

associated information in a storage device.

[0009]

In this case, in the correction amount calculation process, the controller may calculate the area correction amount on the basis of a difference between an actual
5 position of the chip in the inspection image and an ideal position of the chip, which is obtained from the camera offset amount in design, in the inspection image.

[0010]

Further, in this case, the apparatus for producing a semiconductor device may further include a second camera that captures an image of the bonding tool from below,
10 the controller may be configured to execute a tool image acquisition process of acquiring, as a tool image, an image of the chip held by the bonding tool, which is captured by the second camera, prior to the mounting process, and the controller may calculate a chip offset amount which is an offset amount of a center of the bonding tool with respect to a center of the chip on the basis of the tool image, and may calculate the ideal position of
15 the chip in the inspection image on the basis of the chip offset amount and the camera offset amount in design.

[0011]

Further, after the mounting process is executed, the controller may execute the inspection image acquisition process without moving the bonding head horizontally.

20 [0012]

Further, the position detecting means may include a position sensor installed in a drive system of the bonding head.

[0013]

There is provided a method for producing a semiconductor device disclosed in
25 the present specification in which steps are executed for each of one or more points, the

[CLAIMS]

[Claim 1]

An apparatus for producing a semiconductor device comprising:

a stage on which a substrate is mounted;

5 a bonding head capable of moving to a discretionary point relative to the stage;

a position detecting means for detecting a position of the bonding head;

a bonding tool that is attached to the bonding head and holds a chip;

a first camera that is attached to the bonding head and captures an image of a mounting surface, which is an upper surface of the stage or an upper surface of the

10 substrate mounted on the stage, from above; and

a controller,

wherein the controller is configured to execute for each of one or more points:

a mounting process of mounting the chip on the mounting surface by moving the bonding head to the discretionary point and then driving the bonding tool;

15 an inspection image acquisition process of acquiring, as an inspection image, an image of the mounting surface after the chip has been mounted thereon captured by the first camera;

a correction amount calculation process of calculating, as an area correction amount, a correction amount for a camera offset amount, which is an offset amount of the first camera with respect to the bonding tool, on the basis of a position of the chip in the inspection image; and

a storage process of associating the calculated area correction amount and a position of the discretionary point detected by the position detecting means and then storing the associated information in a storage device.

25 [Claim 2]

The apparatus for producing a semiconductor device according to claim 1, wherein, in the correction amount calculation process, the controller calculates the area correction amount on the basis of a difference between an actual position of the chip in the inspection image and an ideal position of the chip, which is obtained from the camera offset amount in design, in the inspection image.

[Claim 3]

The apparatus for producing a semiconductor device according to claim 2, further comprising:

a second camera that captures an image of the bonding tool from below,

wherein the controller is configured to execute a tool image acquisition process of acquiring, as a tool image, an image of the chip held by the bonding tool, which is captured by the second camera, prior to the mounting process, and

wherein the controller calculates a chip offset amount which is an offset amount of a center of the bonding tool with respect to a center of the chip on the basis of the tool image, and calculates the ideal position of the chip in the inspection image on the basis of the chip offset amount and the camera offset amount in design.

[Claim 4]

The apparatus for producing a semiconductor device according to any one of claims 1 to 3, wherein, after the mounting process is executed, the controller executes the inspection image acquisition process without moving the bonding head horizontally.

[Claim 5]

The apparatus for producing a semiconductor device according to any one of claims 1 to 4, wherein the position detecting means includes a position sensor installed in a drive system of the bonding head.

[Claim 6]

A method for producing a semiconductor device in which steps are executed for each of one or more points, the steps comprising:

a step of moving a bonding head, to which a bonding tool and a first camera are attached, to discretionary point on a stage;

5 a step of mounting the chip held by the bonding tool on a mounting surface, which is an upper surface of the stage or an upper surface of the substrate mounted on the stage;

a step of acquiring, as an inspection image, an image of the mounting surface after the chip has been mounted thereon captured by the first camera;

10 a step of calculating, as an area correction amount, a correction amount for a camera offset amount, which is an offset amount of the first camera with respect to the bonding tool, on the basis of a position of the chip in the inspection image; and

a step of associating the calculated area correction amount and a position of the discretionary point and then storing the associated information in a storage device.

15 [Claim 7]

An apparatus for producing a semiconductor device comprising:

a stage on which a substrate is mounted;

a bonding head capable of moving relative to the stage;

20 a bonding tool that is attached to the bonding head and bonds a chip to the substrate;

a first camera that is attached to the bonding head and captures an image of a mounting surface, which is an upper surface of the stage or an upper surface of the substrate mounted on the stage, from above; and

a controller,

25 wherein the controller is configured to execute for each of one or more points:

a first mounting process of mounting a reference chip on the mounting surface by moving the bonding head to a discretionary point and then driving the bonding tool;

a reference image acquisition process of acquiring, as a reference image, an image of the mounting surface after the reference chip has been mounted thereon
5 captured by the first camera;

a second mounting process of mounting an inspection chip on the reference chip by positioning the bonding head on the basis of the reference image such that the inspection chip is allowed to be mounted directly above the reference chip and then driving the bonding tool;

10 an inspection image acquisition process of acquiring, as an inspection image, an image of the mounting surface after the inspection chip has been mounted thereon captured by the first camera;

a correction amount calculation process of calculating, as an area correction amount, a correction amount for a camera offset amount, which is an offset amount of the
15 first camera with respect to the bonding tool, on the basis of a positional deviation between the reference chip and the inspection chip in the inspection image; and

a storage process of associating the calculated area correction amount and a position of the discretionary point and then storing the associated information in a storage device.