processing apparatus of Claim 9, wherein the flexible portion is further configured such that a fixing tool configured to fix both ends of the flexible portion is attachable to the flexible portion.

12. The substrate processing apparatus of Claim 7, wherein the exhauster and the pipe housing are installed at a floor, and the exhauster and the pipe housing are connected by a vibration-damping fastener.

13. The substrate processing apparatus of Claim 7, further comprising a processing module including the process chamber and a delivery chamber connected to the process chamber below the process chamber,

wherein the pipe housing is connected to the delivery chamber by a vibration-damping fastener.

14. The substrate processing apparatus of Claim 12 or 13, wherein the vibration-damper is made of a vibration-damping alloy that absorbs mechanical vibration, and the vibration-damping fastener is made of resin or rubber.

15. The substrate processing apparatus of Claim 7, wherein the exhaust pipe includes a plurality of separable sections connected via elastic seals, and the at least one connector is installed at each of the sections.

16. The substrate processing apparatus of Claim 8, wherein the exhaust pipe includes an installation plate formed parallel to an installation surface of the frame, and the at least one connector is connected by being bolted between the installation surface and the installation plate with the vibration-damper interposed.

17. The substrate processing apparatus of any one of Claims 7, 15, and 16, wherein the vibration-damper has a plate shape, and

wherein the vibration-damper is configured to support at least a portion of a gravity applied to the exhaust pipe as a shear load in a direction parallel to a planar surface of the vibration-damper.

18. The substrate processing apparatus of Claim 7, wherein the vibration-damper is configured to distribute a plurality of resonance points on a frequency axis.

19. The substrate processing apparatus of Claim 7, wherein the vibration-damper is

configured to convert vibration to heat based on one or more selected from the group of viscous flow at a phase boundary of a two-phase mixed structure, rotation or movement of a magnetic domain in a ferromagnetic body, movement of transition in a crystal, and movement of a twin crystal interface.

20. A method of manufacturing a semiconductor device, the method comprising:

providing a substrate to a process chamber;

supplying a processing gas into the process chamber; and

exhausting an inside of the process chamber by an exhauster via an exhaust pipe installed at a pipe housing via a vibration-damper and configured to bring the process chamber into fluid communication with the exhauster.