

SYSTEM, SUBSTRATE PROCESSING APPARATUS, METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE, AND PROGRAM

TECHNICAL FIELD

[0001] The present disclosure relates to a system, a substrate processing apparatus, a method of manufacturing a semiconductor device, and a program.

BACKGROUND

[0002] A semiconductor manufacturing apparatus, which is a substrate processing apparatus for performing a predetermined process on a substrate, performs a predetermined process on a substrate by controlling various modules such as a mass flow controller (MFC), which is a flow rate controller, a sequencer, and the like. When a process is performed by using a semiconductor manufacturing apparatus, the process result may be changed significantly depending on the combination of setting data of various modules.

[0003] In a related art, there is disclosed a technique that includes a process module for processing a substrate, a process controller for controlling a temperature, a pressure and a gas flow rate in the process module according to a first parameter file, a transfer controller for controlling a mechanism for transfer of a substrate according to a second parameter file, and an operation controller for providing a control instruction to the process controller and the transfer controller to execute the processing of the substrate. An operation unit checks the consistency among the first parameter file, the second parameter file, and a third parameter file held by the operation controller. If the files are consistent, a control instruction is provided.

[0004] In this specification, the setting data and the table file used for film formation are referred to as system files. In addition, the semiconductor manufacturing apparatus and the like contain a function called backup for storing a combination of system files. Further, the semiconductor manufacturing apparatus and the like contain a function called restoration for restoring (downloading) the combination. When upgrading the software used in the semiconductor manufacturing apparatus, the setting data of various modules may be erased. Therefore, backup is performed before the software upgrade, and restoration may be performed after the software

upgrade. At this time, it may not be possible to restore the system files to their original states due to forgetting the backup and performing the upgrade.

[Prior Art Documents]

[0005] Patent Documents

Patent Document 1: Japanese Patent Application Publication No. 2007-59765

SUMMARY

[0006] Some embodiments of the present disclosure provide a technique capable of upgrading the software installed in a semiconductor manufacturing apparatus without affecting the data of system files.

[0007] According to one or more embodiments of the present disclosure, there is provided a technique that includes at least one sub-controller configured to be capable of controlling at least one module; and a main controller including a memory configured to be capable of including a first storage configured to be capable of storing a system file currently set in the module and a second storage configured to be capable of storing a history of uploading or downloading of the system file for the module as history information, wherein the main controller is configured to, when transmitting and receiving the system file to and from the sub-controller, store the transmitted or received system file in the first storage and store the history information of the system file in the second storage, according to a comparison result between the transmitted or received system file and the system file stored in the first storage.

[0008] According to the present disclosure in some embodiments, it is possible to upgrade the software installed in a semiconductor manufacturing apparatus without affecting the data of system files.

[0009]

BRIEF DESCRIPTION OF DRAWINGS

[0010] FIG. 1 is a perspective view showing a substrate processing apparatus preferably used in one or more embodiments of the present disclosure.

FIG. 2 is a side sectional view showing the substrate processing apparatus preferably used in one

WHAT IS CLAIMED IS:

1. A system, comprising:
at least one sub-controller configured to be capable of controlling at least one module;
and
a main controller including a memory configured to be capable of including a first storage configured to be capable of storing a system file currently set in the module and a second storage configured to be capable of storing a history of uploading or downloading of the system file for the module as history information,
wherein the main controller is configured to, when transmitting and receiving the system file to and from the sub-controller, store the transmitted or received system file in the first storage and store the history information of the system file in the second storage, according to a comparison result between the transmitted or received system file and the system file stored in the first storage.
2. The system of Claim 1, wherein the main controller is configured to store the history information, which shows a change history of the system file used in the module, in the second storage.
3. The system of Claim 2, wherein the main controller is configured to store the system file uploaded or downloaded for the module in the second storage and in the first storage at the same time.
4. The system of Claim 1, wherein when the system file for the module is uploaded and the uploaded system file is different from the system file stored in the first storage, or when the system file for the module is downloaded and the downloaded system file is different from the system file stored in the first storage, the main controller is configured to store the uploaded or downloaded system file in the first storage and store the history information of the system file in

the second storage.

5. The system of Claim 1, wherein when the module is connected to the main controller, the main controller is configured to make an upload request for the system file for the connected module.
6. The system of Claim 1, wherein the main controller is configured to store the system files uploaded or downloaded for the module in a folder of the second storage whose folder name is set as a date of when the system file is uploaded or downloaded.
7. The system of Claim 6, wherein the main controller is configured to add, to the folder name, a serial number incremented by 1 in an order stored in the second storage and a time of when the system file is uploaded or downloaded.
8. The system of Claim 1, wherein the main controller is configured to, when a module is newly connected, upload a system file for the newly connected module and is configured to, when there is no difference between the system file stored in the first storage and the system file for the newly connected module, do nothing.
9. The system of Claim 6, wherein the main controller is configured to search the second storage based on a designated date and leave one of the latest system file for the module before the designated date in the folder.
10. The system of Claim 9, wherein the main controller is configured to erase the system file for the module preceding the latest system file for the module before the designated date.
11. The system of Claim 6, wherein the main controller is configured to erase the folder whose contents are empty.

12. The system of Claim 1, wherein the first storage is configured to store the same system file as the system file downloaded for the module.
13. The system of Claim 1, wherein information on the system file uploaded or downloaded for the module is stored in the second storage in a chronological order.
14. The system of Claim 3, wherein the second storage is configured to store a folder whose folder name is set as a date and time of when uploading or downloading is performed for the module, and the folder is configured to store the uploaded or downloaded system file and information about the module for which uploading or downloading is performed.
15. A substrate processing apparatus, comprising:
at least one sub-controller configured to be capable of controlling at least one module;
and
a main controller including a memory configured to be capable of including a first storage configured to be capable of storing a system file currently set in the module and a second storage configured to be capable of storing a history of uploading or downloading of the system file for the module as history information,
wherein the main controller is configured to, when transmitting and receiving the system file to and from the sub-controller, store the transmitted or received system file in the first storage and store the history information of the system file in the second storage, according to a comparison result between the transmitted or received system file and the system file stored in the first storage.
16. A method of manufacturing a semiconductor device, comprising:
when transmitting and receiving a system file between at least one sub-controller configured to be capable of controlling at least one module, and a main controller including a

memory configured to be capable of including a first storage configured to be capable of storing a system file currently set in the module and a second storage configured to be capable of storing a history of uploading or downloading of the system file for the module as history information, a history-information-storing process of storing the transmitted or received system file in the first storage and storing the history information of the system file in the second storage, according to a comparison result between the transmitted or received system file and the system file stored in the first storage; and

a substrate-processing process of processing a substrate by executing a process recipe by using the system files.

17. A program that causes, by a main controller, a substrate processing apparatus to perform the history-information-storing process and the substrate-processing process of Claim 16.