

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, comprising:
 - executing a process recipe for processing a substrate by supplying a process gas into a process furnace; and
 - executing a correction recipe for checking a characteristic value of a supply valve installed at a process gas supply line for supplying the process gas into the process furnace, wherein the act of executing the correction recipe comprises:
 - supplying an inert gas into the process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened;
 - detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and
 - calculating the characteristic value of the supply valve based on the detected pressure value.
2. The method of Claim 1, wherein a reaction gas supply line for supplying a reaction gas into the process furnace is provided separately from the process gas supply line,
 - wherein the method further comprises purging in which the inert gas is supplied into each of the process gas supply line and the reaction gas supply line in the state where the adjusting valve is fully opened, and
 - wherein the act of supplying the inert gas, the act of detecting the pressure value, and the act of calculating the characteristic value include closing a valve that is provided at the reaction gas supply line and supplies the reaction gas.
3. The method of Claim 1, wherein the correction recipe is performed each time the process recipe is performed one or more times.

4. The method of Claim 1, wherein the correction recipe includes at least a boat-loading process, a purge process, and a boat-unloading process, and
wherein the purge process includes the same condition as the act of executing the process recipe.
5. The method of Claim 4, wherein the purge process includes the same condition as at least one selected from the group of pressure, temperature, and processing time of the act of executing the process recipe.
6. The method of Claim 1, wherein the correction recipe is executed after replacement of the supply valve.
7. The method of Claim 1, wherein the correction recipe is executed after a process condition of the process recipe is changed.
8. The method of Claim 1, wherein the correction recipe is executed after maintenance operation of a heater that heats the supply valve.
9. The method of Claim 1, wherein the correction recipe includes heating the inert gas by a heater provided at the supply valve.
10. The method of Claim 9, wherein the act of heating the inert gas is executed in parallel with the act of calculating the characteristic value.
11. The method of Claim 1, wherein the act of heating the inert gas includes maintaining a temperature of the supply valve when the characteristic value of the supply valve is previously calculated.

12. A method of managing parts, comprising:
- supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of a process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with a supply valve for supplying a process gas into the process furnace;
 - detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and
 - calculating a characteristic value of the supply valve based on the detected pressure value.
13. A substrate processing apparatus, comprising:
- a controller configured to execute a correction recipe for calculating a characteristic value of a supply valve for supplying a process gas into a process furnace, the correction recipe including:
 - supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with the supply valve;
 - detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas in the state where the adjusting valve is fully opened; and
 - calculating the characteristic value of the supply valve based on the detected pressure value.
14. A computer-readable recording medium storing a program that causes, by a computer, a substrate processing apparatus to perform a process that executes a correction recipe for checking a characteristic value of a supply valve for supplying a process gas into a process

furnace, the process that executes the correction recipe, comprising:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with the supply valve;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and

calculating the characteristic value of the supply valve based on the detected pressure value.

CLAIMS:

1. A method of manufacturing a semiconductor device, comprising:
executing a process recipe for processing a substrate by supplying a process gas into a process furnace; and
executing a correction recipe for checking a characteristic value of a supply valve installed at a process gas supply line for supplying the process gas into the process furnace, wherein the act of executing the correction recipe comprises:
supplying an inert gas into the process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened;
detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and
calculating the characteristic value of the supply valve based on the detected pressure value,
wherein the correction recipe is executed after maintenance operation of a heater that heats the supply valve.
2. The method of Claim 1, wherein a reaction gas supply line for supplying a reaction gas into the process furnace is provided separately from the process gas supply line,
wherein the method further comprises purging in which the inert gas is supplied into each of the process gas supply line and the reaction gas supply line in the state where the adjusting valve is fully opened, and
wherein the act of supplying the inert gas, the act of detecting the pressure value, and the act of calculating the characteristic value include closing a valve that is provided at the reaction gas supply line and supplies the reaction gas.

3. The method of Claim 1, wherein the correction recipe is performed each time the process recipe is performed one or more times.
4. The method of Claim 1, wherein the correction recipe includes at least a boat-loading process, a purge process, and a boat-unloading process, and
wherein the purge process includes the same condition as the act of executing the process recipe.
5. The method of Claim 4, wherein the purge process includes the same condition as at least one selected from the group of pressure, temperature, and processing time of the act of executing the process recipe.
6. The method of Claim 1, wherein the correction recipe is executed after replacement of the supply valve.
7. The method of Claim 1, wherein the correction recipe is executed after a process condition of the process recipe is changed.
8. A method of manufacturing a semiconductor device, comprising:
executing a process recipe for processing a substrate by supplying a process gas into a process furnace; and
executing a correction recipe for checking a characteristic value of a supply valve installed at a process gas supply line for supplying the process gas into the process furnace,
wherein the act of executing the correction recipe comprises at least:
supplying an inert gas into the process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the

process furnace and adjusts an internal pressure of the process furnace is fully opened;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and

calculating the characteristic value of the supply valve based on the detected pressure value,

wherein the correction recipe includes heating the inert gas by a heater provided at the supply valve.

9. The method of Claim 8, wherein the act of heating the inert gas is executed in parallel with the act of calculating the characteristic value.

10. The method of Claim 8, wherein the act of heating the inert gas includes maintaining a temperature of the supply valve when the characteristic value of the supply valve is previously calculated.

11. A method of managing parts, comprising a correction recipe including:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of a process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with a supply valve for supplying a process gas into the process furnace;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and

calculating a characteristic value of the supply valve based on the detected pressure value,

wherein the correction recipe is executed after maintenance operation of a heater that heats the supply valve.

12. A substrate processing apparatus, comprising:

a controller configured to execute a correction recipe for calculating a characteristic value of a supply valve for supplying a process gas into a process furnace, the correction recipe including:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with the supply valve;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas in the state where the adjusting valve is fully opened; and

calculating the characteristic value of the supply valve based on the detected pressure value,

wherein the correction recipe is executed after maintenance operation of a heater that heats the supply valve.

13. A program that causes, by a computer, a substrate processing apparatus to perform a process that executes a correction recipe for checking a characteristic value of a supply valve for supplying a process gas into a process furnace, the process, which executes the correction recipe, comprising, after maintenance operation of a heater that heats the supply valve:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with the supply valve;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and

calculating the characteristic value of the supply valve based on the detected pressure value.

14. A method of managing parts, comprising:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of a process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with a supply valve for supplying a process gas into the process furnace;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened;

calculating a characteristic value of the supply valve based on the detected pressure value; and

heating the inert gas by a heater provided at the supply valve.

15. A substrate processing apparatus, comprising:

a controller configured to execute a correction recipe for calculating a characteristic value of a supply valve for supplying a process gas into a process furnace, the correction recipe including:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with the supply valve;

detecting a pressure value in a supply pipe provided with the supply valve

while supplying the inert gas in the state where the adjusting valve is fully opened;
calculating the characteristic value of the supply valve based on the detected pressure value; and
heating the inert gas by a heater provided at the supply valve.

16. A program that causes, by a computer, a substrate processing apparatus to perform a process that executes a correction recipe for checking a characteristic value of a supply valve for supplying a process gas into a process furnace, the process, which executes the correction recipe, comprising:

supplying an inert gas into a process gas supply line for a certain period of time in a state where an adjusting valve that is installed at an exhaust portion of the process furnace and adjusts an internal pressure of the process furnace is fully opened, the process gas supply line being provided with the supply valve;

detecting a pressure value in a supply pipe provided with the supply valve while supplying the inert gas into the process gas supply line in the state where the adjusting valve is fully opened; and

calculating a characteristic value of the supply valve based on the detected pressure value; and

heating the inert gas by a heater provided at the supply valve.