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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/691,097	04/20/2015	Klaus-Dieter ROETH	KLAP146US/P4219	2304
112811	7590	09/23/2019	EXAMINER	
KLA-Tencor Corporation and Simpson & Simpson PLLC 5555 Main Street Williamsville, NY 14221			AMARA, MOHAMED K	
			ART UNIT	PAPER NUMBER
			2886	
			NOTIFICATION DATE	DELIVERY MODE
			09/23/2019	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KLAUS-DIETER ROETH, MOHAMMAD M.
DANESHPANAH, ALEXANDER BUETTNER,
ABDURRAHMAN SEZGINER, and MARK WAGNER

Appeal 2019-000507
Application 14/691,097
Technology Center 2800

Before JEFFREY T. SMITH, BEVERLY A. FRANKLIN,
and BRIAN D. RANGE, *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

DECISION ON APPEAL

SUMMARY

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1, 3–37, and 39–42. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as KLA-Tencor Corporation. Appeal Br. 2.

STATEMENT OF THE CASE²

Appellant describes the invention as relating to a system for measuring the position of defects on objects. Spec. ¶ 2. In particular, the system could determine defects of semiconductor components such as patterned extreme ultraviolet (EUV) mask blanks. *Id.* at ¶¶ 7, 37. The system seeks to achieve a very low uncertainty (less than 30 nm). *Id.* at ¶ 12. Claim 1, reproduced below with emphases added to certain key recitations, is illustrative of the claimed subject matter:

1. A system for determining the position of defects on an object comprising:

a first apparatus comprising:

an inspection unit for the object, the inspection unit comprises a first measuring stage comprising a mechanical stage **wherein the inspection unit detects at least one defect to a first degree of accuracy;** and,

a second apparatus comprising:

a coordinate measuring unit comprising:

a second measuring stage for moving the object in a X-coordinate direction and a Y-coordinate direction, wherein the second measuring stage comprises a mechanical stage; and,

a double-pass interferometer having a wavelength correction system arranged to measure a position of the measuring stage **wherein the coordinate measuring unit detects the at least one defect to a second degree of accuracy greater than the first degree of accuracy;** and,

an interface comprising a computer data communication connection for sending alignment and coordinate

² In this Decision, we refer to the Non-Final Office Action dated February 12, 2018 (“Non-Final Act.”), the Appeal Brief filed June 8, 2018 (“Appeal Br.”), the Examiner’s Answer dated September 13, 2018 (“Ans.”), and the Reply Brief filed October 29, 2018 (“Reply Br.”).

information on the arrangement and position of the at least one defect on the object from the inspection unit to the coordinate measuring unit, wherein the coordinate measuring unit and the inspection unit are locally separated units linked by the interface and the coordinate measuring unit is arranged to acquire at least one image and information about a variable defocus position with respect to the object.

Appeal Br. 21 (Claims App.).

REFERENCES

The Examiner relies upon the prior art below in rejecting the claims on appeal:

Green	US 4,061,914	Dec. 6, 1977
Chilese et al. ("Chilese")	US 2005/0018193 A1	Jan. 27, 2005
Heiden ("Heiden")	US 2009/0040530 A1	Feb. 12, 2009
Terasawa et al. ("Terasawa")	US 2009/0091752 A1	Apr. 9, 2009
Stokowski	US 2011/0181868 A1	July 28, 2011

REJECTIONS

On appeal, the Examiner maintains (Ans. 3) the following rejections:

Rejection 1. Claims 1, 3–6, 8, 11–16, 18, 20–27, 29, and 31–37 under 35 U.S.C. § 103 as unpatentable over Terasawa in view of Heiden and further in view of Green. Non-Final Act. 4.

Rejection 2. Claims 7, 9, 17, 28, and 39–41 under 35 U.S.C. § 103 as unpatentable over Terasawa, Heiden, and Green further in view of Stokowski. *Id.* at 29.

Rejection 3. Claims 10, 19, and 30 under 35 U.S.C. § 103 as unpatentable over Terasawa, Heiden, Green, and Stokowski further in view of Chilese. *Id.* at 32.

Rejection 4. Claim 42 under 35 U.S.C. § 103 as unpatentable over Terasawa, Heiden, Green, and Chilese. *Id.* at 34.

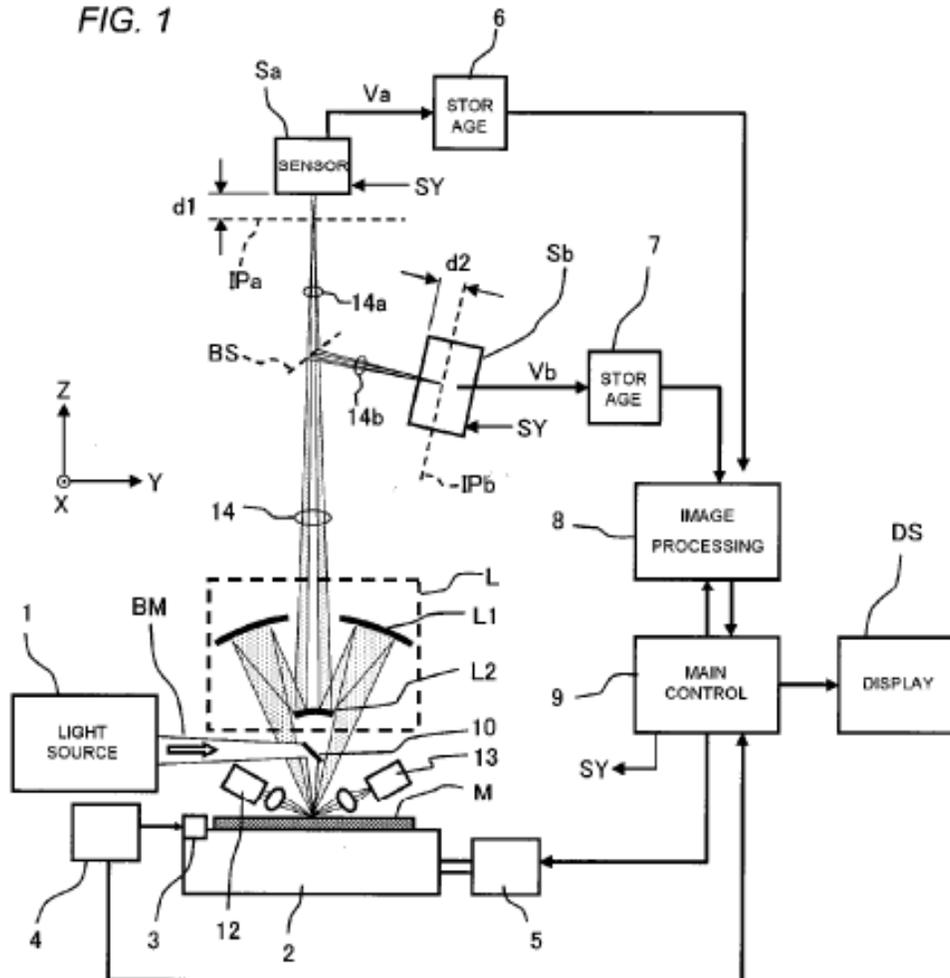
ANALYSIS

After review of the Examiner's and Appellant's opposing positions, the applied prior art, and Appellant's claims and Specification, we determine that the Appellant's arguments are insufficient to identify reversible error in the Examiner's obviousness rejections. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011). Accordingly, we affirm the stated obviousness rejections for substantially the fact findings and the reasons set forth by the Examiner in the Examiner's Answer. We offer the following for emphasis.

Appellant does not present any substantively distinct arguments for any claims. *See* Appeal Br. 14–19. Therefore, consistent with the provisions of 37 C.F.R. § 41.37(c)(1)(iv) (2013), we limit our discussion to claim 1, and all remaining claims stand or fall with claim 1.

The Examiner finds that Terasawa teaches most of the recitations of claim 1. Non-Final Act. 4–5. In particular the Examiner finds that the system depicted by Terasawa Figure 1 discloses, for example, an inspection unit (light source 12, detector 13, the Z part of stage 2, driving part of 5, and controlling part in 9). *Id.* at 4 (citing Terasawa). The Examiner also finds that the Terasawa Figure 1 system discloses a coordinate measuring unit (light source 1, system L with optical component and lenses, in addition to

parts 3–10, Sa, and Sb). *Id.* at 4–5. Terasawa Figure 1 is reproduced below for reference.



Terasawa Figure 1 is “a configurative view showing an example of the mask blank inspection apparatus” according to Terasawa. Terasawa ¶ 30.

The Examiner finds that Terasawa does not expressly teach “the system wherein the inspection unit, with a separate first measuring mechanical stage, detects at a first degree of accuracy **at least one defect.**” Non-Final Act. 6. The Examiner also finds that Terasawa does not expressly teach the interferometer having a wavelength correction system arranged to measure a position of the measuring stage. The Examiner, however, finds

that Heiden teaches a coordinate measuring machine that measures a position of the measuring stage. *Id.* at 6–7 (citing Heiden). The Examiner states a rationale why a person of skill in the art would have combined the teachings of Terasawa and Heiden. *Id.*

The Examiner finds that the combination of Terasawa and Heiden does not explicitly teach a system where “the inspection unit detects at a first degree of accuracy **at least one defect**” but maintains such a detection is inherent with Terasawa. *Id.* at 7. In addition to the inherency theory, the Examiner finds that Green teaches an apparatus and method for dual resolution analysis where first a low resolution object analyzer is used and then a separate higher resolution unit is used. *Id.* (citing Green). The Examiner determines that “it would have been obvious to one with ordinary skills in the art before the effective filing date of the instant application to use the system and method of use of Terasawa and Heiden, according to Green’s teachings so that the inspection unit detects at a first degree of accuracy at least one defect, with the advantage of increasing the efficiency and reducing the time of the detection of the objects of interest.” *Id.* (citing Heiden 1:30–42).

Appellant argues that claim 1 requires a first apparatus comprising an inspection unit and a second apparatus comprising a coordinate measuring unit where the apparatuses are “locally separate units linked by an interface.” Appeal Br. 14. Appellant argues that each of the prior art references does not disclose such a configuration. *Id.* at 14–15. With respect to the “locally separate” recitation, Appellant’s argument is unpersuasive because the Examiner identifies separate portions of the Terasawa system as being the inspection unit and coordinate measuring unit.

The units each occupy their own separate space. Non-Final Act. 5; Terasawa Fig. 1. Appellant presents no argument as to why the units the Examiner identifies are not locally separate. Moreover, we discern no portion of the Specification that indicates “locally separate” should be construed in a narrow fashion that would exclude the Terasawa’s separate units. Accordingly, under a broadest reasonable construction, we discern no error in the Examiner’s finding that the identified units of the Terasawa system are “locally separate.”

With respect to the “linked by an interface” recitation, the Examiner also finds that the two identified units are linked via main control 9. Non-Final Act. 5. Appellant presents no argument as to why this finding is in error. Appeal Br. 14–15.

Appellant also argues that the cited references are silent as to an inspection unit and locally separate coordinate measuring unit which “detect at least one defect to a first and a second degree of accuracy, respectively, where the second degree of accuracy is greater than the first.” Appeal Br. 15. This argument is also unpersuasive. As explained above, the Examiner identifies locally separate Terasawa units. Final Act. 5–6. The Examiner also finds that Green teaches the benefits of using a low resolution object analyzer in combination with a higher resolution unit. *Id.* at 7 (citing Green); *see also* Appeal Br. 15 (admitting that Green teaches low resolution and higher resolution analysis). The Examiner determines that it would have been obvious to use the system and method of Terasawa according to Green’s teachings so that this recitation is met. Non-Final Act. 7; *see also* Ans. 6–7. Appellant presents arguments regarding the teaching of each of the three cited references individually (Appeal Br. 14–15), but Appellant

does not persuasively explain to why Terasawa’s device as modified by the teachings of Heiden and Green would lack this feature. It is well-settled that “[n]on-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

In the Reply Brief, Appellant argues that what the Examiner identifies as an inspection unit in Terasawa merely measures the position (height) of object M and is not capable of measuring defects as claim 1 recites. Reply Br. 3–6. Appellant’s argument is unpersuasive because it addresses only Terasawa. The Examiner’s rejection is based upon the combined teachings of Terasawa, Heiden, and Green, and Appellant presents no argument as to why a person of skill in the art would not have reached an inspection unit capable of measuring defects when considering the combined teachings of Terasawa, Heiden, and Green. *In re Merck & Co.*, 800 F.2d at 1097.

Because Appellant’s arguments do not identify reversible error, we sustain the Examiner’s rejections.

DECISION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
	§ 103 Terasawa, Heiden, and Green	1, 3–6, 8, 11– 16, 18, 20–27, 29, 31–37	
	§ 103 Terasawa, Heiden, Green, Stokowski	7, 9, 17, 28, 39–41	

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Claims Rejected	Basis	Affirmed	Reversed
	§ 103 Terasawa, Heiden, Green, Stokowski, Chilese	10, 19, 30	
	§ 103 Terasawa, Heiden, Green, Chilese	42	
Overall Outcome		1, 3-37, 39- 42	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED