

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERIC J. BERGMAN

Appeal 2007-1684
Application 10/998,278
Technology Center 1700

Decided: May 23, 2007

Before EDWARD C. KIMLIN, CHARLES F. WARREN, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-4, 7, 8, 10-15, 17, 18, 22, 26, 27, and 34-41. Claim 1 is illustrative:

1. A method for cleaning a workpiece, comprising:

placing the workpiece into a chamber;

directly or indirectly heating the workpiece,

providing water vapor into the chamber, with the water vapor exceeding about 100 C;

providing ozone gas into the chamber;

pressurizing the chamber to an above ambient pressure to increase ozone gas concentration in the chamber, and with the ozone gas reacting with a contaminant on the workpiece to clean the workpiece.

The Examiner relies upon the following reference as evidence of obviousness:

DeGendt US 6,551,409 B1 Apr. 22, 2003

Appellant's claimed invention is directed to a method for cleaning a workpiece, just as a wafer. The method entails placing the workpiece in a chamber, heating the workpiece, providing water vapor and ozone gas into the chamber, and pressurizing the chamber to an above ambient pressure to increase the ozone gas concentration in the chamber.

All the appealed claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DeGendt.

With the exception of claims 26 and 40, and claim 41, Appellant does not set forth separate arguments for the claims on appeal. Accordingly, with the noted exceptions, all the appealed claims stand or fall together with claim 1.

We have thoroughly reviewed each of Appellant's arguments for patentability. However, we are convinced that the Examiner has drawn the proper legal conclusion that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection for essentially those reasons expressed in the Answer.

Appellant does not dispute the Examiner's factual determination that DeGendt, like Appellant, discloses a method for cleaning a workpiece, such as a wafer, comprising the steps of heating the workpiece, providing water vapor and ozone gas into the chamber and effecting a reaction between the ozone gas and contaminants to clean the workpiece. It is Appellant's principal contention that DeGendt provides no teaching or suggestion of pressurizing the chamber to an above ambient pressure. According to Appellant, "there is no recognition of use of above ambient pressure in processing" (Br. 4, second para.).

We do not subscribe to Appellant's position. As pointed out by the Examiner, the claim 1 recitation "pressurizing the chamber to an above ambient pressure" encompasses or embraces chamber pressures of only slightly greater than ambient and, thereby, provides no patentable distinction over the DeGendt disclosure that "[t]he pressure conditions in the tank are *about* atmospheric conditions" (col. 5, ll. 35-36, emphases added). It can not be gainsaid that there is no meaningful distinction between the "about atmospheric" pressure of DeGendt, which would include, for example, 1.1 atmospheres, and the presently claimed "above ambient pressure," which would also include 1.1 atmospheres.

Also, we find no error in the Examiner's reasoning that the elevated temperatures disclosed by DeGendt would necessarily result in a chamber pressure in excess of atmospheric pressure. DeGendt expressly teaches that "high temperature results in more efficient cleaning" (col. 7, ll. 34-35), and it is fundamental that an increase in temperature of a sealed chamber, such as the one admittedly disclosed by DeGendt, necessarily results in an increase in pressure. Also, like Appellant, DeGendt teaches that an increase in ozone

concentration near the surface of the wafer results in a better cleaning efficiency at elevated temperatures (col. 7, ll. 13-16), which teaching corresponds to the claimed step of pressurizing the chamber to increase the ozone gas concentration. Manifestly, one of ordinary skill in the art would have understood that increasing the concentration of the ozone in the chamber results in an increase in the chamber pressure, and that an obvious way to increase the concentration is to increase the pressure of the ozone.

Appellant cites an article by Gale et al. “to demonstrate how the claimed invention is viewed by others in the field”, and how the effective pressure is described at page 2 of the article, last paragraph (*see* Br. 5, second para.). However, the elevated pressures discussed in the art are not recited in the appealed claims and, therefore, Appellant's argument is not germane to the claimed subject matter.

Appellant also cites paragraphs [0047] and [0061] in the present Specification as demonstrating unexpected results. However, the referenced paragraphs of the Specification are hardly commensurate in scope with the degree of protection sought by the appealed claims, which set no limit on the minimum amount of pressure above atmospheric. *See In re Grasselli*, 713 F.2d 731, 742, 218 USPQ 769, 778 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980). Also, we note that Specification paragraph [0047] makes no mention of chamber pressure, whereas paragraph [0061] speaks of using steam at 15 psi and 126°C but does not specify the pressure **maintained** in the chamber during the cleaning process.

Regarding the claim 26 recitation of maintaining the surface of the wafer at a temperature below the temperature of the water vapor in the

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chamber, we fully concur with the Examiner that such is implicit in the DeGendt disclosure of forming a thin condensation layer on the wafer. Certainly, maintaining the surface of the wafer at a temperature lower than the temperature of the water vapor would have been an obvious way of forming the condensation layer on the wafer described by DeGendt. As for separately argued claim 41, we are in full agreement with the Examiner that spraying the steam into the chamber would have been an obvious way of providing steam in the process of DeGendt. We observe that Appellant bases no argument upon objective evidence of nonobviousness with respect to separately argued claims 26, 40, and 41.

In conclusion, based on the foregoing and the reasons well-stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(iv)(2006).

AFFIRMED

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