

## Appeal decision

Appeal No. 2012-225

Germany

Appellant

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The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2004-249234, entitled "Apparatus for Testing Substrates" (the application published on April 14, 2005, Japanese Unexamined Patent Application Publication No. 2005-101584) has resulted in the following appeal decision.

### Conclusion

The appeal of the case was groundless.

### Reason

#### No. 1. History of the procedures

This application is an application in foreign language filed on August 27, 2004 (priority claim under the Paris Convention: August 28, 2003, Germany), translation of the description, the scope of claims, the drawings, and Abstract was submitted on September 17, 2004, a notice of reasons for refusal was issued on May 28, 2010, and a written opinion and written amendment were submitted on December 17, 2010. However, a decision of refusal was made on August 10, 2011, and, against this, a

request for appeal was made on January 6, 2012, and at the same time, a written amendment was submitted.

No. 2 Decision to dismiss amendment by the written amendment dated January 6, 2012

[Conclusion of Decision to Dismiss Amendment]

The amendment by the written amendment dated January 6, 2012 shall be dismissed.

[Reason]

1. Details of amendment

The invention according to Claim 1 in the scope of claims amended by the above written amendment is as follows:

"[Claim 1]

"An apparatus for testing substrates configured to have test arrangements comprising a handling system (3), a substrate magazine station (7), and an alignment station (10), wherein at least two test arrangements (1;2;11;12;14;15) are provided which are all jointly operatively connected to the handling system, the substrate magazine station, and the alignment station;

the test arrangements (1;2;11;12;14;15) are configured as independent modules and the modules have identical grid dimensions and can be connected to each other; and

the modules are arranged on a vibration-insulating section, or a position-controlled platform."

2. Propriety of amendment

(1) Details of amendment and purpose requirements of amendment

The above invention according to the Claim 1 (hereinafter, referred to as "the Amended Invention") limits "the modules" in Claim 1 before the amendment to being "arranged on a vibration-insulating section, or a position-controlled platform" and this amendment limits matters necessary to specify the invention described in Claim 1 before the amendment.

Accordingly, the Amendment is for the purpose of the restriction of the scope of claims stipulated in Article 17-2(4)(ii) of the Patent Act before revision by Act No. 55 of 2006 (hereinafter, referred to as "Patent Act before revision of 2006"), of which the provisions then in force shall remain applicable according to revision supplement Article 3(1) of Act No. 55 of 2006.

Then, the following will examine whether or not the Amended Invention is independently patentable at the time of filing of the patent application (whether or not it violates the provisions of Article 126(5) of the Patent Act which is applied mutatis mutandis pursuant to the provisions of Article 17-2(5) of the Patent Act before revision of 2006).

(2) Described matters in Publication

A. As for this, International Publication No. WO2001/080289 (hereinafter, referred to as "Publication 1"), which is a publication distributed before the priority date of the present application, includes the following description of "MODULAR SUBSTRATE MEASUREMENT SYSTEM" (title of the invention) together with drawings.

(A1) "The present invention provides a substrate measurement system comprising a central substrate handling chamber which is provided with substrate transfer means, at least one substrate container interface with a standardized interface and arranged to receive a matching substrate container, and a mechanical interface to receive a measurement chamber comprising a measurement instrument. The measurement chamber has a standardized size and is provided with standardized mechanical interface, in order to connect to the corresponding interface of the substrate handling chamber. Because of the standardization of the measurement chamber, the modular substrate measurement system can easily be configured with different types of measurement instruments for a certain application by a simple replacement of one measurement chamber by another chamber.

According to a preferred embodiment of the present invention, the central substrate handling chamber comprises two or more measurement chambers of standardized size and provided with a standardized mechanical interface. In this embodiment, the substrate transfer means is shared by the two or more measurement instruments inside their respective measurement chambers and the substrate container interface, resulting in savings in cost and floor space. Moreover, two or more measurements on a single wafer can be executed sequentially without time delay. In this embodiment, more than one substrate container interface can be connected to the substrate handling chamber. The measurement chambers can be distributed in a substantially horizontal plane but they can also be stacked in a substantially vertical direction. (Page 1, line 26 to Page 2, line 16)

(A2) " FIG. 1 shows a substrate measurement system comprising a centrally mounted substrate handling chamber 7, provided with wafer transfer means 10. The substrate

handling chamber is provided with a substrate container interface 1 and a mechanical interface 50 on which a measurement chamber 30 is connected. A substrate container interface 1 is connected to the substrate handling chamber 7. On the substrate container interface 1 a substrate container 8 is mounted. The substrate container interface 1 provides a standardized mechanical interface on which the substrate container 8 is connected by means of a corresponding interface.

In the measurement chamber 30 a measurement instrument 35 is provided for a certain application, e.g. measurement of the thickness of a film on a wafer. Both the substrate handling chamber 7 and the measurement chamber 30 comprise standardized mechanical interfaces: the mechanical interface 50 provided on the substrate handling chamber 7 and the mechanical interface 51 on the measurement chamber 30 are standardized.

The mechanical interface 50 and the mechanical interface 51 provide matching coupling parts 52, and 53, respectively, for coupling the measurement chamber 30 to the substrate handling chamber 7. The coupling provides a gastight sealable coupling between the measurement chamber 30 and the substrate handling chamber 7. In this manner, the measurement chamber 30 can be used under controlled vacuum pressure conditions. Also, the mechanical interface 50 provides a mechanical support area 54 for supporting the measurement chamber 30 on a matching support area 55 of the mechanical interface 51. The support areas 54, 55 may be arranged as a substantially horizontal area, a substantially vertical area, or a combination of the two. The fit of such a mechanical support area 54 and a matching support area 55 may be provided in any conceivable way as known in the art. (Page 3, line 22 to Page 4, line 15)

(A3) "The substrate transfer means is capable of transferring a substrate from any of the substrate containers 8, 9 located on the substrate container interfaces 1, 2, by means of their interfaces 80, 81, in any required sequence along any number of the measurement chambers 30, 31, 32, 33, and of returning the substrate in either the same substrate container or the other substrate container, respectively.

During measurement of a substrate in any of the measurement instruments 35, 36, 37, 38, located in one of the measurement chambers 30, 31, 32, 33, the substrate can be supported by the substrate transfer means 10. But, most preferably, the substrate is supported on substrate support means (not shown) inside the measurement chamber 35, 36, 37, 38 and the substrate transfer means 10 is retracted from the measurement chamber 30, 31, 32, 33. In this way, during measurement of one substrate in one measurement instrument, the substrate transfer means 10 is available

to transfer other substrates to and from one of the other measurement instruments. The substrate handling chamber 7 can also be equipped with a station for substrate aligning or for substrate identification, as known in the art. (Page 5, lines 18 to 32)

(A4) "FIG. 3 shows a modular substrate measurement system according to a third embodiment wherein the substrate container interfaces 1, 2, 3 and the measurement chambers 30, 31, 32 are grouped in linear arrays around an elongated substrate handling chamber 7. Between substrate handling chamber and measurement chambers, mechanical interfaces 50 and 51 are provided as described in the previous embodiments. On the substrate container interfaces 1, 2, 3, substrate containers 8, 9, 11 are mounted. The substrate transfer means 10 comprises means for a linear translation in the substantially longitudinal direction of the substrate handling chamber 7, as indicated by arrows T1 and T2.

In the embodiment of FIG. 3, due to the standardized mechanical interfaces 50 and 51, each measurement chamber 30, 31, 32 can be easily replaced by one of a plurality of other measurement chambers 39, 40, each of which is provided with its respective measurement instrument 41 or 42, specific to the desired application. Also, due to the standardized mechanical interfaces 50 and 51, the measurement chambers 30, 31, 32 can be mutually exchanged in any way selected. (Page 6, lines 8 to 22)

(A5) "In this way, the outside dimensions of the measurement chamber need to be only slightly larger than the dimensions of the substrate to allow mapping of the wafer. When the substrate is circular, with a diameter of 300 mm or greater, the measurement chamber can fit within a horizontal square or rectangular cross section with the smallest dimension less than 100 mm larger than the substrate diameter. For the compactness of the system it is advantageous to have this smallest dimension at the side that is mounted against the substrate handling chamber." (Page 10, lines 11 to 17)

(A6) From the description of FIG. 3, it can be found that the rectangular parallelepiped measurement chamber 30, measurement chamber 31, and measurement chamber 32 are connected to the substrate handling chamber 7 in parallel with each other.

As viewed from the above summarized matters, the following invention (hereinafter, referred to as "Cited Invention") is described in Publication 1:

"A modular substrate measurement system comprising substrate transfer means, substrate container interfaces, substrate alignment station, and two or more measurement chambers including measurement instruments, wherein; the substrate transfer means can transfer a substrate from any of substrate containers provided in the substrate container interfaces to an arbitrary measurement chamber; the measurement chambers are of a rectangular parallelepiped shape having standardized dimensions, replaceable with another measurement chamber, and supported by a mechanical support area; and the plurality of measurement chambers are connected to the substrate handling chamber in parallel with each other."

B. Japanese Unexamined Patent Application Publication No. S61-168236 (hereinafter, referred to as "Publication 2"), which is also a publication distributed before the priority date of the present application, includes the following description of "WAFER INSPECTING APPARATUS" together with drawings.

(B1) "(Background of the invention)

It is already known to have two units of a wafer inspecting apparatus arranged and control them with a single tester apparatus. However, such a system requires a very large floor space for installation, since each of the wafer inspecting apparatuses is equipped not only with a stage mechanism capable of fine alignment for wafer inspection but also with a loading mechanism for bringing the wafer to the stage mechanism.

(Purpose of the invention)

An object of the present invention is to solve such a problem and to provide a wafer inspecting apparatus capable of inspecting wafers with a plurality of stage mechanisms and requiring only a small floor space for installation." (page 1, the lower left column, 8th line from the bottom to page 1, the lower right column, line 6).

(B2) "FIG. 1 is a schematic plan view when the wafer inspection apparatus in the casing is viewed from above, FIG. 2 is a front view indicating especially a stage section of the wafer inspecting apparatus in the casing, FIG. 3 is a view taken along a line A-A showing the loading mechanism of the wafer inspecting apparatus, and FIG. 4 is a flowchart indicating the operation of the microcomputer.

In FIG. 2, 1 is a stand, and 2 and 3 are vibration-proof mechanisms which are separately and independently mounted on the stand 1. A base 4 is fixed on the vibration-proof mechanisms 2." (page 1, the lower right column, line 10 to line 18)

(B3) "In this embodiment, the above-described elements 4 to 7, 9 to 11, and 13 constitute a right-side inspection section. A base 14, an XY stage 15, a Z stage 16, a  $\theta$ -rotation stage 17, a probe card 19, a supporting stand 20, a microscope 21, and a sensor 22 are respectively configured similarly to the elements 4 to 7, 9 to 11, and 13 on the right-side inspection section and constitute a left-side inspection section. Reference numeral 18 indicates a wafer arranged on the  $\theta$ -rotation stage. The above-described right-side inspection section and left-side inspection section are supported by the vibration-proof mechanisms 2 and 3, respectively, which are independently provided on the stand 1; and are configured so as to prevent mutual transmission of vibration by these vibration-proof mechanisms 2 and 3." (page 2, the upper right column, line 5 to line 17)

(B4) "A stage 45 for performing pre-alignment of a wafer is rotatable (on its own axis) by a motor 44." (page 2, the lower right column, line 10 to line 12)

C. Japanese Unexamined Patent Application Publication No. 2000-183129 (hereinafter, referred to as "Publication 3") which is also a publication distributed before the priority date of the present application, includes the following description of "VACUUM PROCESSING SYSTEM" together with drawings.

(C1) "[0069] The common transfer chamber 71 has a rectangular shape, and vacuum processing chambers 73a to 73e of five rooms in the example shown in FIG. 6 are arranged parallel to the central longitudinal axis of the common transfer chamber 71 along one side of the common transfer chamber 71. In addition, the load chamber 74, the unload chamber 75, and the carriage chamber 76 are arranged parallel to the central longitudinal axis of the common transfer chamber 71 along the other side surface facing the vacuum processing chambers 73a through 73e.

[0070] Therefore, in the common transfer chamber 71, the opening and the mounting seat which are for mounting the gate valve 79 at five positions on the above one side surface and three positions on the other side surface are formed. All the openings and mounting seats are set to an identical size, and the chamber 73a to 73e, 74, 75, or 76 can be selectively attached to any of the mounting seats via the gate valves 79 having an identical size and identical specifications.

[0071] The rail 29 as an example of moving means disposed on the floor 72 of the common transfer chamber 71 (see FIG. 2) is designed so that the transfer devices 20e, 20f, and 20g can move in the X and Y directions. That is, the transfer devices 20e, 20f, and 20g are linearly moved in the X and Y directions without being rotated in the

$\theta$ -direction, as shown in FIG. 4 and FIG. 5; thus, they are operated to be matched with transfer lines to the chambers 73a to 73e, 74, 75, and 76.

[0072] According to the processing system 70 shown in FIG. 6, the following effects can be obtained in addition to the effects obtained by the processing system 50 shown in FIG. 4: since the rotation operation of the transfer device is not required, the size of the common transfer chamber 71 can be the minimum one required for movement of the transfer device in the X and Y directions; and since there is no useless space between vacuum processing chambers 73a to 73e in comparison with the radial arrangement shown in FIG. 4, a reduction in the installation space can be achieved."

(C2) Further, from description in FIG. 6, it can be found that each of the vacuum processing chambers 73a to 73e is formed as a compartment having an identical shape and is connected to the common transfer chamber 71 while being arranged without space between other processing chambers.

### (3) Comparison / judgment

In comparison between the Amended Invention and Cited Invention, the "substrate transfer means," "substrate container interface," "measurement chambers" and "measurement instruments," and "modular substrate measurement system" in the Cited Invention correspond to the "handling system," "substrate magazine station," "test arrangements," "apparatus for testing substrates," and "apparatus," respectively in the Amended Invention.

In addition, the "measurement chambers" in the Cited Invention are of a rectangular parallelepiped shape having standardized dimensions and replaceable with another measurement chamber; and therefore, it can be said that the individual measurement chambers have grid dimensions identical to each other.

In addition, when inspecting a substrate such as a semiconductor substrate, transferring the substrate to an area for aligning the substrate by the transfer means so as to align the direction and position of the substrate before carrying it into an inspecting apparatus is well-known as described in Publication 2 (a stage 45 for performing pre-alignment) and is a technical matter to be naturally adopted by a person skilled in the art. Therefore, it is obvious that the "substrate alignment station" of the Cited Invention corresponds to the "alignment station" of the Amended Invention and the substrate transfer means of the Cited Invention transfers the substrate to the substrate alignment station.

Furthermore, paragraphs [0012] and [0013] of the specification describe the

following: "[0012] This problem is solved by providing at least two test arrangements which are all jointly operatively connected to the handling system, the substrate magazine station, and the alignment station in this invention.

[0013]

Therefore, via the substrate magazine station, the wafer magazine can be used. Semiconductor wafers to be tested are supplied to all test arrangements by this wafer magazine. In this case, the handling system takes out a semiconductor wafer from the wafer magazine and places this wafer on the alignment station for pre-positioning. This semiconductor wafer is picked up again after pre-positioning and supplied to one of the test arrangements." Thus, the "at least two test arrangements which are all jointly operatively connected to the handling system, the substrate magazine station, and the alignment station" in the Amended Invention means that the substrate is supplied from the substrate magazine station to the test arrangements and alignment station by the handling system. Accordingly, it can be said that the feature of transferring a substrate from the substrate container interface to the measurement chamber and substrate alignment station by the substrate transfer means in the Cited Invention corresponds to the "at least two test arrangements which are all jointly operatively connected to the handling system, the substrate magazine station, and the alignment station" in the Amended Invention.

Therefore, the Amended Invention and Cited Invention are identical in terms of: "an apparatus for testing substrates configured to have test arrangements comprising a handling system, a substrate magazine station, and an alignment station, wherein at least two test arrangements are provided which are all jointly operatively connected to the handling system, the substrate magazine station, and the alignment station;" and they are different in the following points:

\*The different feature 1

In the apparatus of the Amended Invention, the test arrangements are configured as independent modules which have identical grid dimensions and can be mutually connected; whereas, in the modular substrate measurement system of the Cited Invention, measurement chambers are of a rectangular parallelepiped shape having standardized dimensions and replaceable with another measurement chamber, but they are supported by a mechanical support area and it is not specified that individual measurement chambers can be mutually connected.

\*The different feature 2

In the apparatus of the Amended Invention, the modules are arranged on a vibration-insulating section, or a position-controlled platform; whereas, in the modular substrate measurement system of the Cited Invention, it is not specified to include means for insulating vibration.

Then, the above different features are examined below.

\*Regarding the different feature 1

It is obvious for a person skilled in the art that an apparatus for processing substrates or an inspecting apparatus is generally installed in a clean space such as a clean room, and such an installation space is desired to be small.

In addition, it can be said that in a case where a plurality of modularized processing chambers are arranged in parallel and connected to a common substrate transfer chamber for transferring substrates, the manner of arranging the processing chambers so as to be able to be connected without spaces between the processing chambers in order to reduce an installation space of the entire apparatus is an arrangement manner which is appropriately adopted by a person skilled in the art in the technical field of substrate processing apparatuses as described in Publication 3.

Also, in the modular substrate measurement system of the Cited Invention in which two or more measurement chambers are connected in parallel with each other to the substrate handling chamber provided with substrate transfer means, it is natural for a person skilled in the art to consider reducing the installation space of the modular substrate measurement system. Therefore, it could have been easily conceived of by a person skilled in the art to arrange the parallelly arranged modules having identical dimensions so as to be connected with each other while reducing spaces between the modules as much as possible, as in the above arrangement method described in Publication 3.

\*Regarding the different feature 2

It is a well-known technical matter as described in Publication 2 that when a plurality of inspecting apparatuses are arranged for a device for transferring semiconductor wafers, each of the inspecting apparatuses is arranged on a vibration-proof mechanism.

It is obvious for a person skilled in the art that if a measurement apparatus picks up vibration in testing a substrate such as a semiconductor wafer by measurement by a measurement apparatus, the substrate cannot be accurately tested; and also in the

modular substrate measurement system of the Cited Invention, it could have been easily conceived of by a person skilled in the art to provide a measurement chamber with a vibration-proof mechanism for insulating the measurement chamber from vibration so as to accurately measure substrates.

In addition, the effects obtained by the Amended Invention can be easily predicted from the Cited Invention and the above well-known technical matter.

As described above, the Amended Invention could have been easily made by a person skilled in the art based on the Cited Invention and the well-known technical matter, and the appellant should not be granted a patent for it independently at the time of patent application under the provisions of Article 29(2) of the Patent Act.

#### (4) Conclusion

Therefore, since the Amendment was made in violation of the provisions of Article 126(5) of the Patent Act which is applied mutatis mutandis pursuant to the provisions of Article 17-2(5) of the Patent Act before revision of 2006, the Amendment shall be dismissed under the provisions of Article 53(1) of the Patent Act applied mutatis mutandis by replacing certain terms pursuant to Article 159(1) of the Patent Act.

### No. 3 Regarding the Invention

#### 1. The Invention

Since the amendment by the written amendment dated January 6, 2012 was dismissed as described above, the inventions according to the claims of the present application are as specified by the matters described in Claims 1 to 9 in the scope of claims in the written amendment dated December 17, 2010; and the invention according to Claim 1 (hereafter, referred to as "the Invention") among them is as follows:

"[Claim 1]

An apparatus for testing substrates configured to have test arrangements comprising a handling system (3), a substrate magazine station (7), and an alignment station (10), wherein at least two test arrangements (1; 2; 11; 12; 14; 15) are provided which are all jointly operatively connected to the handling system, the substrate magazine station, and the alignment station;  
each of the test arrangements (1; 2; 11; 12; 14; 15) is configured as an independent

module; and

the modules have identical grid dimensions and can be connected to each other."

## 2. Described matters in Publications and Cited Invention

On the other hand, the described matters in Publications 1 to 3, which are publications distributed prior to the priority date of the present application, and the Cited Invention are as described in the above No. 2, 2. (2).

## 3. Comparison / judgment

The Invention is one from which the limitation matter of "the modules are arranged on a vibration-insulating section, or a position-controlled platform" in the Amended Invention is omitted and thus, the Amended Invention which corresponds to one including all the matters specifying the Invention and further limiting other matters specifying the Invention could have been easily made by a person skilled in the art based on the Cited Invention and well-known technical matters, as described in the above No. 2, 2. (3); and therefore, for the same reason, it can be said that the Invention could also have been easily made by a person skilled in the art.

## 4. Closing

As described above, the Invention could have been easily made by a person skilled in the art based on the Cited Invention and well-known technical matters; and thus, the appellant should not be granted a patent for the Invention in accordance with the provisions of Article 29(2) of the Patent Act.

Accordingly, the present application should be rejected without examining inventions relating to the other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

April 15, 2013

Chief administrative judge:	NIINOMI, Takeshi
Administrative judge:	INOUE, Shigeo
Administrative judge:	MATSUOKA, Miwa