CLEANING DEVICE FOR CHECKING WAFERS IN REAL TIME, AND USE METHOD AND INSPECTION METHOD THEREOF

TECHNICAL FIELD

The present invention relates to the technical field of cleaning wafers, in particular to a cleaning device for checking wafers in real time, and a use method and inspection method thereof.

BACKGROUND

As the technology of manufacturing sophisticated chips is continuously developing in China, continuous iteration for materials of chips poses increasingly high process requirements for chip raw materials—wafers. In the process of etching and cleaning a wafer body, it is necessary to rotate the wafer body horizontally while spraying treatment liquid onto its surface from a nozzle. In this process, during cleaning, it is necessary to use various cleaning media in combination with the cleaning operation. Due to very high requirements for control to the reaction solution, if there is any occurrence of leakage from a cleaning nozzle, below-standard temperature of reaction solution, failure in switching solutions and misalignment of wafer bodies, in the process, it will make wafer bodies defective, causing losses for manufacturers.

Therefore, it is necessary to provide a cleaning device for checking wafers in real time, which is capable of checking spray nozzles and wafer bodies, and a use method and inspection method thereof.

SUMMARY

The objective of the present invention is to provide a cleaning device for checking wafers in real time, and a use method and inspection method thereof.

In order to achieve the above objective, the present invention provides a cleaning device for checking wafers in real time, including a clamping unit; a plurality of spraying arms rotatably arranged above the clamping, a spray nozzle mounted at an end of each spraying arm; a remedy unit rotatably arranged above the clamping unit; a plurality of first inspection units, which are each arranged on each spraying arm and suitable to check each spray nozzle for its spraying state; a second inspection unit, which is arranged above the clamping unit and suitable to check a wafer body for its cleaning state on the clamping unit; and a terminal controller, which electrically connects to the clamping unit, a driving apparatus of each spraying arm, a driving apparatus of the remedy unit, each first inspection unit and the second inspection unit,

respectively; when one of the first inspection units checks that unexpected leakage occurs to a corresponding spray nozzle, the terminal controller receives a signal sent by the first inspection unit, controls a corresponding spraying arm to stop spraying, and controls the remedy unit to spray a remedy medium onto a wafer body.

Further, the terminal controller includes: an input unit suitable to receive data from each first inspection unit and the second inspection unit; a storage unit in which normal data is stored, data obtained by the input unit is compared with the stored normal data, and the obtained data that exceeds a range of the normal data is set as an abnormal state; a control unit suitable to obtain a comparison result from the storage unit and control the driving apparatus of each spraying arm and the driving apparatus of the remedy unit at occurrence of an abnormal state; and an alarm unit suitable to receive a signal from the control unit and issue an alarm at occurrence of an abnormal state.

Further, each first inspection unit checks a corresponding spray nozzle that is currently spraying and transmits temperature spectral image data of a cleaning medium sprayed from the corresponding spray nozzle to the input unit; each first inspection unit checks a corresponding spray nozzle that has finished spraying and transmits image data generated from unexpected drippage of a cleaning medium of the corresponding spray nozzle to the input unit.

Further, the second inspection unit checks a wafer body on the clamping unit, transmits temperature spectral data of different cleaning media that have been sprayed on the surface of the wafer by different spraying arms to the input unit, and the second inspection unit can transmit image data generated from a position state of the wafer of the clamping unit to the input unit.

Further, each spraying arm is L-shaped, and has a vertical bar connected to a drive motor, an encoder of which electrically connects to the control unit.

Further, each first inspection unit includes a fixing clamp, a detector body, and a nitrogen connector; the fixing clamp is clamped onto a crossbar of a corresponding spraying arm, and the detector body is rotatably installed at the bottom of the fixing clamp, and a rotation axis of the detector body is perpendicular to the crossbar of the corresponding spraying arm, and the nitrogen connector is disposed at the end of the detector body away from a corresponding spray nozzle; a nitrogen inlet hole that is compatible with the nitrogen connector is set on the detector body, and the nitrogen connector is inserted into the nitrogen inlet hole, and the nitrogen connector is suitable to enable nitrogen gas to flow into the interior of the detector body.

Further, the remedy unit includes a remedy spraying tube, which is suitable to spray a remedy medium.

The present invention further provides a use method of the cleaning device for checking

wafers in real time , comprising the steps of:

S1. turning the clamping unit that has clamped a wafer body, then enabling the second inspection unit to continuously transmit image data generated from a position of the wafer body to the terminal controller, while enabling the second inspection unit to continuously transmit temperature spectral data generated from a surface of the wafer body to the terminal controller;

S2. enabling the first one of spraying arms to turn to the top of the clamping unit, and enabling the first one of spraying arms to spray a cleaning medium to clean the wafer body inside the clamping unit;

S3. enabling a corresponding first inspection unit to check the cleaning medium that is currently being sprayed from a corresponding spray nozzle, generating temperature spectral image data, then transmitting the temperature spectral image data to the terminal controller;

S4. returning the first one of spraying arms that has finished spraying to its initial position, while enabling the corresponding first inspection unit to check unexpected drippage of a cleaning medium from the corresponding spray nozzle, and transmitting data to the terminal controller; and

S5. enabling a plurality of spraying arms to perform the action as described in the above steps one by one, so as to complete cleaning wafer bodies.

The present invention further provides an inspection method of a cleaning device for checking wafers in real time, comprising the steps of

S10. turning each spraying arm from an initial position to an operation position to start spraying, then returning it to the initial position after finishing spraying, and enabling each first inspection unit to perform real-time inspection on a corresponding spray nozzle,

firstly, the first inspection unit checks unexpected drippage of a cleaning medium from the corresponding spray nozzle and feeds back to the terminal controller; when unexpected drippage of a cleaning medium occurs, the terminal controller sends a signal to a driving apparatus of the spraying arm and triggers an alarm, so as to enable the spraying arm to stop operating and return to its initial position; at the same time, the terminal controller sends a signal to a driving apparatus of the remedy spraying tube, so as to enable the remedy spraying tube to turn to a remedy position and spray a remedy medium, completing remedying wafer bodies; and

S20. during cleaning a wafer body, enabling the second inspection unit to perform real-time inspection on the wafer body,

firstly, the second inspection unit checks the wafer body for its position in real time; when the wafer body deviates or breaks, the second inspection unit feeds back to the terminal controller, and the terminal controller sends a signal to the clamping unit and triggers an alarm,

so as to enable the clamping unit to stop turning,

at the same time, the second inspection unit performs real-time inspection on the surface temperature of the wafer body,

when the surface temperature of the wafer body is abnormal, the terminal controller sends a signal to the driving apparatus of the spraying arm and triggers an alarm, so as to enable the spraying arm to stop operating and return to its initial position; at the same time, the terminal controller sends a signal to the driving apparatus of the remedy spraying tube, so as to enable the remedy spraying tube to turn to a remedy position and spray a remedy medium, completing remedying wafer bodies,

when the surface temperature of the wafer body still does not change, the terminal controller sends a signal to the clamping unit and the spraying arm, so that the clamping unit stops turning and the spraying arm stops operating.

The present invention has the following beneficial effects.

1. It is possible to check the spray nozzle for its spraying state and check whether unexpected leakage occurs to the spray nozzle, by way of using the first inspection unit.

2. It is possible to check the wafer body for its surficial temperature (that is, temperature of a cleaning medium), and check the wafer body for its position or whether it has been broken, by way of using the second inspection unit.

3. It is possible to control the remedy unit to release the remedy medium at occurrence of an anomaly, so as to remedy the wafer body, by way of using the terminal controller.

Other features and advantages of the present invention will be set forth in the following description, and will become partially apparent from the description or learnable by way pf putting the present invention into practice.

BRIEF DESCRIPTION OF THE DRAWINGS

To describe the embodiments of the present invention or the technical solutions in the prior art more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments or the descriptions in the prior art. Apparently, the accompanying drawings in the following description show merely some embodiments of the present invention, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

In order to make the above objective, features, and advantages of the present invention clearer and more understandable, we subsequently provide a preferred embodiment as an example in combination with attached figures as follows. A detailed description is made as follows.

Fig. 1 is a front view of the cleaning device for checking wafers in real time, according to the present invention.

Fig. 2 is a perspective view of the spraying arm and the inspection unit, according to the present invention.

Fig. 3 is a front view of the spraying arm and the inspection unit, according to the present invention.

Fig. 4 is a diagram of the internal structure of the inspection unit, according to the present invention.

Fig. 5 is a block diagram of the terminal controller, according to the present invention.

wherein, 100- clamping unit; 200-spraying arm; 201- spray nozzle; 202- drive motor; 300- remedy unit; 301- remedy spraying tube; 400- first inspection unit; 401- fixing clamp; 402- detector body; 403- nitrogen connector; 404- nitrogen inlet hole; 500- second inspection unit.

DETAILED DESCRIPTION

In order to specify the objective, technical solution and advantage of the examples of the present invention, we shall clearly and completely describe the technical solution in the examples of the present invention in combination with the drawings in the examples of the present invention as follows, it is obvious that the described examples are a part of the embodiments of the present invention, but not embody all examples. Based on the examples in the invention, all other examples obtained by a person skilled in the art without doing the creative work belong to the protection scope of the present invention.

EXAMPLE 1

As shown in Figs. 1-5, the cleaning device for checking wafers in real time, provided by the present invention, includes: a clamping unit 100; a plurality of spraying arms 200 rotatably arranged above the clamping unit 100; a spray nozzle 201 mounted at an end of each spraying arm 200; a remedy unit 300 rotatably arranged above the clamping unit 100; a plurality of first inspection units 400, which are each arranged on each spraying arm 200 and suitable to check each spray nozzle 201 for its spraying state, in short, making it possible to check each spray nozzle 201 for its spraying state and check whether unexpected leakage occurs to each spray nozzle 201,by means of each first inspection unit 400, a second inspection unit 500, which is arranged above the clamping unit 100 and suitable to check a wafer body for its cleaning state on the clamping unit 100, furthermore, making it possible to check the wafer body for its surficial temperature (that is, temperature of a cleaning medium), and check the wafer body for its position or whether it has been broken, by way of using the second inspection unit 500; and a terminal controller, which electrically connects to the clamping unit 100, a driving apparatus

of each spraying arm 200, a driving apparatus of the remedy unit 300, each first inspection unit 400 and the second inspection unit 500, respectively; wherein when one of the first inspection units 400 checks that unexpected leakage occurs to a corresponding spray nozzle 201, the terminal controller receives a signal sent by the first inspection unit 400, controls a corresponding spraying arm 200 to stop spraying, and controls the remedy unit 300 to spray a remedy medium onto a wafer body, in short, making it possible to control the remedy unit 300 to release the remedy medium at occurrence of an anomaly, so as to remedy the wafer body, by way of using the terminal controller.

The terminal controller includes: an input unit suitable to receive data from each first inspection unit 400 and the second inspection unit 500; a storage unit in which normal data is stored, data obtained by the input unit is compared with the stored normal data, and the obtained data that exceeds a range of the normal data is set as an abnormal state; a control unit suitable to obtain a comparison result from the storage unit and control the driving apparatus of each spraying arm 200 and the driving apparatus of the remedy unit 300 at occurrence of an abnormal state; and an alarm unit suitable to receive a signal from the control unit and issue an alarm at occurrence of an abnormal state.

Each first inspection unit 400 checks a corresponding spray nozzle 201 that is currently spraying and transmits temperature spectral image data of a cleaning medium sprayed from the corresponding spray nozzle 201 to the input unit; in short, each first inspection unit 400 provides a piece of feedback (since different cleaning media have different temperatures, it is possible to judge a state of a cleaning medium by way of judging a temperature of the sprayed medium) presenting the cleaning medium sprayed from the corresponding spray nozzle 201 to the input unit in the form of temperature spectral image data, and the piece of feedback is compared with the normal data in the storage unit, to activate the control unit to perform an action for control. Each first inspection unit 400 checks a corresponding spray nozzle 201 that has finished spraying and transmits image data generated from unexpected drippage of a cleaning medium of the corresponding spray nozzle 201 to the input unit; in addition, checks drippage of a cleaning medium that occur when the spraying arm 200 turns to an operation position and back to an initial position. When unexpected leakage occurs, the remedy unit 300 remedies the wafer body.

The second inspection unit 500 checks a wafer body on the clamping unit 100, transmits temperature spectral data of different cleaning media that have been sprayed on the surface of the wafer by different spraying arms 200 to the input unit, and the second inspection unit 500 can transmit image data generated from a position state of the wafer of the clamping unit 100 to the input unit. In short, the second inspection unit 500 checks the wafer body for its

temperature. When an error occurs during switching the spraying arm 200 and causes different cleaning media to be sprayed, the remedy unit 300 remedies the wafer body; and, when there is no occurrence of spraying media, the alarm unit issues an alert. In addition, the second inspection unit 500 can check the wafer body for its position, and when the wafer body deviates or breaks, the alarm unit issues an alert to notify staffs for handling.

Each spraying arm 200 is L-shaped, and has a vertical bar connected to a drive motor 202, an encoder of which electrically connects to the control unit. In short, with the aid of the encoder of the drive motor 202, the control unit can promptly obtain the position of each spraying arm 200 to judge whether leakage from a corresponding spray nozzle 201 occurs at an unexpected position (that is, dripping onto the wafer body that has already been cleaned); in addition, if leakage occurs at an unexpected position, there is no need for remedy.

Each first inspection unit 400 includes a fixing clamp 401, a detector body 402, and a nitrogen connector 403. The fixing clamp 401 is clamped onto a crossbar of a corresponding spraying arm 200, and the detector body 402 is rotatably installed at the bottom of the fixing clamp 401, and a rotation axis of the detector body 402 is perpendicular to the crossbar of the corresponding spraying arm 200, and the nitrogen connector 403 is disposed at the end of the detector body 402 away from a corresponding spray nozzle 201. A nitrogen inlet hole 404 that is compatible with the nitrogen connector 403 is set on the detector body 402, and the nitrogen connector 403 is inserted into the nitrogen inlet hole 404, and suitable to enable nitrogen gas to flow into the interior of the detector body 402. In short, the detector body 402 of each first inspection unit 400 employs an infrared CCD checker. By introducing nitrogen gas into the detector body, it is possible to maintain a positive pressure inside the detector body 402, preventing a cleaning medium from splashing into it; in addition, the second inspection unit 500 also employs an infrared CCD detector.

The remedy unit 300 includes a remedy spraying tube 301, which is suitable to spray a remedy medium; in short, the remedy spraying tube 301 is suitable to spray pure water to remedy the wafer body.

EXAMPLE 2

The present invention further provides a use method of a cleaning device for checking wafers in real time, which includes the following steps.

S1. Turning the clamping unit 100 that has clamped a wafer body, then enabling the second inspection unit 500 to continuously transmit image data generated from a position of the wafer body to the terminal controller, while enabling the second inspection unit 500 to continuously transmit temperature spectral data generated from a surface of the wafer body to the terminal controller.

S2. Enabling the first one of spraying arms 200 to turn to the top of the clamping unit 100, and enabling the first one of spraying arms 200 to spray a cleaning medium to clean the wafer body inside the clamping unit 100.

S3. Enabling a corresponding first inspection unit 400 to check the cleaning medium that is currently being sprayed from a corresponding spray nozzle 201, generating temperature spectral image data, then transmitting the temperature spectral image data to the terminal controller.

S4. Returning the first one of spraying arms 200 that has finished spraying to its initial position, while enabling the corresponding first inspection unit 400 to check unexpected drippage of a cleaning medium from the corresponding spray nozzle 201, and transmitting data to the terminal controller.

S5. Enabling a plurality of spraying arms 200 to perform the action as described in the above steps one by one, so as to complete cleaning wafer bodies.

EXAMPLE 3

The present invention further provides an inspection method of a cleaning device for checking wafers in real time, which includes the following steps.

S10. Turning each spraying arm 200 from an initial position to an operation position to start spraying, then returning it to the initial position after finishing spraying, and enabling each first inspection unit 400 to perform real-time inspection on a corresponding spray nozzle 201.

Firstly, the first inspection unit 400 checks unexpected drippage of a cleaning medium from the corresponding spray nozzle 201 and feeds back to the terminal controller. When unexpected drippage of a cleaning medium occurs, the terminal controller sends a signal to a driving apparatus of the spraying arm 200 and triggers an alarm, so as to enable the spraying arm 200 to stop operating and return to its initial position; at the same time, the terminal controller sends a signal to a driving apparatus of the remedy spraying tube 301, so as to enable the remedy spraying tube 301 to turn to a remedy position and spray a remedy medium, completing remedying wafer bodies.

S20. During cleaning a wafer body, enabling the second inspection unit 500 to perform real-time inspection on the wafer body.

Firstly, the second inspection unit 500 checks the wafer body for its position in real time. When the wafer body deviates or breaks, the second inspection unit 500 feeds back to the terminal controller, and the terminal controller sends a signal to the clamping unit 100 and triggers an alarm, so as to enable the clamping unit 100 to stop turning.

At the same time, the second inspection unit 500 performs real-time inspection on the surface temperature of the wafer body.

When the surface temperature of the wafer body is abnormal, the terminal controller sends a signal to the driving apparatus of the spraying arm 200 and triggers an alarm, so as to enable the spraying arm 200 to stop operating and return to its initial position; at the same time, the terminal controller sends a signal to the driving apparatus of the remedy spraying tube 301, so as to enable the remedy spraying tube 301 to turn to a remedy position and spray a remedy medium, completing remedying wafer bodies.

When the surface temperature of the wafer body still does not change, the terminal controller sends a signal to the clamping unit 100 and the spraying arm 200, so that the clamping unit 100 stops turning and the spraying arm 200 stops operating.

All components selected in the present invention (components whose specific structures are not specified) are standard parts or parts known to a person skilled in the art. Their structure and principles can be obtained by a person skilled in the art with the aid of technical manuals or by means of conventional experimental methods. In addition, all software programs involved in the present invention are prior art, and the present invention does not involve any improvements to the software programs.

In the description of the examples of the present invention, unless otherwise clearly specified and defined, the terms such as “install”, “connect”, “link” should be broadly explained. For example, they may mean a fixed connection, or a detachable connection or a one-piece connection; they may mean a direct connection, or indirect connection through an intermediate medium, or an internal communication between two parts. A person skilled in the art can understand the specific meaning of the above terms corresponding to conditions in the present invention. We shall further describe the present invention in combination with the drawings as follows.

In the description of the present invention, it shall be understood that the orientation or position relationship indicated by the terms "center", "up", "down", "left", "right", "vertical", "horizontal", "inside", "outside" and the like is based on the orientation or position relationship shown in the accompanying drawings, it is only for the convenience of description of the present invention and simplification of the description, and it is not to indicate or imply that the indicated device or element must have a specific orientation, and be constructed and operated in a specific orientation. Therefore, the terms shall not be understood as limiting the present invention. Moreover, the terms "first", "second" and "third" are used for descriptive purposes only and cannot be understood as indicating or implying relative importance.

In the several embodiments provided by the present invention, it should be understood that the disclosed system, device, and method can be put into practice in other ways. An embodiment of the device described above is merely illustrative. For example, a unit is divided

only in terms of logical functions, and it may be divided in other ways in practice. For instance, multiple units or components may be combined or integrated into another system, or some features may be omitted or is not put into practice. In another respect, mutual or direct coupling or communication connection shown or discussed may be indirect coupling or communication connection through some communication interfaces, devices, or units, and may be in the electrical, mechanical, or other forms.

A unit described as a separate part may or may not be physically separated, and a part shown as a unit may or may not be a physical unit, in other words, it may lie in one place or be distributed at multiple network units. According to actual needs, some or all of the units can be selected to put the solution of this embodiment into practice.

In addition, in various embodiments of the present invention, each functional unit may be integrated into a single processing unit, or each unit may exist in the separate physical form, or two or more units may be integrated into one unit.

A person skilled in the art, inspired by the preferred embodiments of the present invention described above, can make various changes and modifications without departing from the scope of the technical concept of the present invention, based on the above description. The technical scope of the present invention is not limited to the content described in the specification and must be determined based on the scope of the claims.

Claims

1. A cleaning device for checking wafers in real time, comprising:

a clamping unit;

a plurality of spraying arms rotatably arranged above the clamping, a spray nozzle mounted at an end of each spraying arm;

a remedy unit rotatably arranged above the clamping unit;

a plurality of first inspection units, which are each arranged on each spraying arm and suitable to check each spray nozzle for its spraying state;

a second inspection unit, which is arranged above the clamping unit and suitable to check a wafer body for its cleaning state on the clamping unit; and

a terminal controller, which electrically connects to the clamping unit, a driving apparatus of each spraying arm, a driving apparatus of the remedy unit, each first inspection unit and the second inspection unit, respectively;

wherein when one of the first inspection units checks that unexpected leakage occurs to a corresponding spray nozzle, the terminal controller receives a signal sent by the first inspection unit, controls a corresponding spraying arm to stop spraying, and controls the remedy unit to spray a remedy medium onto a wafer body.

2. The cleaning device for checking wafers in real time according to claim 1, wherein the terminal controller includes:

an input unit suitable to receive data from each first inspection unit and the second inspection unit;

a storage unit in which normal data is stored, data obtained by the input unit is compared with the stored normal data, and the obtained data that exceeds a range of the normal data is set as an abnormal state;

a control unit suitable to obtain a comparison result from the storage unit and control the driving apparatus of each spraying arm and the driving apparatus of the remedy unit at occurrence of an abnormal state; and

an alarm unit suitable to receive a signal from the control unit and issue an alarm at occurrence of an abnormal state.

3. The cleaning device for checking wafers in real time according to claim 2, wherein each first inspection unit checks a corresponding spray nozzle that is currently spraying and transmits temperature spectral image data of a cleaning medium sprayed from the corresponding spray nozzle to the input unit;

each first inspection unit checks a corresponding spray nozzle that has finished spraying

and transmits image data generated from unexpected drippage of a cleaning medium of the corresponding spray nozzle to the input unit.

4. The cleaning device for checking wafers in real time according to claim 3, wherein the second inspection unit checks a wafer body on the clamping unit, transmits temperature spectral data of different cleaning media that have been sprayed on the surface of the wafer by different spraying arms to the input unit, and

the second inspection unit can transmit image data generated from a position state of the wafer of the clamping unit to the input unit.

5. The cleaning device for checking wafers in real time according to claim 4, wherein each spraying arm is L-shaped, and has a vertical bar connected to a drive motor, an encoder of which electrically connects to the control unit.

6. The cleaning device for checking wafers in real time according to claim 5, wherein each first inspection unit includes a fixing clamp, a detector body, and a nitrogen connector;

the fixing clamp is clamped onto a crossbar of a corresponding spraying arm, and the detector body is rotatably installed at the bottom of the fixing clamp, and a rotation axis of the detector body is perpendicular to the crossbar of the corresponding spraying arm, and the nitrogen connector is disposed at the end of the detector body away from a corresponding spray nozzle;

a nitrogen inlet hole that is compatible with the nitrogen connector is set on the detector body, and the nitrogen connector is inserted into the nitrogen inlet hole, and

the nitrogen connector is suitable to enable nitrogen gas to flow into the interior of the detector body.

7. The cleaning device for checking wafers in real time according to claim 6, wherein the remedy unit includes a remedy spraying tube, which is suitable to spray a remedy medium.

8. A use method of the cleaning device for checking wafers in real time as claimed in claim 7, comprising the steps of

S1. turning the clamping unit that has clamped a wafer body, then enabling the second inspection unit to continuously transmit image data generated from a position of the wafer body to the terminal controller, while enabling the second inspection unit to continuously transmit temperature spectral data generated from a surface of the wafer body to the terminal controller;

S2. enabling the first one of spraying arms to turn to the top of the clamping unit, and enabling the first one of spraying arms to spray a cleaning medium to clean the wafer body inside the clamping unit;

S3. enabling a corresponding first inspection unit to check the cleaning medium that is currently being sprayed from a corresponding spray nozzle, generating temperature spectral image data, then transmitting the temperature spectral image data to the terminal controller;

S4. returning the first one of spraying arms that has finished spraying to its initial position, while enabling the corresponding first inspection unit to check unexpected drippage of a cleaning medium from the corresponding spray nozzle, and transmitting data to the terminal controller; and

S5. enabling a plurality of spraying arms to perform the action as described in the above steps one by one, so as to complete cleaning wafer bodies.

9. An inspection method of a cleaning device for checking wafers in real time as claimed in claim 7, comprising the steps of

S10. turning each spraying arm from an initial position to an operation position to start spraying, then returning it to the initial position after finishing spraying, and enabling each first inspection unit to perform real-time inspection on a corresponding spray nozzle,

wherein, firstly, the first inspection unit checks unexpected drippage of a cleaning medium from the corresponding spray nozzle and feeds back to the terminal controller; when unexpected drippage of a cleaning medium occurs, the terminal controller sends a signal to a driving apparatus of the spraying arm and triggers an alarm, so as to enable the spraying arm to stop operating and return to its initial position; at the same time, the terminal controller sends a signal to a driving apparatus of the remedy spraying tube, so as to enable the remedy spraying tube to turn to a remedy position and spray a remedy medium, completing remedying wafer bodies; and

S20. during cleaning a wafer body, enabling the second inspection unit to perform real-time inspection on the wafer body,

wherein, firstly, the second inspection unit checks the wafer body for its position in real time; when the wafer body deviates or breaks, the second inspection unit feeds back to the terminal controller, and the terminal controller sends a signal to the clamping unit and triggers an alarm, so as to enable the clamping unit to stop turning,

at the same time, the second inspection unit performs real-time inspection on the surface temperature of the wafer body,

when the surface temperature of the wafer body is abnormal, the terminal controller sends a signal to the driving apparatus of the spraying arm and triggers an alarm, so as to enable the spraying arm to stop operating and return to its initial position; at the same time, the terminal controller sends a signal to the driving apparatus of the remedy spraying tube,

so as to enable the remedy spraying tube to turn to a remedy position and spray a remedy medium, completing remedying wafer bodies,

when the surface temperature of the wafer body still does not change, the terminal controller sends a signal to the clamping unit and the spraying arm, so that the clamping unit stops turning and the spraying arm stops operating.